Bluetooth GPS Logger

M-1000C

Bluetooth®

User's Guide

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Rev. 1.1

HOLUX Technology, Inc.

No.1-1, Innovation Road I, Science-based Industrial Park, HsinChu City 300, Taiwan

TEL: 886-3-6687000 FAX: 886-3-6687111

Website: www.holux.com

CE

Declaration of Conformity

The following products 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 R&TTE Directive (1999/5/EC) that include the Electromagnetic Compatibility Directive (89/336/EEC) and Low Voltage Directive (73/23/EEC). The listed standard as below were applied:

The following Equipment:

Product	:	M-1000 Bluetooth GPS Receiver
Trade name	:	***HOLUX***
Model Number	:	M-1000×× (××=A~Z)

This product 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 R&TTE Directive (1999/5/EC) that include the Electromagnetic Compatibility Directive (89/336/EEC) and Low Voltage Directive (73/23/EEC), the following standards were applied:

1999/5/EC:
ETSI EN 300 328 :
ETSI EN 301 489-17
ETSI EN 301 489-1 :
:

73/23/EEC:
EN 60950-1
:

The following importer/manufacturer is responsible for this declaration:

Company Name	: **HOLUX Technology, Inc**		
Company Address	: **1F, No.30, R&D Rd. II, Hsinchu City 300, Taiwan（R.O.C.）**		
Telephone	: 886-3-6687000	Facsimile :	886-3-6687111

Person is responsible for marking this declaration:

Philip Yu	Vice President
Name (Full Name)	Position/ Title
May-11-2007	
Date	Legal Signature

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1. Overview

(Fig.1)

The HOLUX **M-1000C** Wireless GPS Logger allows users to store of up to 100,000 GPS coordinates of latitude, longitude, time, and elevation. The data can be analyzed by uploading to a computer through its USB/Bluetooth connection. Once the coordinates and the digital images are integrated, the tracking history and the location the images were taken can be shared through ezTour or Google Earth.

The *HOLUX* **M-1000C Bluetooth GPS Logger** (Fig. 1) is a total solution GPS Logger with Bluetooth, USB interface and built-in rechargeable battery for high sensitivity to tracking signal. M-1000C design is based on Media Tek Inc.(MTK) GPS solution-MT3329 low power Architecture.

M-1000C is a dual-function GPS Logger. Not only transmit satellite information through the PDA or Notebook by Bluetooth interfaces but also is a G-Mouse GPS Logger through a *HOLUX* designed data cable (Optional cable, see chapter 6) to deliver satellite signal to the device without Bluetooth interface.

M-1000C meets the requirement of field application, such as car navigation, mapping, agriculture surveying and security use under clear view of sky. M-1000C contacts to other device through Bluetooth interface, and built-in rechargeable Li-ion battery to save satellite information such as the status of satellite signal, the previous available location, date and time.

With the advanced technology, M-1000C can search up to 66 satellites simultaneously, re-acquires satellite signals in 0.1 microsecond and updates position data per second.

2. Packing List

Thank you for purchasing the M-1000C Bluetooth GPS Logger. Before you start, make sure that the following items are included in your package. If any of these items are missing, please contact your original local *HOLUX* dealer or distributor.

- **M-1000C** Bluetooth GPS Logger 1 Set
- Battery 1 Set
- Mini USB Cable 1 Set
- User guide and Driver CD 1 Pcs
- M-1000C Quick Guide 1 Pcs
- Warranty card 1 Pcs

Option

- Travel Power Supply 1 Set

3. Main features

1). Built in MTK MT3329 Low power consumption GPS chipset.

2). 66 parallel satellite-search channels for fast acquisition and reacquisition.

3). Superior sensitivity up to -165 dBm.

4). Built-in WAAS/EGNOS Demodulator without any additional hardware.

5). Compatible with Bluetooth Serial Port Profile (SPP) completely.

6). Low power consumption. Built-in rechargeable and changeable Lithium-ion battery, the working time can last 28 hours maximum.

7). Provide expand terminal contact to other system without Bluetooth device.

8). Support NMEA0183 V 3.01 data protocol

9). 3 color-LEDs indicate to show the status of device.

10). FLASH based program memory. New software revisions upgradeable through serial interface.

11). Small, sleek, and lightweight design easily fits in your hand.

12). Over-Temperature protection

13). Enhanced algorithms -SnapLock and SnapStart provide superior navigation, performance in urban, canyon and foliage environments.

14). For Car navigation, Marine navigation, Fleet management, AVL, Personal navigation, Tracking System, and Mapping device application.

4. Technical Specification

4.1. Basic Specification

- Chipset: MTK MT3329 chipset.
- Channels: 66 parallel satellite-search channels.
- Frequency: 1575.42 MHz
- Receiver: L1, C/A code.
- Built-in 2Mbit flash memory capable of recording 100,000 points of GPS data

4.2. Acquisition Time (refer to MTK chip specification)

- Reacquisition: 0.1 second
- Cold start: < 36 seconds
- Warm start:< 33 seconds
- Hot start: < 1 second

4.3. Receiver Accuracy

- Normal: < 3 meters CEP without SA
- Enable EGNOS or WAAS:
  Position: < 2.2 meters, horizontal 95% of time
  < 5 meters, Vertical 95% of time
- Velocity: within 0.1 meters / second
- Time: 0.1 microsecond synchronized GPS time

4.4. Use Limitation

- Altitude: < 18,000 meters (60,000 feet)
- Velocity: < 515 meters/ second (1000Knots)
- Acceleration: 4 G
- Jerk: 20 meters / second^3, max

4.5. Power Supply

- External Voltage: 5V DC +/-5%
- Batteries:
  Main Power: Built-in rechargeable Lithium-ion for system power.
- Working voltage: 30~40mA (Normal mode).
  25mA (Power Saving).
- Auto Power Saving mode.
- Circuit protection on **M-1000C** when over-temperature condition 50°C occurs.

4.6. Output and Interface

- **Output**

I. Output protocol

Baud Rate: 38400 bps

Data bit: 8

Parity: No

Stop bit: 1

II. Format. NMEA0183 V3.01: GPGGA (1time/1 sec), GPGSA (1 time/5 sec.), GPGSV (1time /5 sec.), GPRMC (1time /1 sec.), GPVTG (1 time/1 sec), (GLL, or MTK NMEA Command for optional).

III. Datum: WGS84.

- **Input/ Output Interface:**

I. Compatible Bluetooth Serial Port Profile (SPP), Version1.2 and class 2(up to 10 meter range).

II. In/Out Port. GPS signal (Out)/Command(In) with USB Level Mini USB Type B Connector

4.7. Physical

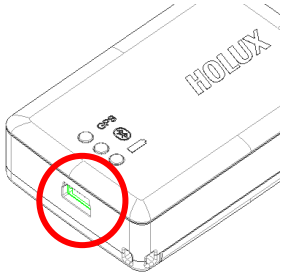
- Size: 62.5 × 41 × 17.1 mm
- Weight: < 53 g
- Operating Temperature: -10°C to + 60°C (under the un-charging condition); Charging Temperature: 0°C to + 45°C
- Storage Temperature:-20°C to + 60°C
- Operating humidity: 5% to 95% No condensing

4.8. Other Functions

- Bluetooth frequency: 2.4 ~2.48GHz
- Bluetooth Input Sensitivity: -85dBm
- Low sensitivity of receiving satellite signal: -165 dBm
- LED Functions: Indicate Bluetooth status, GPS status, Battery Status and Battery charging status

5. Getting Started

STEP 1. Charge Battery



Please charge battery till LED off for the first time.

Power cable plug in Power cable connect to power socket

↓

Charge Battery

Battery indicator light:

Power too low -------- Red LED on

Charging ---------- Green LED on

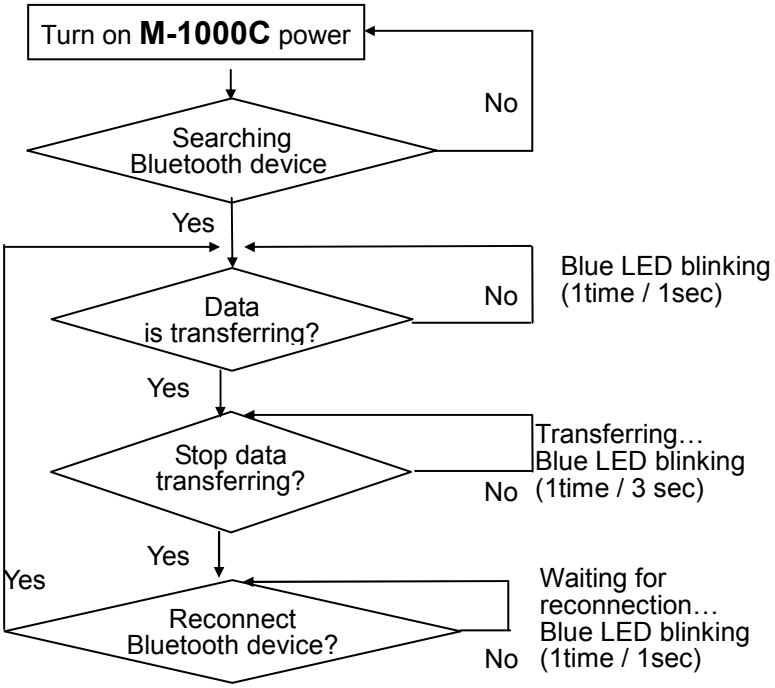
Full or Not in charging -- LED off

Mini USB socket

STEP 2. Turn on the power

Power switch

Bluetooth Status –



Note:
Some PDAs have to re-open Bluetooth manager for Bluetooth device re-connection.

GPS Status ---

Put **M-1000C** in clear view of the sky without any obstruction for better satellite acquiring.

Turn on **M-1000C** power

↓

Search GPS -- Steady orange LED on

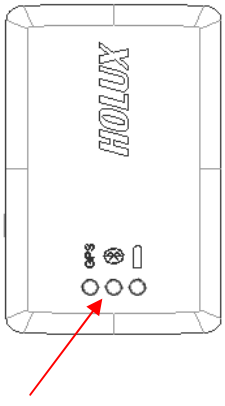
↓

Position Fixed -- Orange LED blinking

Turn off **M-1000C** power

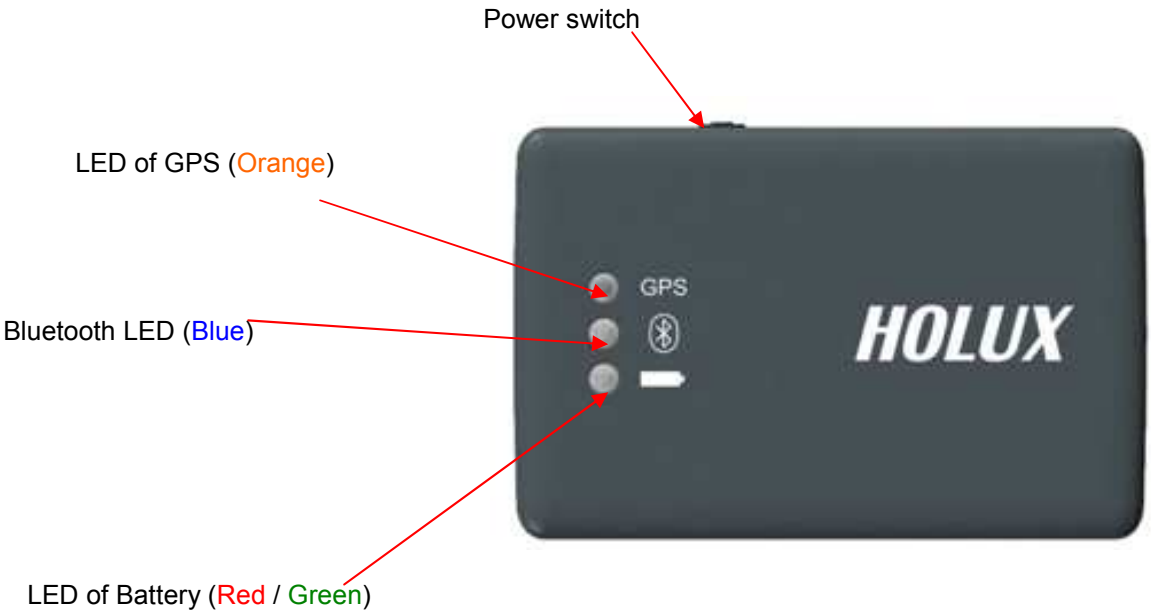
↓

Power Off -- Orange LED off



5.1. Hardware Description

15). **M-1000C** Body description see Fig. 2:



(Fig.2)

16). LED status:

SYMBOL	COLOR	STATUS		DESCRIPTION
Bluetooth	Blue	Blinking	1 time / 1 sec	Search Bluetooth Device
			1 time / 1 sec	Standby Mode
			1 time / 3 sec	Transferring Data
Battery	Red	Light on		Power too low
	Green	Light on		In charging
	N/A	Light off		Battery full or Not in charging
GPS	Orange	Light on		Acquiring Satellites
		Blinking	1 time / 1 sec	Position Fixed

17). Power Switch:

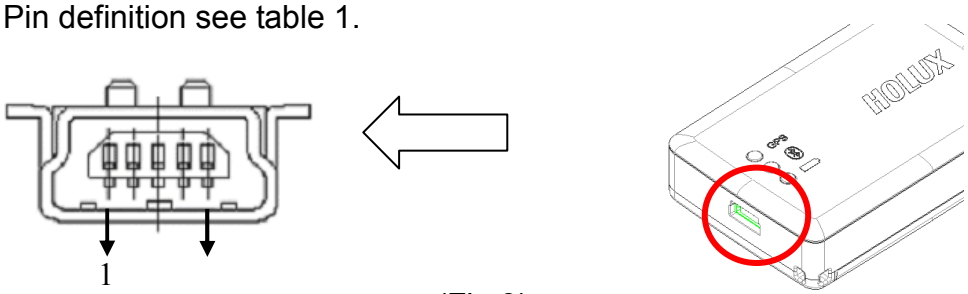
a. Power on, Orange light is on.

b. Power off, Orange light is off.

18). Power Jack & Data Port, see Fig.3

Jack type: Mating face of 5 pin Mini USB Type B female.

Pin definition see table 1.

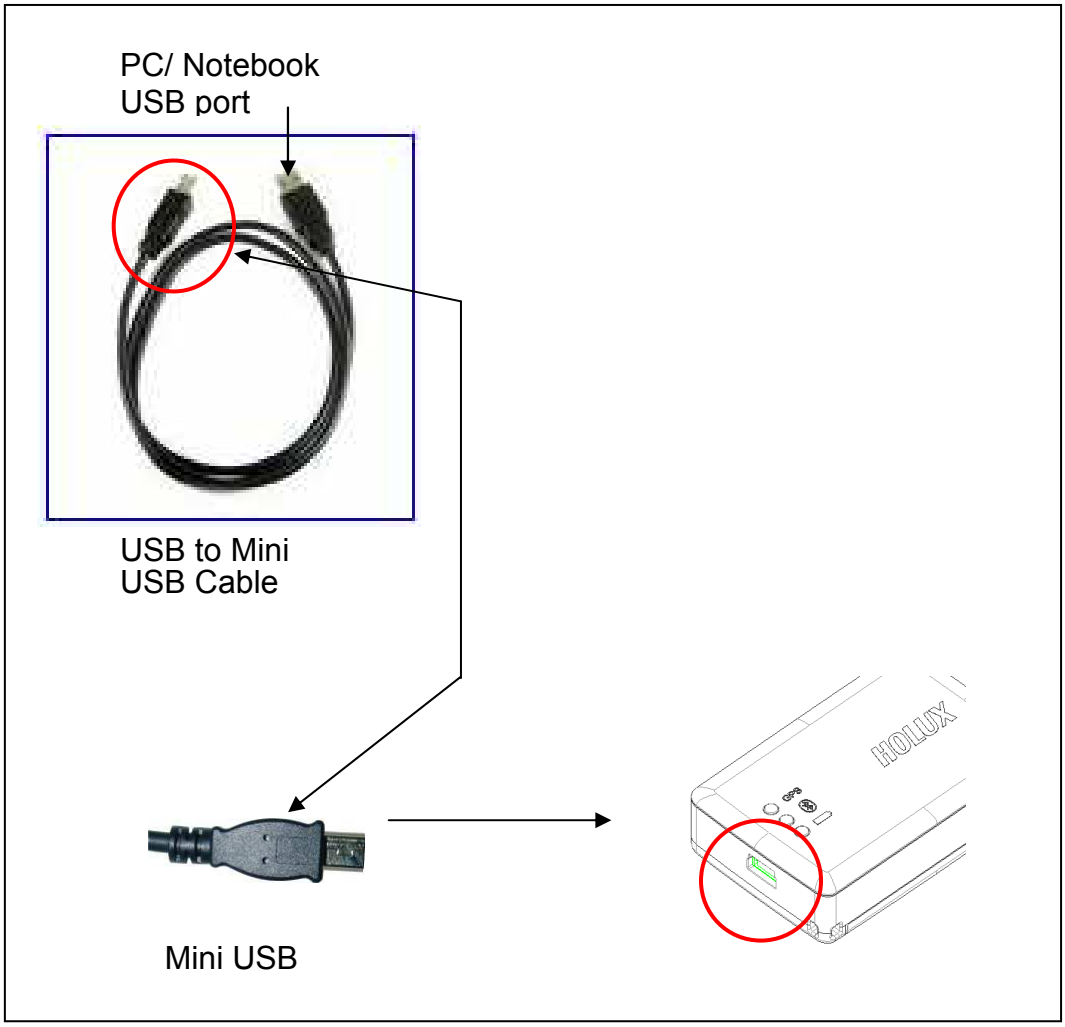


(Fig.3)

Table 1

Pin	Pin Name	Signal and description
1	GND	Signal ground, Battery charging ground.
2	NC	
3	D_Plus	Transmit Data. From organizer to peripheral.(Voltage Level is 3.3V ~ 5.0V).
4	D_Minus	Receive Data. Form peripheral to organizer.(Voltage level is 3.3V ~ 5.0V).
5	VCHARG	Positive terminal of DC adaptor that powers the internal charging circuit of Li-Ion battery. The approved power supply is 5.0V +/- 5%@800mA.

19). Optional accessories, and connector description, see Fig. 4



(Fig.4)

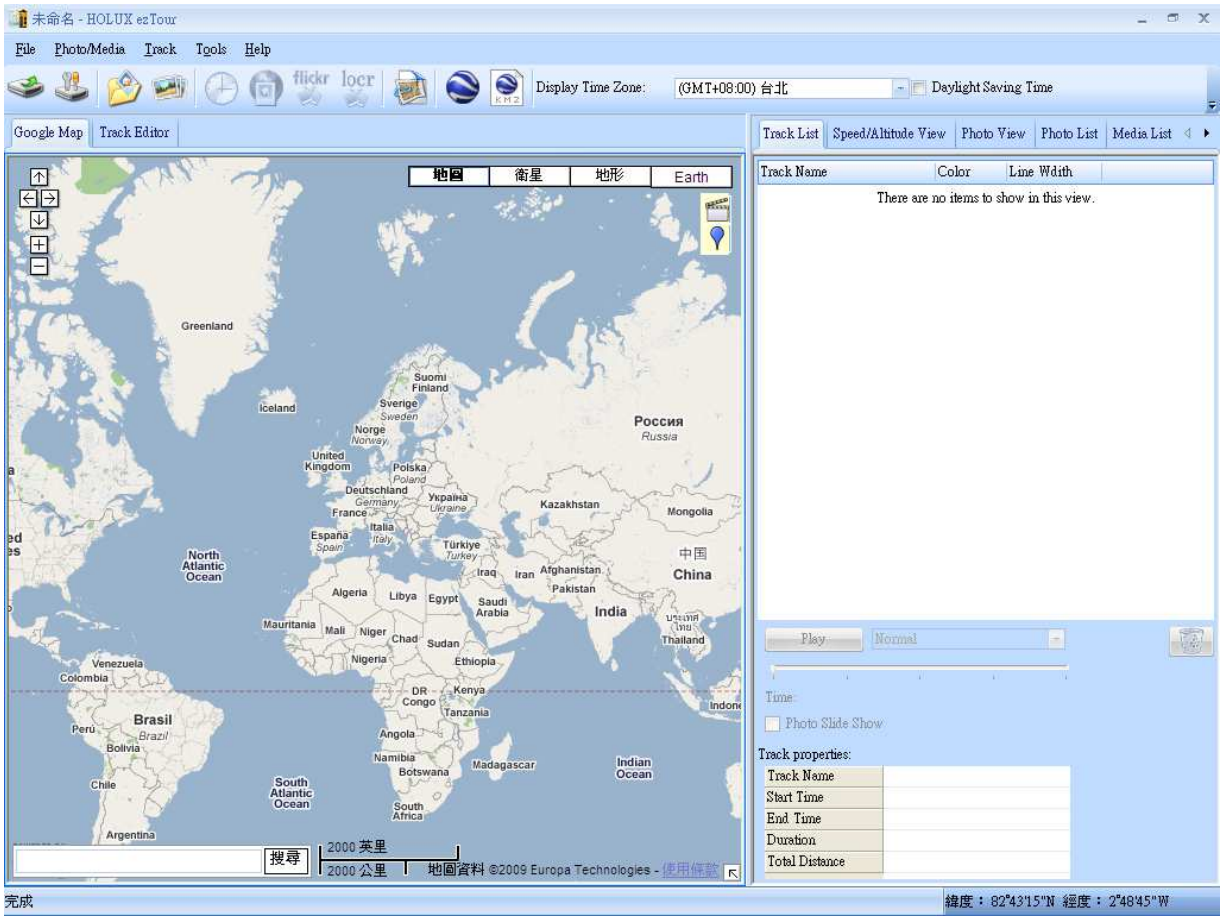
5.2. M-1000C Logger Track Logging and Mode Setting

5.2.1 Data Logging

1. When the power is turned on, the device will automatically search for satellite positioning (orange LED on), and then logging will begin. When the power is switched off, the logging will stop. When the power is turned on again, it will once again conduct satellite positioning and start logging.

5.2.2 GPS Data Logging Mode Setting

1. Install ezTour onto a PC or notebook (see ezTour instructions manual for installation)
2. When the application runs, the following main screen can be seen:



3. From the Menu bar select [Setup GPS Logger] to bring up the settings window

4. Make sure that the M-1000C is connected to a PC or notebook, and select [reconnect] or [manual settings]

5. The logger can be set to record by a set time or set distance. The conditions for recording can be set the following ways:
   (1) Select car, bicycle, exercising, or walking mode.
   (2) Manually set the time or distance.

6. When the logger's data storage is full, there are two modes to choose from:
   (1) Rewrite: When the data is full, data will begin to be rewritten, overwriting the data from the beginning.
   (2) Terminate: When the data is full, the logger will cease to record any further data.
7. Press [Confirm] to start logging according to the new setting.

5.2.3 Data Read

When the logger M-1000C is connected to a PC or notebook through USB or Bluetooth, the data can be extracted through ezTour. Please see ezTour instruction manual for details.

5.3. Installation of Mini GPS Viewer program

The product includes the application Mini GPS viewer for easy viewing and testing or GPS status. The following is the steps of software installation to setup on PDA, DELL AXIM x51v with Bluetooth Manager. For other PDA or laptop device, the steps might vary.

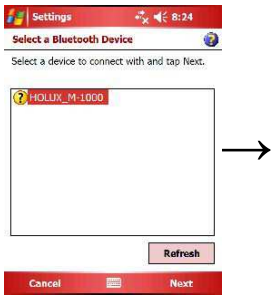
1. In Pocket PC setting→system panel, enable "manage GPS automatically".

Note: The setting may vary in other PocketPC or Smartphone , please check the manual or consult the technical service respectively.

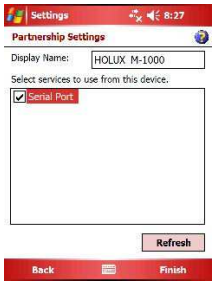
2. Tap the Bluetooth icon to start "Bluetooth Manager" on PocketPC to enable Bluetooth function.

3. In "Devices" panel , tap "New partnership" to search Bluetooth devices nearby. If the result is not found, tap "Refresh" to research again.

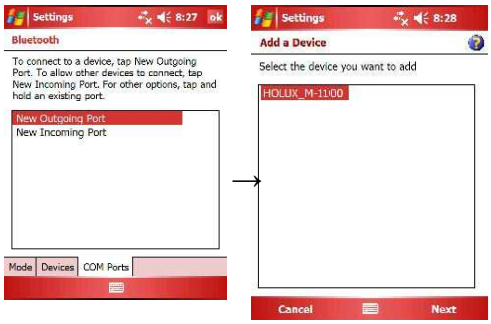
4. Choose the Bluetooth device "HOLUX_M-1000C" and tap "Next"



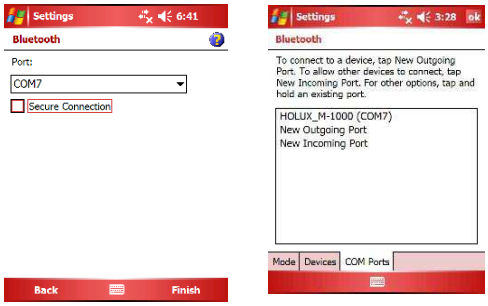
5. Connect to “Serial port” or “SPP Slave”, then tap “Finish”



6. Go to the “COM ports” panel to tap “New Outgoing Port”, choose “HOLUX_M-1000C” device and tap “Next”.



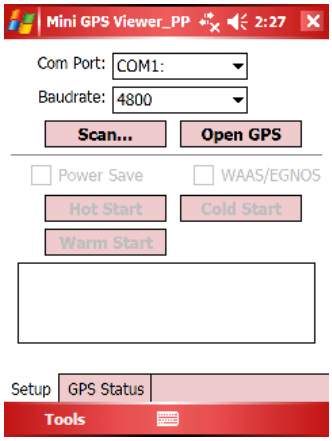
7. Select the COM port, then tap finish, it will show as right figure, and tap “OK” to finish the Bluetooth setting. Recommend not to use “Secure Connection” which may cause unstable connection.



8. Then you can enable your navigation map program to enjoy GPS function now.

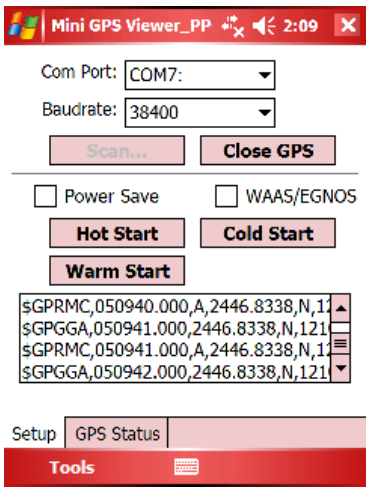
5.4. Execute the Mini GPS Viewer program

1) The following window is shown after executing Mini GPS Viewer_PPC,(see Fig. 5). The Windows 2000/XP version is just different on display.



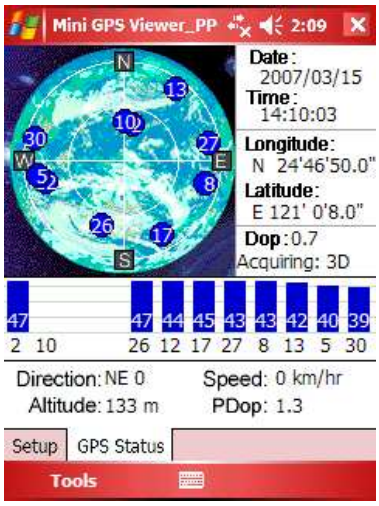
(Fig. 5)

2) Setup the Baud rate: 38400, then tap “Scan” button to scan your COM Port. Select your COM Port respectively, then tap “Open GPS” button. Check log screen below if the satellite data is receiving correctly.



(Fig. 6)

3) Select “GPS Status” panel to observe the GPS information status, see Fig. 7.



(Fig. 7)

4) In “setup” panel you can see “Hot Start”、“Warm Start”、“Cold Start”、which allow you to re-acquisition of Ephemeris and Almanac. Basically the satellites are always moving in the sky, if Ephemeris and Almanac data in GPS Logger can’t meet real satellites status upon you if GPS Logger is over 0.5 hour power off but you are no longer in the previous position , it takes more time for the GPS Logger to get GPS position fix soon. We suggest you can click “Cold Start” or “Warm start” to re-acquisition. Or you can remove the battery for 3 seconds and reinsert it, this operation is the same with “Cold Start”.

6. Optional cable accessory

Option cable accessory is provided to meet customers' need, see table 1. With the data cable connected, it can transmit data with PDA, NoteBook easily as the G-mouse role.

Table 1

Item	Description	Note
USB Cable	USB to Mini-USB data cable	

7. Driver Installation

The following is the steps of installation USB driver

7.1 System Requirement

CPU: IBM, Pentium III or above, or other compatible PC.

Memory: above 32 MB

System: Windows 2000/XP

7.2 Installation

I. Starts the driver installer from driver CD.

II. Connect USB data cable to computer. System will search new hardware and install the driver automatically

III. Connect **M-1000C** GPS Logger with USB data cable.

7.3 Important

Verify the COM port to start using your own navigation software.

I. Click **<Start>** menu, select → **<Setting>**, then enter→ **<Controller>**

II. After entering **<Controller>**, and select **<System>**.

III. Select **<Device Manager>**.

IV. Find the **< Connector** (COM & LPT)**>** and check the Virtual COM Port, which was created by the USB driver.

Please note that the virtual COM port number might be different from every computer. Before using navigation software, please confirm the COM Port numbers created by your computer and provided by your navigation software. Otherwise, the navigating software won't receive the satellite signal, because of the un-match COM Port setting.

8. Warranty

The **M-1000C** is warranted to be free from defects in material and functions for a period of one year from the date of purchase. Any failure of this product within this period under normal conditions will be replaced at no charge to the customers.

- **M-1000C has built Li-battery inside, please avoid closing to high temperature environment or sun shine directly for a long time.**

9. Troubleshooting

Problems	Possible Reasons	Methods
No GPS output but GPS timer is counting	Weak or no GPS signal at the place of **M-1000C**	Test under open sky at a fix location and run Mini GPS Viewer “Cold start” function.
	The ephemeris and almanac data in GPS memory is no longer valid after no use for a long time.	Remove the Battery for 3 seconds and re-insert, then power on to test again.
Execute fail	Bluetooth function unstable	Power On/Off M-1000C. Re-Start PDA or PC and refer to section 5.2 “Bluetooth device connection installation” to re-connect.
Can not open the COM port	Bluetooth connection interrupted or COM port is conflicted/ occupied by other programs.	Check the Bluetooth connection again, Check and close other programs that might conflict with.
Can not find **M-1000C**	Poor Bluetooth connection	Re-Start PDA or PC and refer to section 5.2 “Bluetooth device connection installation” .

Federal Communications Commission (FCC) 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 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 party responsible for compliance could void the user's authority to operate this 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.

This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provide with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

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