RoyalTek
Bluetooth GPS
Datalog Receiver

MBT-1100

User Manual

V1.0

Published on March 2008 by RoyalTek Company Ltd.

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

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Content

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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 ^{o}C to +50 ^{o}C
- Discharger operating temperature range -20 ^{o}C to +60 ^{o}C
- Battery Storage temperature range -20 ^{o}C to +60 ^{o}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

GPS receiver		
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
Interface		
13	I/O Pin	8pin
Mechanical requirements		
14	Weight	38±1g
Power consumption		
15	Vcc	5V
16	Current	- Fix：55mA @ 5.0V (Avg.) - Acquisition： 70mA @ 4.2V from battery (Avg.)
Environment		
17	Temperature	- For charge： 0 ~ +50℃ (under 5hrs) - For discharge： -20 ~ +60℃ - Storage：-20 ~ +60℃
18	Humidity	≦95%
Battery		
19	Operation Time	≧ 10 hours (avg.)
20	Battery	Li-on 550mAh, rechargeable
21	Replaceable	No
22	Connector	Mini USB 8pin
External GPS Antenna Connector		
23	Type	None
Backup Battery		
24	Backup Battery	None
LED Indicator		

PDF 檔案以 "pdfFactory Pro" 試用版建立　www.pdffactory.com

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
1: Longitude, Latitude	Greater than 330,000
2: Longitude, Latitude, Altitude	Greater than 285,000
3: Longitude, Latitude, Altitude, Velocity	Greater than 245,000
4:Longitude, Latitude, Altitude, Velocity, Delta Distance	Greater than 200,000
5: All data	Greater than 48,000

Bluetooth

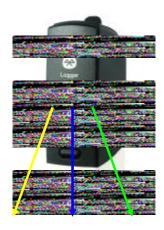|	Bluetooth Operating Frequency	2401~2479 MHz
	Bluetooth certified	BT 2.0
	Bluetooth UART port support data rate	115200
	Bluetooth distance	$\geq$ 10m

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)

Power On/Off button

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
l   Load your GPS mapping or routing software, along with the corresponding maps of the areas that you are occupying or plan to travel to.

l   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.

l   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

l Connect car charger into your adapter connector of *MBT-1100*.

l Plug adapter connector into handheld device connector and plug car charger into cigar-lighter.
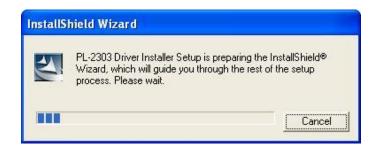
3. Utility Installation

The Main Menu of Installation CD shows as above.

l   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.

l   Click the **PC Software** to install the software application.

l   Click the **User Manual** to open the user manual of MBT-1100.

l   Click the **View Royaltek Website** to link our http://www.royaltek.com, please make sure your PC connects to Internet first.

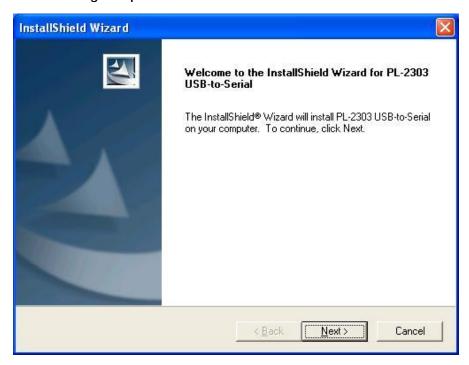l   Click the **Browse CD Contents** to open the explorer to browse the files within the CD.

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.

InstallShield Wizard

InstallShield Wizard Complete

InstallShield already successfully to installed PL-2303 USB-to-Serial driver. Please press [Finish] button to close and out of InstallShield.

If you have been plugged cable on PC before run this setup, please unplug and then plug cable again for system detect this device!

< Back   Finish   Cancel

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.
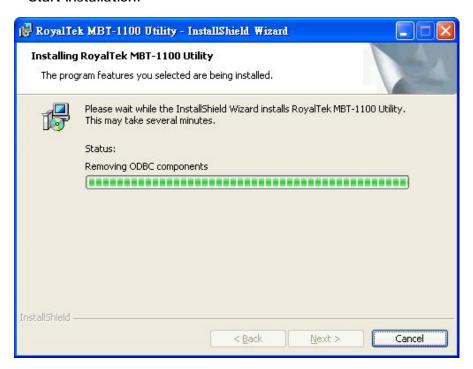

To the License Agreement page: Click " I accept the terms in the license agreement" then click "Next>" to next page, or click"<Back" to back last stage or "Cancel" to give up installation.

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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.
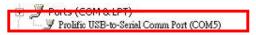
Finally you will see the icon on windows desk.

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.
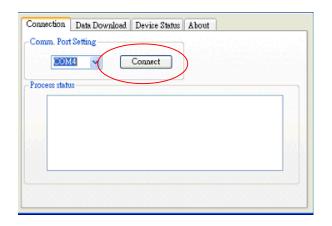
3.3.1 Connect MBT-1100

l   Turn on the power of MBT-1100 and use the USB cable to connect to the USB port on PC.

l   Check the COM port of MBT-1100 first. Click "Start" à "Control Panel"à"Performance and Maintenance"à"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

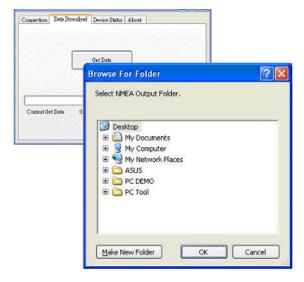Step 1: Open the designated serial port and the button show "Connect".
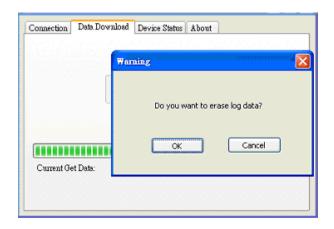
3.3.2 Download Data

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.
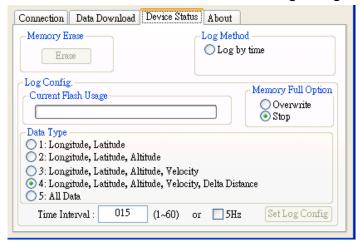
3.3.3 Get and Set MBT-1100 Device Status

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：Change log by time interval to 5, check if the log time had been changed to 0.2 seconds

◆**Data Type (user adjustable)**

　There are 5 options for user to choose these data items to be saved in the

MBT-1100.

1: Longitude, Latitude, will be saved.

2: Longitude, Latitude, Altitude, will be saved.

3: Longitude, Latitude, Altitude, Velocity will be saved.

4: Longitude, Latitude, Altitude, Velocity, Delta Distance will be saved.

5: 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, $GPGLL, $GPGSA, $GPGSV, $GPRMC, $GPVT will be saved.

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

Name	Example	Units	Description
Mode 1	A		See Table 1-1
Mode 2	3		See Table 1-2
PDOP	1.3		Position Dilution of Precision
HDOP	0.8		Horizontal Dilution of Precision
VDOP	1.1		Vertical Dilution of Precision
Delta Distance	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.
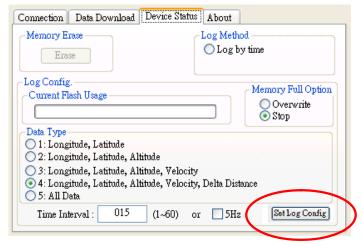
◆ **Memory Erase**
Erase all memory.

◆ **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.
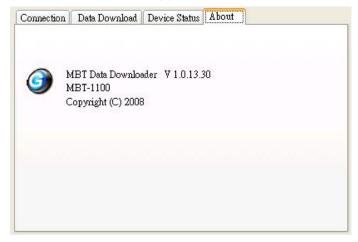

Finally, these setting take effect.

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.

MBT Data Downloader V 1.0.13.30
MBT-1100
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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.

Revision History

Data	Revision	Note
2008/04/07	V1.0	Final Release

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