

# **RoyalTek Bluetooth GPS Datalog Receiver**

**MBT-1100**

**User Manual**

**V1.1**



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**(Design and specifications are subject to change without notice.)**

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# **1. Product Introduction**

## **1.1 Overview**

The MBT-1100 is equipped with the latest GPS solution for fast and accurate fix on GPS signals. This latest round of technology advancements gives the users an “instant on” feel, and the experience in navigation becomes more natural. The dimension of 69.5(L) x 23(W) x 20(H) and weight only 38g, making it an ideal solution to carry everywhere.

## **1.2 Main Features**

- NMEA0183 compliant protocol
- Extreme fast TTFF at low signal level.
- Adopt TCXO as GPS core clock source
- Industrial Standard
- Selectable Baud Rate
- WAAS / ENGOS is supported

## **1.3 Product Notification**

- Charger operating temperature range 0 °C to +50 °C
- Discharger operating temperature range -20 °C to +60 °C
- Battery Storage temperature range -20 °C to +60 °C
- 10hr at full charge continuous operation mode.
- Humidity range up to 95% no condensing

## **1.4 Application**

- PDA and Cellular Phone Navigation
- Consumer wireless GPS
- Automotive Vehicle Tracking
- Personal Positioning
- Sporting and Recreation

# 1.5 Specification

<b>GPS receiver</b>		
1	Frequency	L1 1575.42MHz.
2	Code	C.A. Code.
3	Chipset Sensitivity	-158dBm (tracking)
4	Chipset cold start	36 sec @ open sky
5	Chipset warm start	33 sec @ open sky
6	Chipset hot start	1 sec @ open sky
7	Reacquisition	Less than 1s
8	Position accuracy	Without aid: 3.0m 2D-RMS DGPS (WAAS, EGNOS, MASA, RTCM): 2.5m
9	Maximum altitude	18000 m
10	Maximum velocity	515 meter/second maximum
11	Update rate	Continuous operation: 1Hz
12	Dimension (L x W x H)	69.5 x 23 x 20mm
<b>Interface</b>		
13	I/O Pin	8pin
<b>Mechanical requirements</b>		
14	Weight	38±1g
<b>Power consumption</b>		
15	Vcc	5V
16	Current	- Fix : 55mA @ 5.0V (Avg.) - Acquisition : 70mA @ 4.2V from battery (Avg.)
<b>Environment</b>		
17	Temperature	- For charge : 0 ~ +50°C (under 5hrs) - For discharge : -20 ~ +60°C - Storage : -20 ~ +60°C
18	Humidity	≤95%
<b>Battery</b>		
19	Operation Time	≥ 10 hours (avg.)
20	Battery	Li-on 550mAh, rechargeable
21	Replaceable	No
22	Connector	Mini USB 8pin
<b>External GPS Antenna Connector</b>		
23	Type	None
<b>Backup Battery</b>		
24	Backup Battery	None
<b>LED Indicator</b>		

25	Status	LEDs showing GPS, Bluetooth, Power, Memory status
26	Original Display	1 Yellow LED indicates power is in charging
		2 Blinking Amber LED indicates Battery Low
		3 Glowing Green LED indicates position is fixed Blinking Green LED indicates position not fixed
		4 Glowing RED LED indicates Memory Full (GPS Green LED off) Erased memory data, RED LED Blinking
		5 Glowing Blue LED indicates Bluetooth is connected Blinking Blue LED indicates Bluetooth is not fixed

### Location Log

27	Data logger	Yes
28	Flash Type	64Mb Serial Flash
29	Data Type	

Data Type	Records
<b>1:</b> UTC Time, Longitude, Latitude	Greater than 330,000
<b>2:</b> UTC Time, Longitude, Latitude, Altitude	Greater than 285,000
<b>3:</b> UTC Time, Longitude, Latitude, Altitude, Velocity	Greater than 245,000
<b>4:</b> UTC Time, Longitude, Latitude, Altitude, Velocity, Delta Distance	Greater than 200,000
<b>5:</b> All data, include UTC Time, latitude, longitude, altitude, speed, distance, PDOP, HDOP, VDOP, No of SV in used, SV info(SNR, Elevation, Azimuth), for this mode, you will get the full sentence of \$GPGGA,\$GPGSA,\$GPGSV,\$GPRMC,\$RTDIST	Greater than 48,000

### Bluetooth

Bluetooth Operating Frequency	2401~2479 MHz
Bluetooth certified	BT 2.0
Bluetooth UART port support data rate	115200
Bluetooth distance	≥ 10m

## 2. Before Start

### 2.1 Check the Package Content

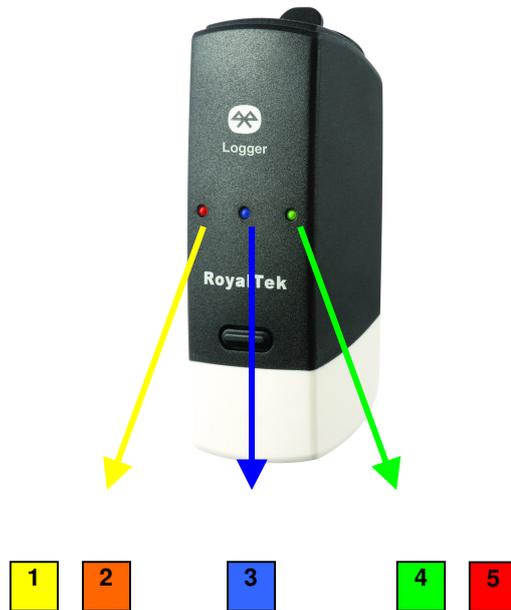
Before you start using *MBT-1100*, please check out if your package includes the following items. If any item is damaged or missed, please contact your reseller at once.

- MBT-1100 Bluetooth GPS datalog receiver
- Car Charger
- CD
- AC Adapter (optional)
- USB cable
- PU GRIP PAD

### 2.2 Power Button (Right View)



## 2.3 LED Display



1	Yellow LED indicates power is in charging
2	Blinking Amber LED indicates Battery Low
3	Glowing Blue LED indicates Bluetooth is connected Blinking Blue LED indicates Bluetooth is not fixed
4	Glowing Green LED indicates position is fixed Blinking Green LED indicates position not fixed
5	Glowing RED LED indicates Memory Full Erased memory data, RED LED Blinking

## 2.4 Hardware Features

### 2.4.1. Power Button

Power ON / Power OFF

### 2.4.2. Bluetooth Status LED (Blue)

Glowing - Bluetooth is on and ready to transmit.

### 2.4.3. GPS Status LED (Green)

Glowing - Position is fixed.

Steady light – Device is on but position is not fixed.

#### **2.4.4. Memory Status LED (Red)**

Glowing – Memory is full.

#### **2.4.5. Battery Status LED (Amber/Yellow)**

None - Battery has adequate power supply.

Amber - Power is low. Charging immediately is required.

Yellow - Connected to power charger, charging.

LED off - Battery is fully charged.

## **2.5. Getting Started**

### **2.5.1. STEP 1: Turn on Receiver and Wait for GPS Fix**

If the position has not been fixed yet, the Green LED will be still. If the position has been fixed, the Green LED will be Glowing.

You are ready to connect to your Bluetooth-enabled mobile device and use your GPS application.

### **2.5.2. STEP 2: Connect to Bluetooth-Enabled Devices**

From your Bluetooth-enabled handheld device, execute Bluetooth application software to search *MBT-1100* and then connect it to your device. If the connection between your device and *MBT-1100* is successful, the Blue LED will be Glowing.

*Note: Type in pin code=0000 during configuration.*

### **2.5.3. STEP 3: Connect to your Navigation Software**

- Load your GPS mapping or routing software, along with the corresponding maps of the areas that you are occupying or plan to travel to.
- Start the application. Make sure the application is set for the COM port that your Bluetooth-enabled mobile device will use for serial communication. Now you should be ready to use your GPS application as directed by the user documentation that came with the software. More configurations may be necessary.
- Refer to the following software application user manual to set up the parameters of the device via Bluetooth radio.

## **2.6 How to use Car Charger to charge your handheld device**

- Connect car charger into your adapter connector of *MBT-1100*.
- Plug adapter connector into handheld device connector and plug car charger into cigar-lighter.

### 3. Utility Installation



The Main Menu of Installation CD shows as above.

- Click the **Install USB Driver (Windows 2000/XP/2003)** or **Install USB Driver (Windows Vista family)** to install the USB Driver, which is needed when you connect the MBT-1100 to your PC or Notebook.
- Click the **PC Software** to install the software application.
- Click the **User Manual** to open the user manual of MBT-1100.
- Click the **View Royaltek Website** to link our <http://www.royaltek.com>, please make sure your PC connects to Internet first.
- Click the **Browse CD Contents** to open the explorer to browse the files within the CD.

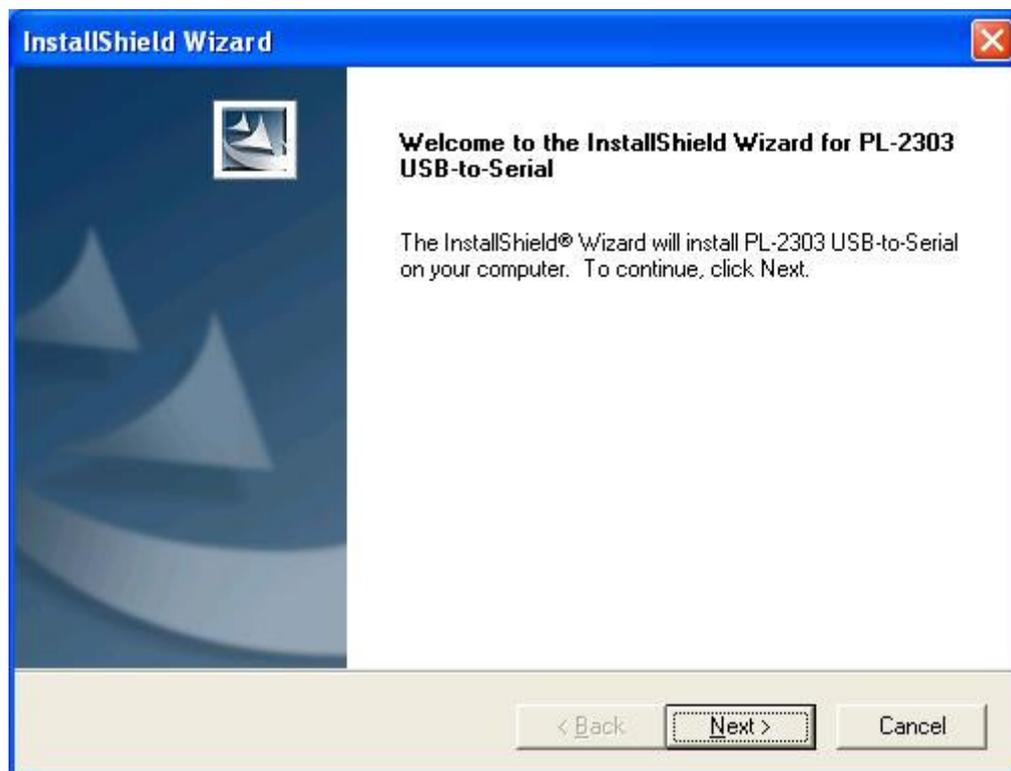
### 3.1 Install USB Driver (Windows 2000/XP/2003) or (Windows Vista family)

Install the USB Driver from CD.

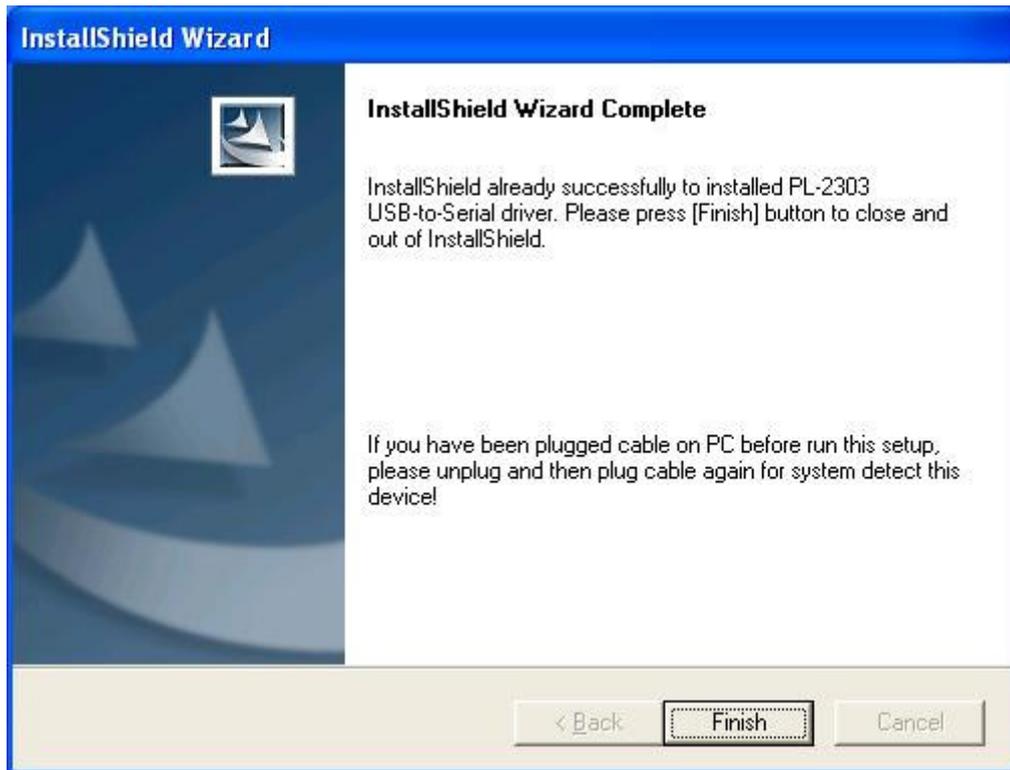
When screen shows the installation window as follows:



Click "Next>" to next page", or click "<Back" to back last stage or "Cancel" to give up installation.



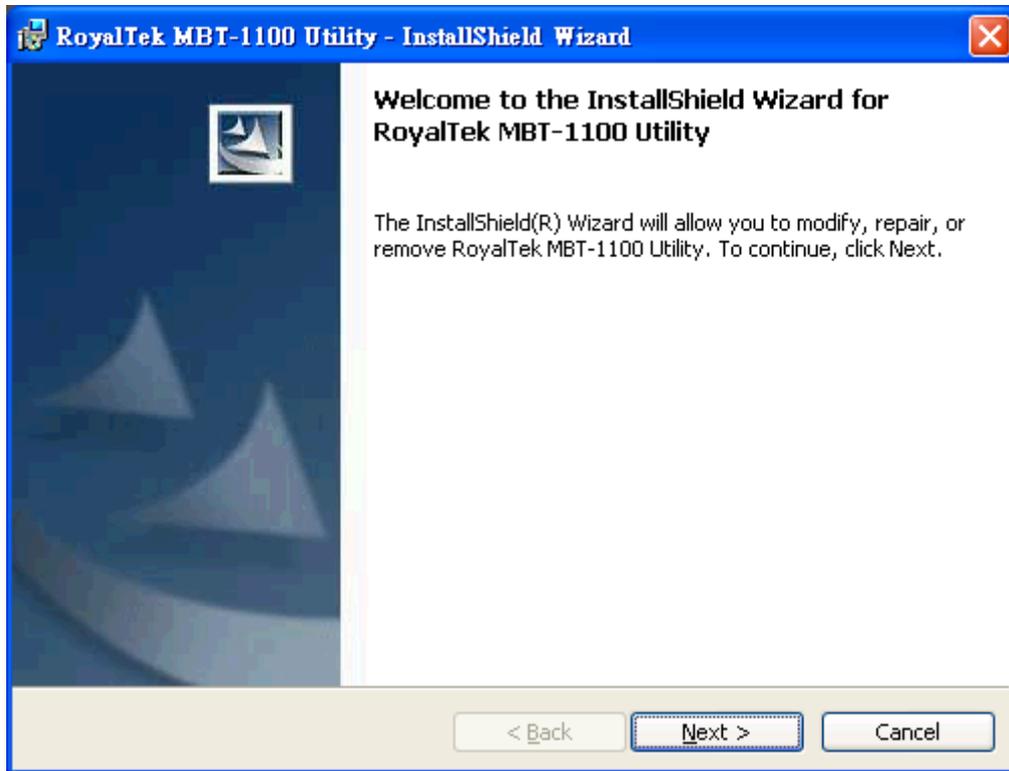
Please click "Finish" to finish the Installation.



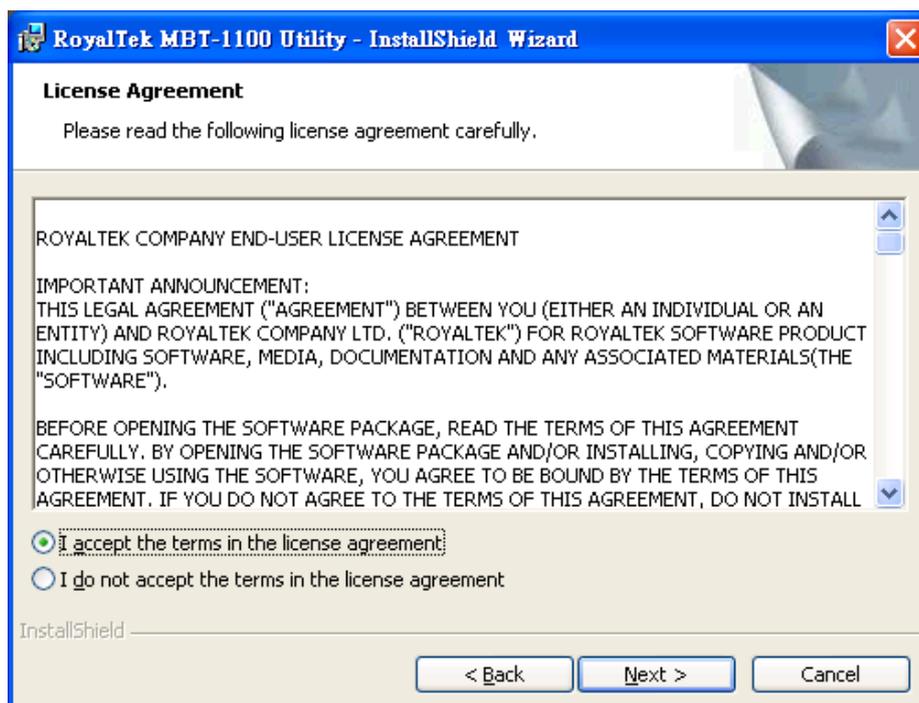
**For USB Driver Vista version, if re-install, please click "<YES>" to remove the driver. If click "<NO>", install may occur hand up problem.**

## 3.2 Install Data download Utility

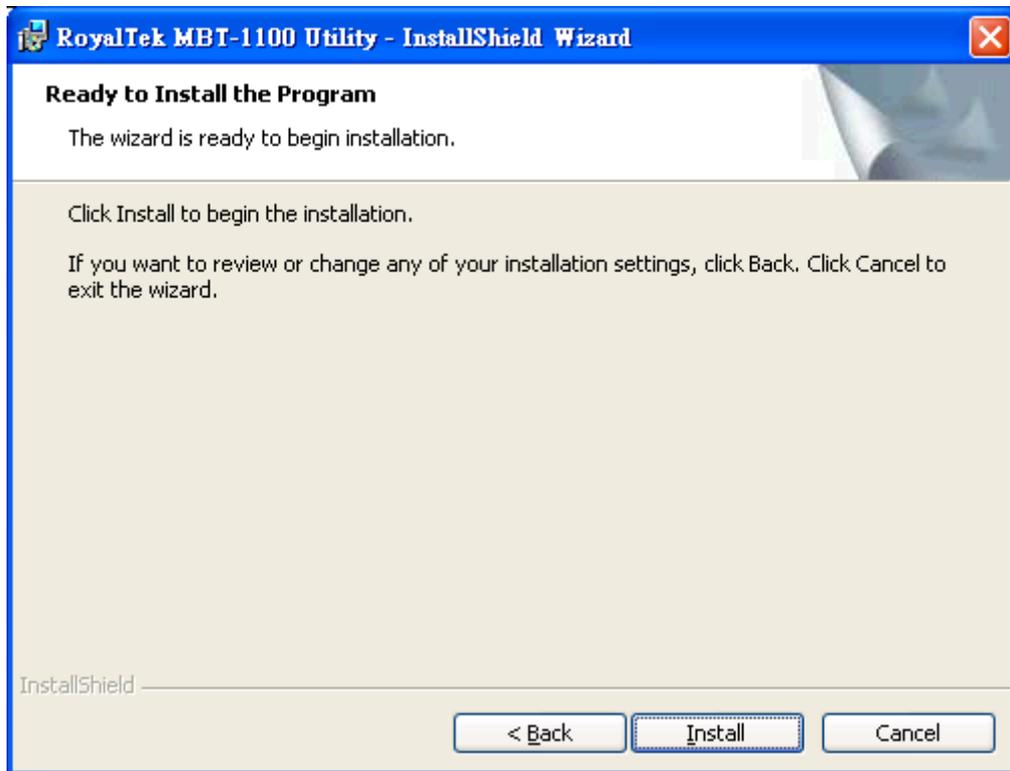
Click "Next>" to next page", or click "<Back" to back last stage or "Cancel" to give up installation.



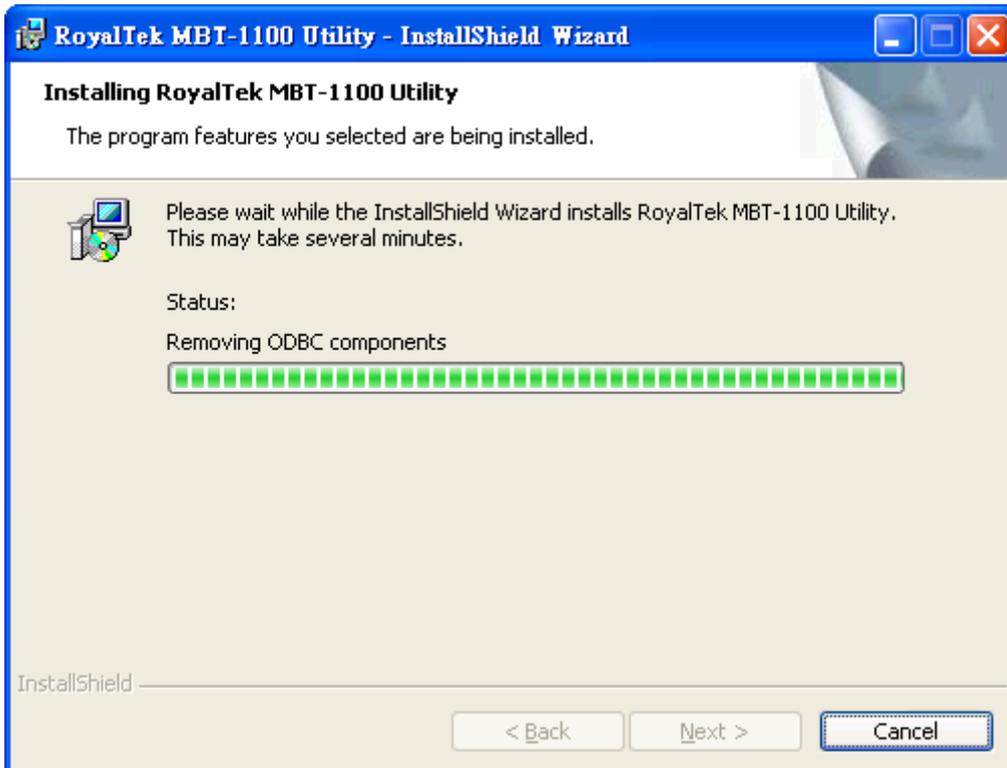
To the License Agreement page: Click " I accept the terms in the license agreement" then click "Next>" to next page, or click "<Back" to back last stage or "Cancel" to give up installation.



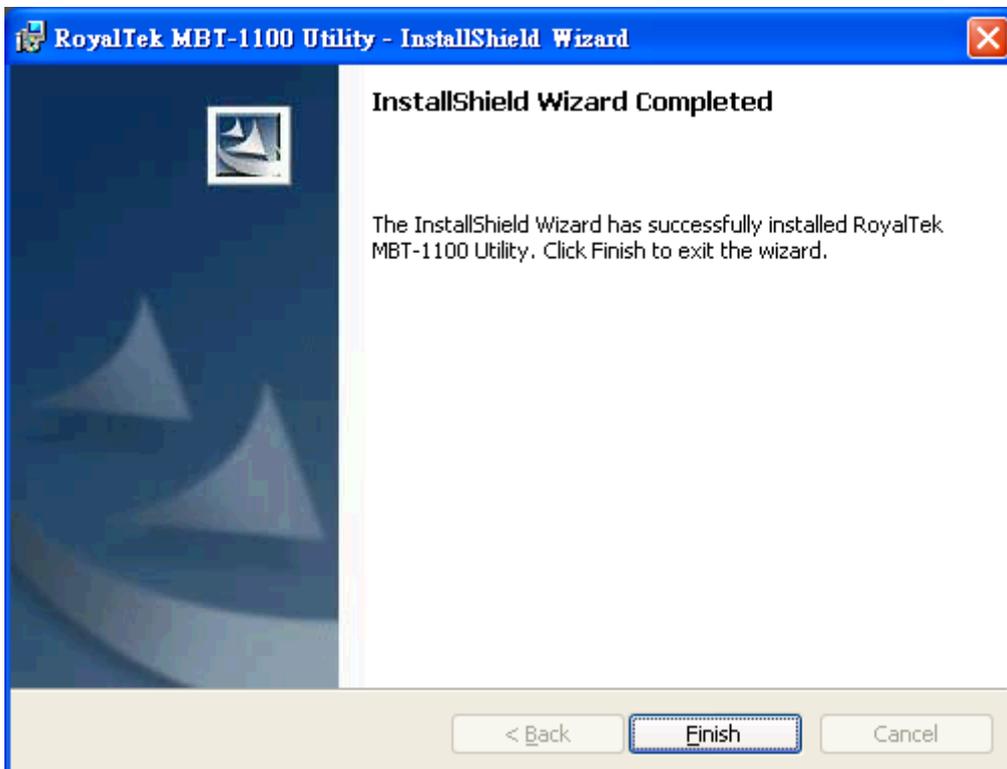
Click "Install" to start installation. Or click "<Back" to back last stage or "Cancel" to give up installation.



Start installation.



Please click "Finish" to finish the Installation.



Finally you will see the icon on windows desk.



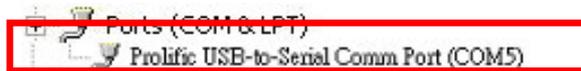
## 3.3 Transfer data to your PC or Notebook

### Usage Notes:

- (1) When you turn on the power button, it starts to search the GPS Signal. After the GPS position fixed, it will begin to record and save the position data.
- (2) If you want to stop recording the GPS data, just turn the power off.
- (3) When download or erase data form MBT-1100, Receiver still continues record and save the position data.
- (4) The time of the log data of MBT-1100 is UTC Time. User doesn't need to adjust the Clock setting of a camera.

### 3.3.1 Connect MBT-1100

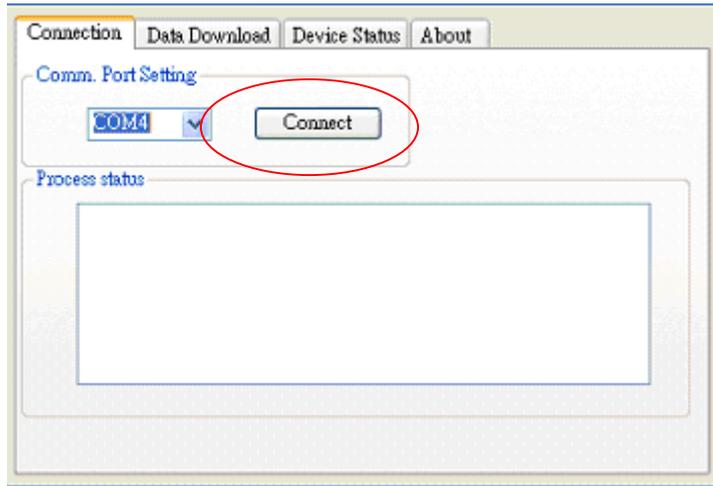
- Turn on the power of MBT-1100 and use the USB cable to connect to the USB port on PC.
- Check the COM port of MBT-1100 first. Click "Start" → "Control Panel"→"Performance and Maintenance"→"System", and you will see the System Properties dialog box; click on "Hardware" tab and then the "Device Manager" button. Expand the "Ports (COM & LPT)" item, and the "Prolific USB-to-Serial Com Port" is the COM port of your MBT-1100.



### Open data download Utility

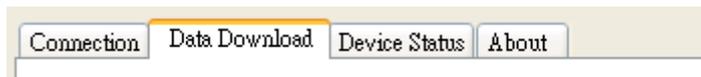
For the First using

Step 1: Open the designated serial port and the button show "Connect".

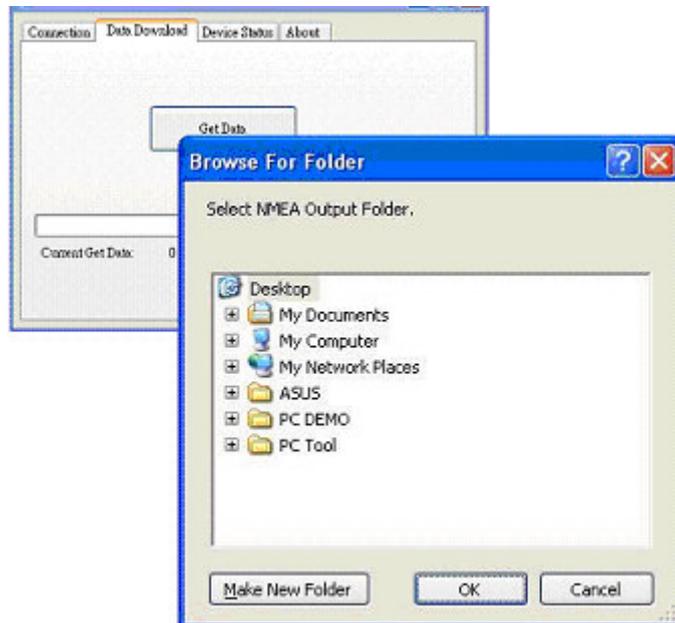


### 3.3.2 Download Data

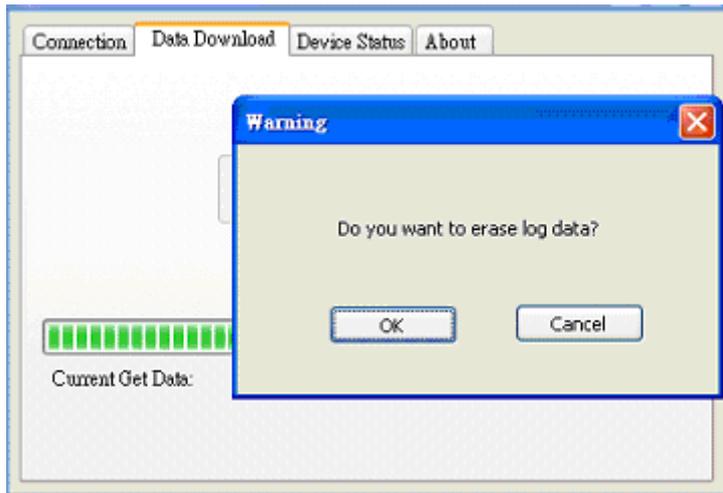
Step 1: Change page to "Data Download" menu bar.



Step 2: Press "Get Data" button and select NMEA output folder.



Step 3: When download finish, there will be a warning message to ask for erasing memory.

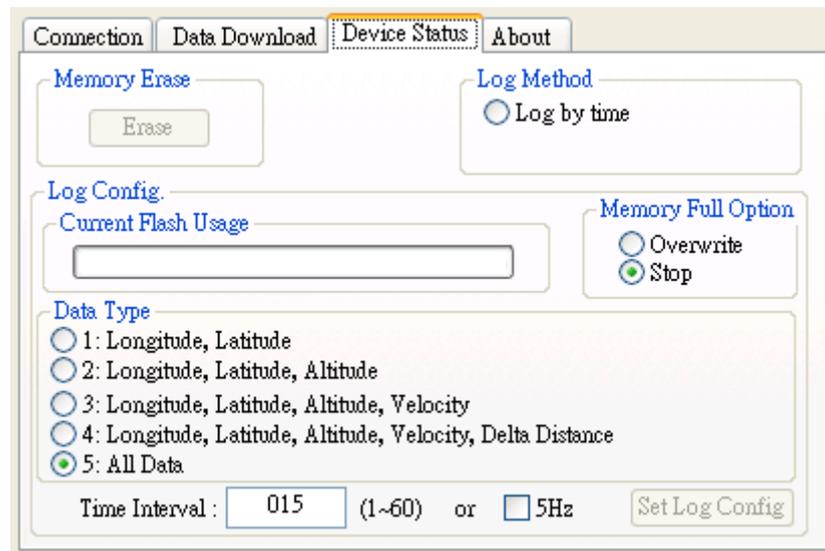


### 3.3.3 Get and Set MBT-1100 Device Status

Step1: Change to "Device Status" menu bar



Step 2: You can review the MBT-1100 default setting configuration.



#### ◆Time Interval (user adjustable)

Default setting is 15secs

1secs ~ 60secs, user adjustable

5Hz : Record data in every 0.2 second

#### ◆Data Type (user adjustable)

There are 5 options for user to choose these data items to be saved in the MBT-1100.

- 1:** UTC Time, Longitude, Latitude, will be saved.
- 2:** UTC Time, Longitude, Latitude, Altitude, will be saved.
- 3:** UTC Time, Longitude, Latitude, Altitude, Velocity, will be saved.
- 4:** UTC Time, Longitude, Latitude, Altitude, Velocity, Delta Distance, will be saved.
- 5:** All data, include UTC Time, latitude, longitude, altitude, speed, distance, PDOP, HDOP, VDOP, No of SV in used, SV info(SNR, Elevation, Azimuth), for this mode, you will get the full sentence of \$GPGGA,\$GPGSA,\$GPGSV,\$GPRMC,\$RTDIST, will be saved.

Note: \$RTDIST,A,3,1.3,0.8,1.1,0.01\*45

Name	Example	Units	Description
<b>Mode 1</b>	A		See Table 1-1
<b>Mode 2</b>	3		See Table 1-2
<b>PDOP</b>	1.3		Position Dilution of Precision
<b>HDOP</b>	0.8		Horizontal Dilution of Precision
<b>VDOP</b>	1.1		Vertical Dilution of Precision
<b>Delta Distance</b>	0.01	m	Delta Distance

**Table 1-1**

Value	Description
1	Fix not available
2	2D
3	3D

**Table 1-2**

Value	Description
M	Manual-forced to operate in 2D or 3D mode
A	Automatic-allowed to automatically switch 2D/3D

**◆Memory Full Option (user adjustable)**

The default memory operation setting is "Stop".

If the memory is full then the system will stop to record.

◆ **Memory Erase**

Erase all memory.

◆ **Log Method**

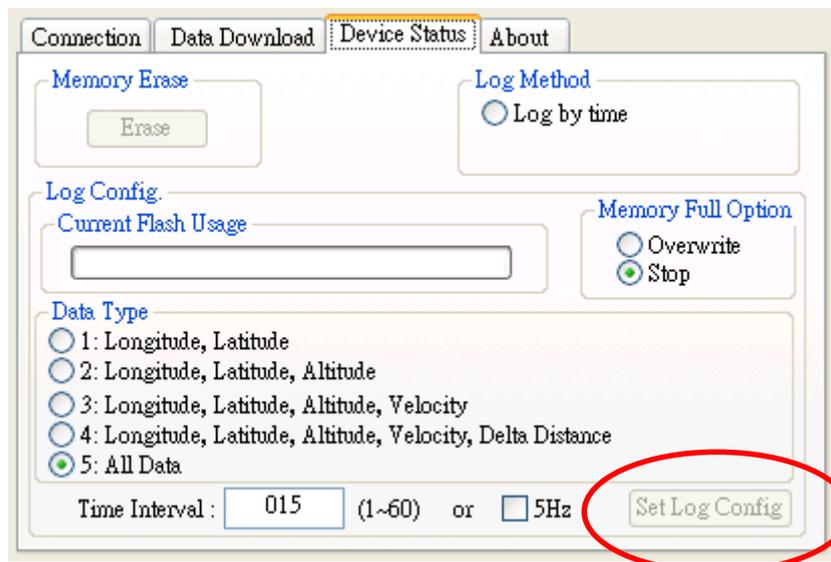
Check the log will save when button pushed.

Log by time

◆ **Log config**

Show the Flash Usage.

Step 3: User adjustable: Memory Full Option, key in the Time Interval.



When you done the configuration setup, press the **"Set Log Config."** button to save the setting to the receiver.



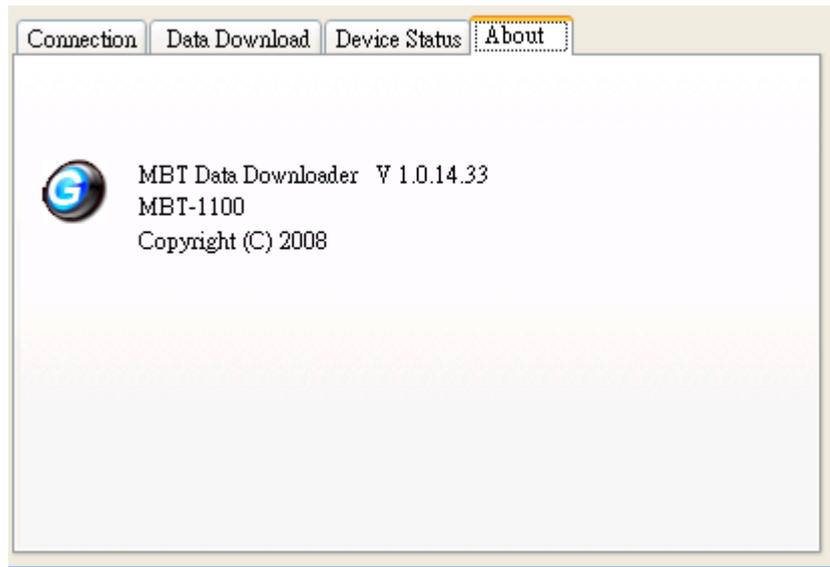
Finally, these setting take effect.

### 3.3.4 Get the Data Logger Data Downloader revision information

Step1: Change to "About" menu bar



User can get the Royaltek Data Logger Data Downloader version.



## **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.

## Revision History

Data	Revision	Note
2008/04/07	V1.0	Final Release
2008/06/12	V1.1	Modify utility UI · Contact information

## Contact informatio

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