Bluetooth GPS Logger

M-1200E

Bluetooth®

User's Guide

Rev. 1.0

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Overview

(Fig.1)

The HOLUX **M-1200E** Wireless GPS Logger allows users to store of up to 200,000 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-1200E 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-1200E design is based on Media Tek Inc.(MTK) GPS solution-MT3329 low power Architecture.

M-1200E meets the requirement of field application, such as car navigation, mapping, agriculture surveying and security use under clear view of sky.

With the advanced technology, M-1200E can search up to 66 satellites simultaneously, re-acquires satellite signals in 0.1 microsecond and updates position data per second.

Main features

- Built in MTK MT3329 Low power consumption GPS chipset
- 66 parallel satellite-search channels for fast acquisition and reacquisition
- Superior sensitivity up to -165 dBm
- Built-in WAAS/EGNOS Demodulator without any additional hardware
- Compatible with Bluetooth Serial Port Profile (SPP) completely
- Low power consumption
- Rechargeable and changeable Lithium-ion battery
- Provide expand terminal contact to other system without Bluetooth device
- Support NMEA0183 V 3.01 data protocol
- 4 color-LEDs indicate to show the status of device
- FLASH based program memory. New software revisions upgradeable through serial interface
- Small, sleek, and lightweight design easily fits in your hand
- Over-heat protection – auto-power off when operation temperature reaches 45°C.
- Enhanced algorithms -SnapLock and SnapStart provide superior navigation, performance in urban, canyon and foliage environments.
- For Car navigation, Marine navigation, Fleet management, AVL, Personal navigation, Tracking System, and Mapping device application.

Technical Specification

Basic Specification

- Chipset: MTK MT3329 chipset.
- Channels: 66 parallel satellite-search channels.
- Frequency: 1575.42 MHz
- Receiver: L1, C/A code.
- Built-in 4M Bytes flash memory capable of recording 200,000 points of GPS data

Acquisition Time (refer to MTK chip specification)

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

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

Use Limitation

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

Power Supply

- External Voltage: 5V DC +/-5%
- Batteries:
  Main Power: Built-in rechargeable Li-ion battery for system power.
- Working voltage: 30~40mA@ 3.7V (Normal mode).
  28mA (Power Saving).
- Auto Power saving mode.
- Circuit protection on **M-1200E** when over-temperature 45°C occurs.

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

Physical

- Size: 68.3 × 22.8 × 15.5 (mm) (+/-0.5mm)
- Weight: 32 (g) (+/- 0.5g)
- 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 85% No condensing

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, Battery charging status and POI record status.

Getting Started

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:

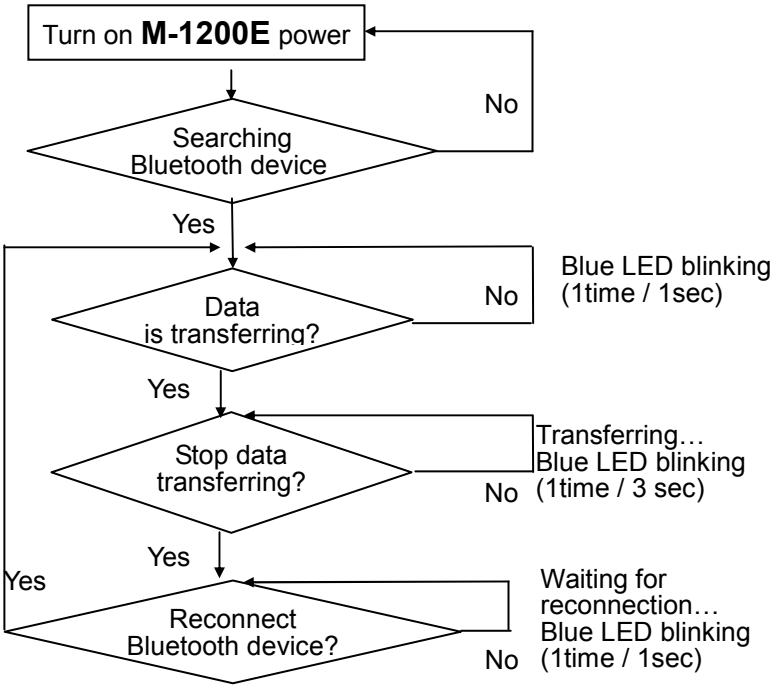
Power too low -------- Red LED on

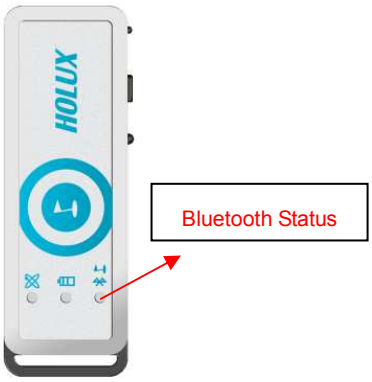
Charging ---------- Green LED on

Full or Not in charging -- LED off

2. Turn on the power

Bluetooth Status –



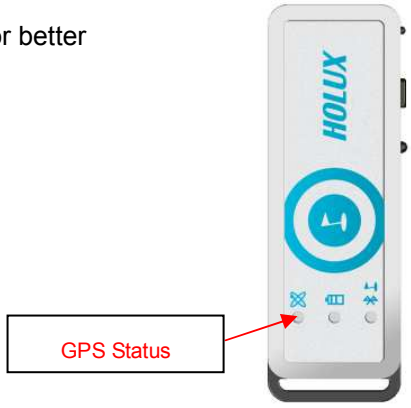


Note:
Some PDAs have to re-open Bluetooth manager for Bluetooth device re-connection.

GPS Status -
Put **M-1200E** in clear view of the sky without any obstruction for better satellite acquiring.

Turn on **M-1200E** power → Search GPS -- Steady orange LED on → Position Fixed -- Orange LED blinking

Turn off **M-1200E** power → Power Off -- Orange LED off

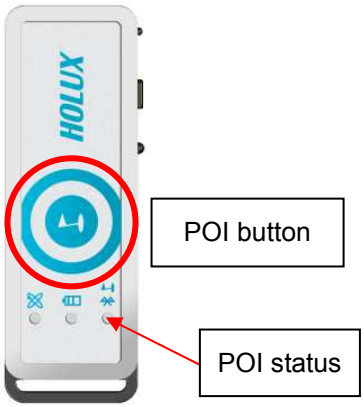


3. POI Status

Press the POI button once, the POI yellow LED is on. Release the button, the yellow LED is off. It means the POI record is completed.

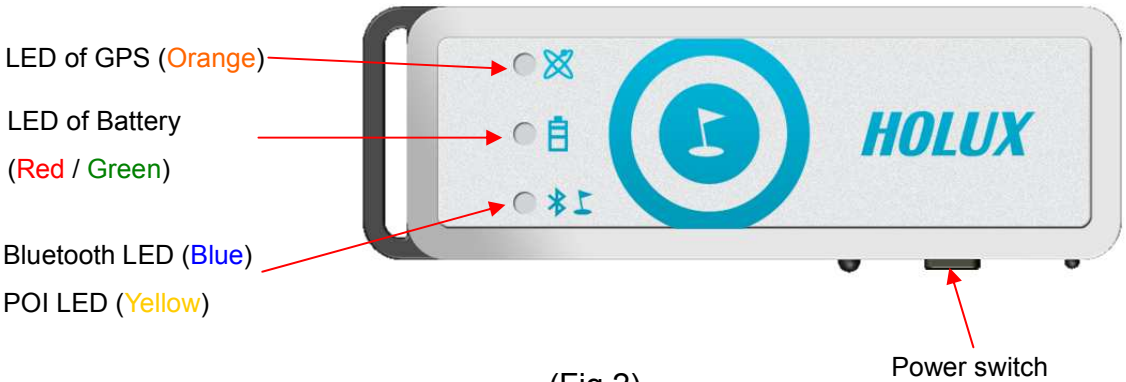
Press **M-1200E** POI Button → Yellow LED on

Release **M-1200E** POI Button → Yellow LED off



Hardware Description

1). **M-1200E** Body description see Fig. 2:



(Fig.2)

2). LED status:

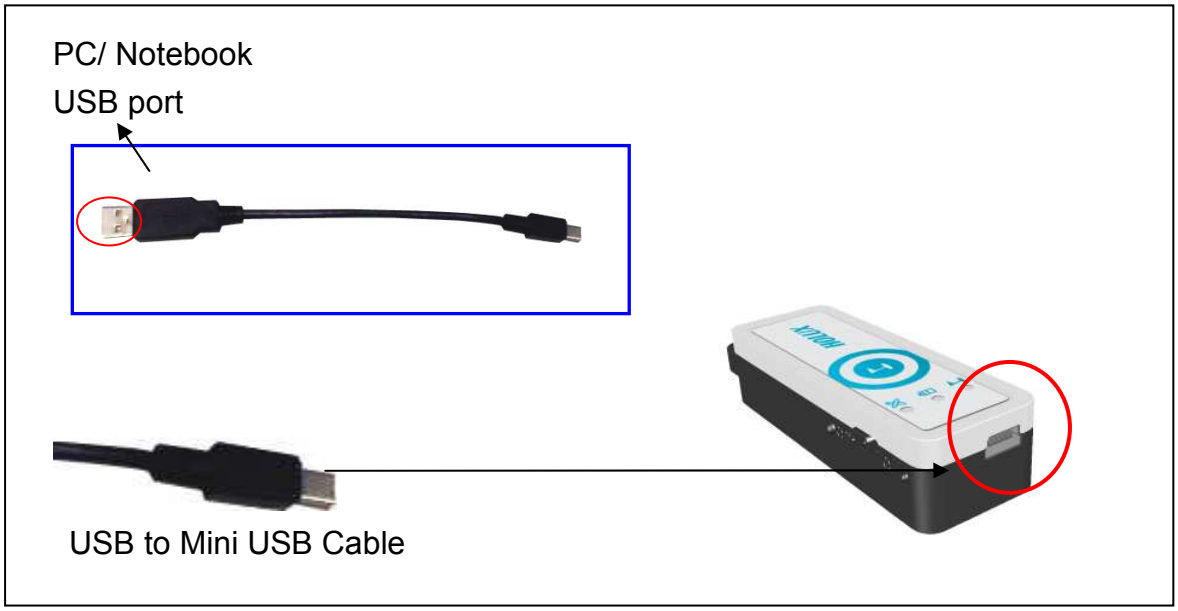
SYMBOL	COLOR	STATUS		DESCRIPTION
Bluetooth/ POI	Blue	Blinking	1 time / 1 sec	Search Bluetooth Device
			1 time / 1 sec	Standby Mode
			1 time / 3 sec	Transferring Data
	Yellow	Press POI button	Light on	Record the POI data
		Release POI button	Light off	POI record is completed.
Battery	Red	Light on		Power 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

3). Power Switch:

a. Power on, Orange light is on.

b. Power off, Orange light is off.

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



(Fig.4)

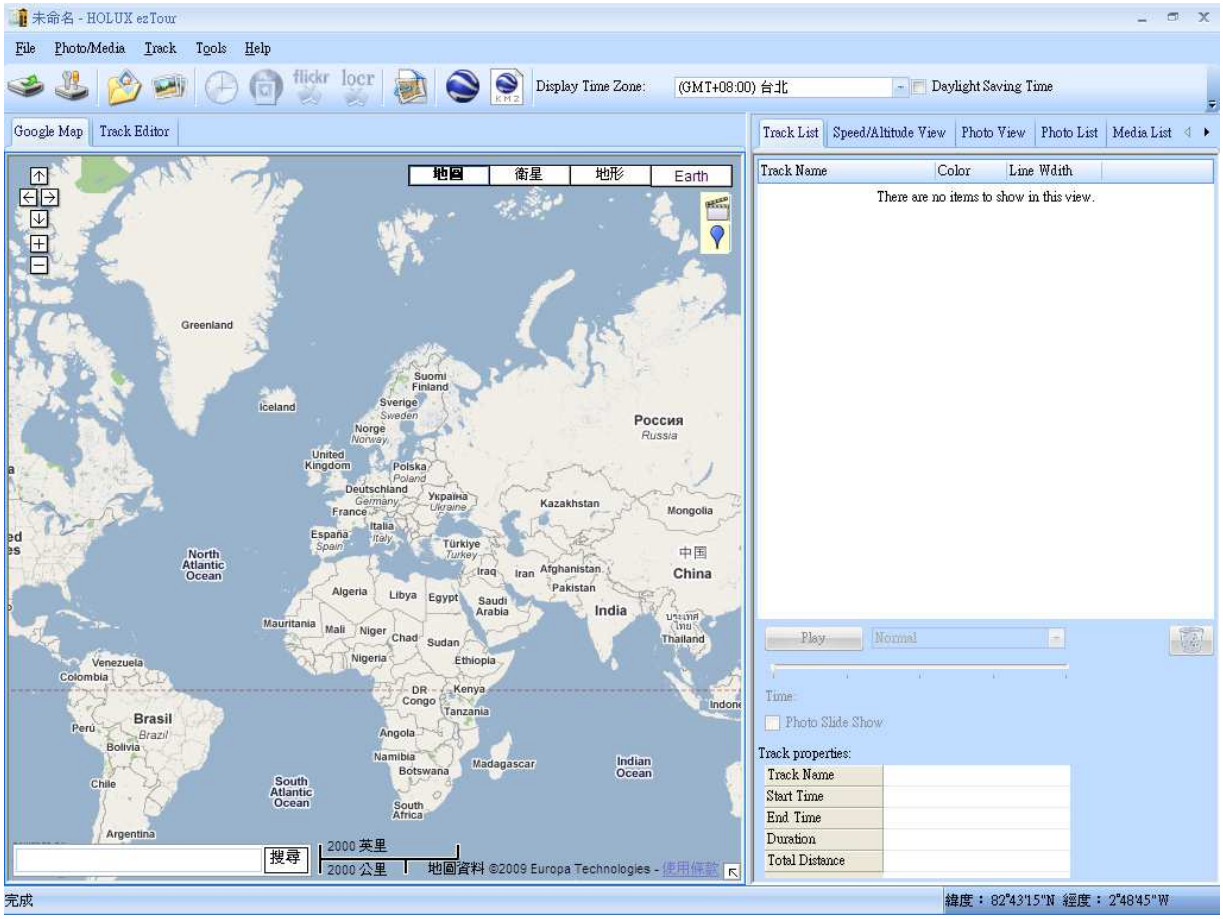
M-1200E Logger Track Logging and Mode Setting

5.2.1 Data Logging

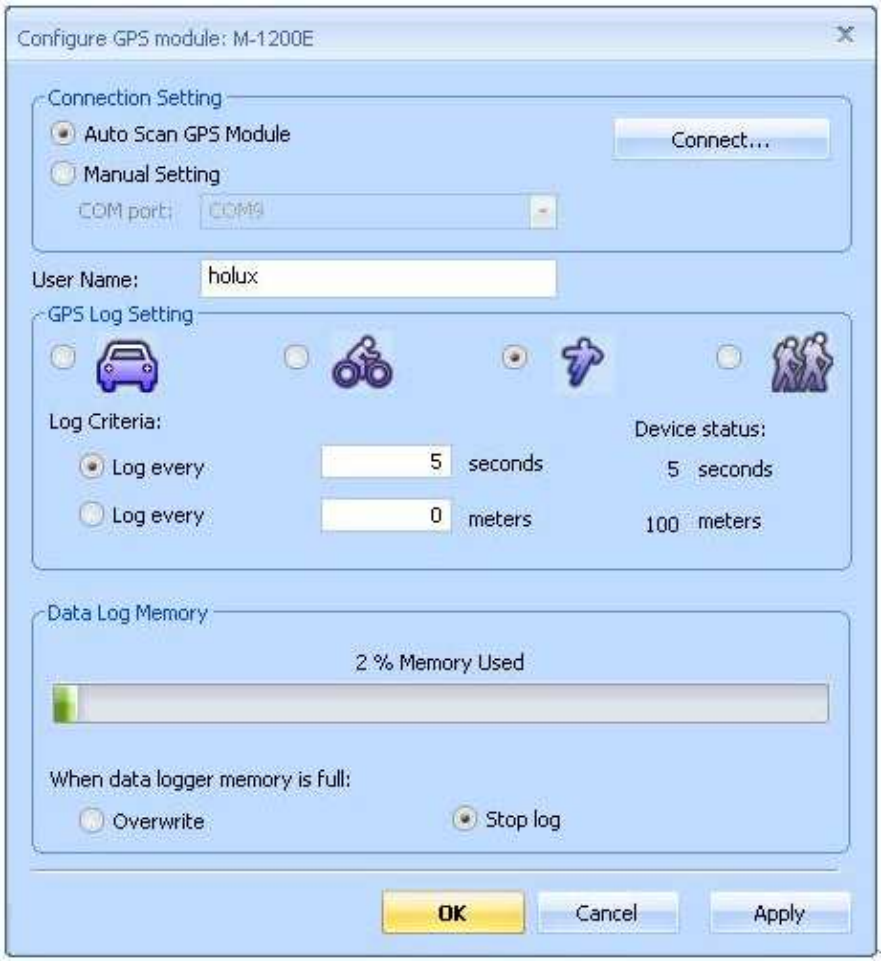
1. When the power is turned on, the device will automatically search for satellite positioning (orange LED on), and then logging will begin. When the power is switched off, the logging will stop. When the power is turned on again, it will once again conduct satellite positioning and start logging.

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-1200E 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.

6. When the logger's data storage is full, there are two modes to choose from:
   (1) Rewrite (default): 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-1200E 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.

Installation of Mini GPS Viewer program

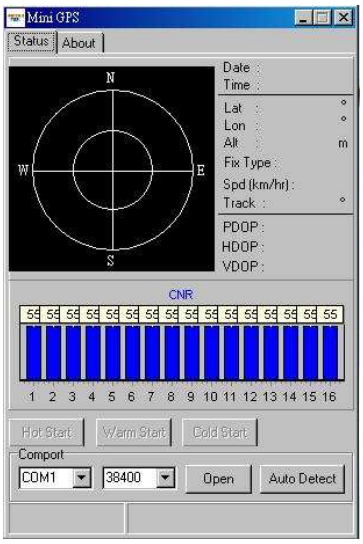
We provide a program “Mini GPS viewer.exe” for end user to watch the satellite signal receiving status on laptop or PDA device.

For Windows 2000/XP OS, you can execute “Mini GPS viewer_PC” directly.

For Microsoft Pocket PC, please copy “Mini GPS viewer_PPC” to SD card or device, then execute “Mini GPS viewer_PPC”.

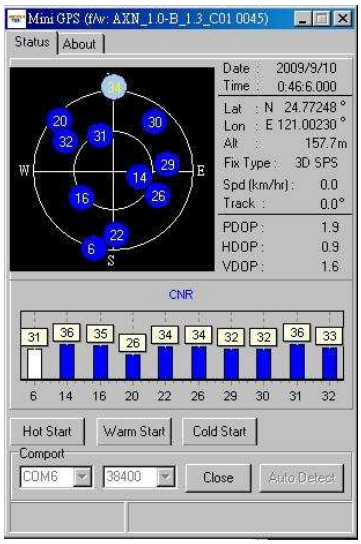
Execute the Mini GPS Viewer program

1) The following window is shown after executing Mini GPS Viewer_PPC,(see Fig. 5).



(Fig. 5)

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



(Fig. 6)

3) 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”.

Driver Installation

The following is the steps of installation USB driver

System Requirement

CPU: IBM, Pentium III or above, or other compatible PC.
Memory: above 32 MB
System: Windows 2000/XP

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-1200E** GPS Logger with USB data cable.

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.

Appendix A. Troubleshooting

Problems	Possible Reasons	Methods
Using ezTour to connect M-1200E is fail	**M-1200E power is not turned on.**	Turn on the M-1200E power switch, and make sure GPS Orange LED is on. Please reference 7.3.
Execute fail	Bluetooth function unstable	Power On/Off M-1200E. Re-Start PDA or PC and refer to Appendix C “Bluetooth Device Connection” 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-1200E**	Poor Bluetooth connection	Re-Start PDA or PC and refer to Appendix C “Bluetooth Device Connection” .

Appendix B. Power Jack & Data Port

Jack type: Mating face of 5 pin Mini USB Type B female. Pin definition see table 1.

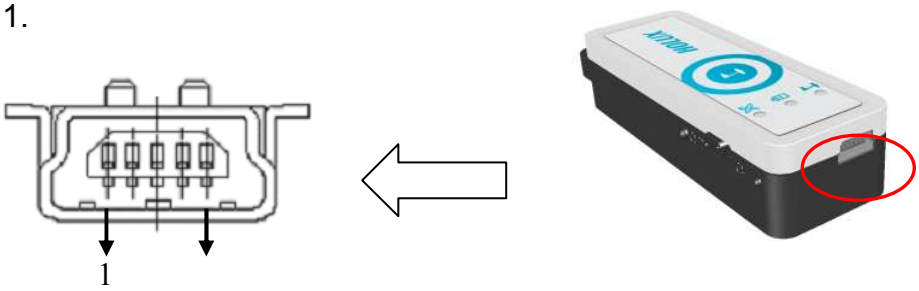


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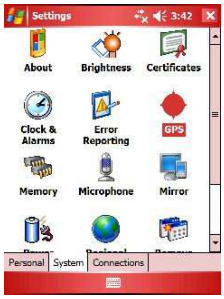
Table .

Pin	Pin Name	Signal and description
1	GND	Signal ground, Battery charging ground.
2	NC	
3	D_Plus	USB data transfer.(Voltage Level is 3.3V ~ 5.0V).
4	D_Minus	USB data transfer.(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 +/- 0.4V, 500mA

Appendix C. Bluetooth Devices Connection

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.

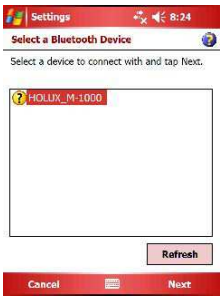
2. In Pocket PC setting→system panel, enable "manage GPS automatically".
Note: The setting may vary in other PocketPC or Smartphone , please check the manual or consult the technical service respectively.



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

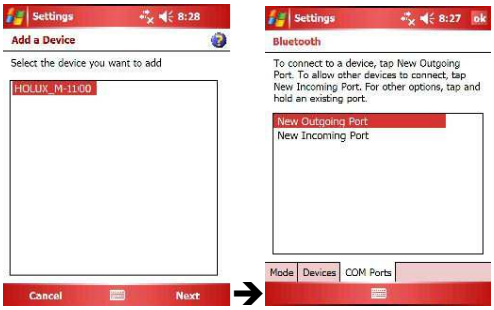
4. In "Devices" panel, tap "New partnership" to search Bluetooth devices nearby. If the result is not found, tap "Refresh" to research again.

5. Choose the Bluetooth device "HOLUX_M-1200E" and tap "Next"

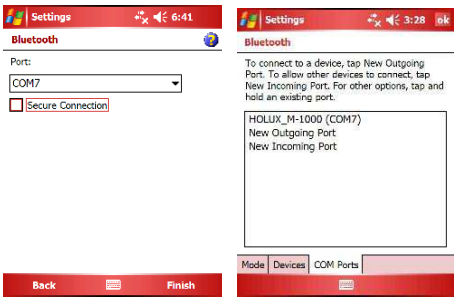


6. Connect to “Serial port” or “SPP Slave”, then tap “Finish”

7. Go to the “COM ports” panel to tap “New Outgoing Port”, choose “HOLUX_M-1200E” device and tap “Next”.



8. 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.



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

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.