Enduro Plus 3G

**Multi-purpose
Tracking Device**

USER MANUAL

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Contents

0. Revision history

Revision	Date	Author	Description of change
1.00	2015/5/25	Hazard.Zhang	Initial

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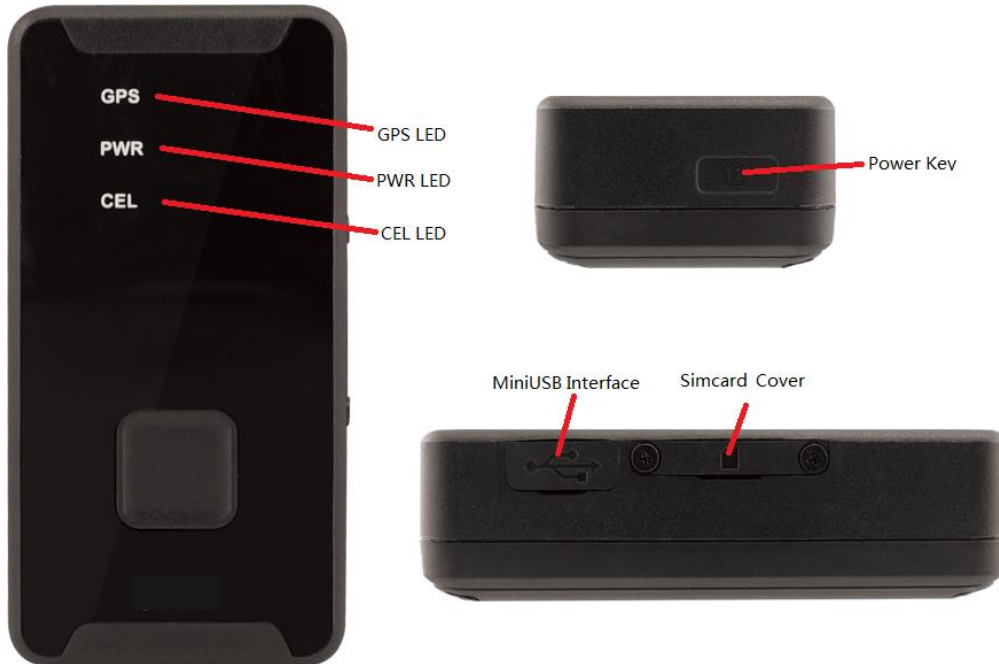
1. Introduction

The water resistant ENDURO PLUS 3G is a powerful GPS locator designed for lone worker, vehicle, pet and asset tracking applications. The thumb sized button makes this device ideal for applications requiring rapid notification of emergency alert or regular setting of geo-fences based on current location. Its built-in GPS receiver has superior sensitivity and fast time to first fix. Its UMTS allows the ENDURO PLUS 3G's location to be monitored in real time or periodically tracked by a backend server and mobile devices. Its built-in 3-axis accelerometer allows motion detection and extends battery life through sophisticated power management algorithms. System integration is straightforward as complete documentation is provided for the full featured @Track protocol. The @Track protocol supports a wide variety of reports including emergency, geo-fence boundary crossings, low battery and scheduled GPS position.

2. Product Overview

2.1. Appearance

2.2. Buttons/Mini USB Interface Description

Button /Mini USB Interface Description	
Power Key	• Turn on ENDURO PLUS 3G • Turn off ENDURO PLUS 3G when without charging. (If power key is enabled)

Function Key	• Geo-Fence mode
	   Long press the key to enable/disable Geo-Fence ID0
	• Geo-Fence in current position mode
	   Long press the key to enable/disable Geo-Fence ID0. If enable Geo-Fence ID0, using the current position as the center of Geo-Fence 0.
	• SOS mode (default)
	   Long press the key to active SOS alarm

Mini USB interface	• Connect a 5V DC adapter can power ENDURO PLUS 3G and charge the internal battery • Connect a 3.7V Li-ion or Li-Polymer battery can power ENDURO PLUS 3G • Backend server developer or administrator can use the Data_Cable_M to configure ENDURO PLUS 3G

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2.3. LEDs Description

There are three LED in ENDURO PLUS 3G, their description are as follow:

LED	Event	State
CELL LED	Searching network	Fast flash
	Network has been registered	Slow flash
	Power off	Dark
	SIM-PIN Locked	Solid
	<LED on> is 2	Dark
GPS LED	GPS has fixed	Solid
	GPS is in fixing	Fast flash
	GPS is on and GPS data wrong	Slow flash
	GPS is off	Dark
	If *<LED on>* is 0, 150 seconds later after powers on.	Dark
	<LED on> is 2	Dark
PWR LED	Power on and normal	Dark
	Charger inserted and charging completed	Solid
	Charger inserted and charging	Fast flash
	Power key was pressed and prepare to power off	Fast flash
	Abnormal	Fast flash
	Power low alert	Slow flash
	Power off or turn off the power light by command	Dark
	<LED on> is 2	Dark

2.4. External Power Interface

2.4.1. External DC Charger Interface

The Pin2 on Mini-USB connector are used for charging and named as VCHG pin, It can be connected to a 5V DC power supply to power ENDURO PLUS 3G and charge the internal battery.
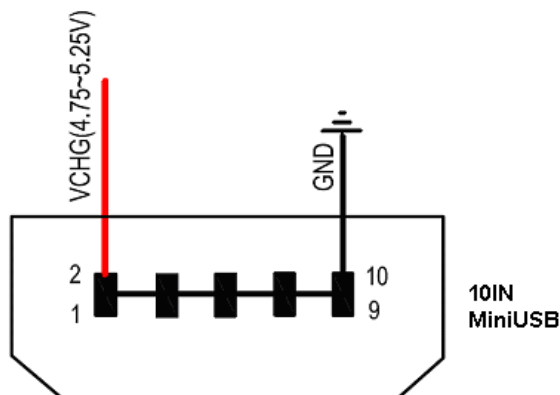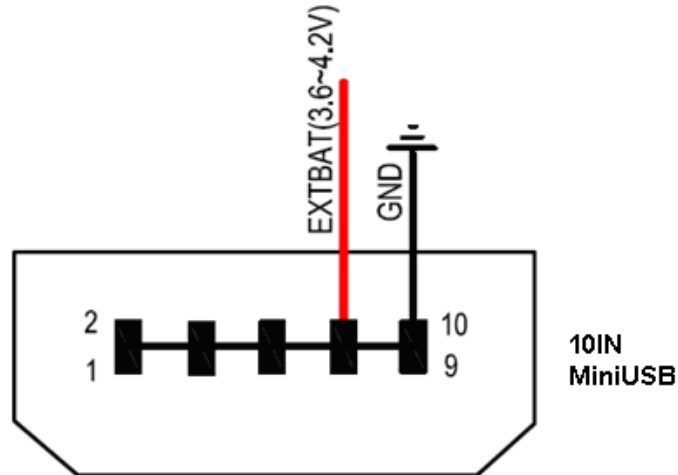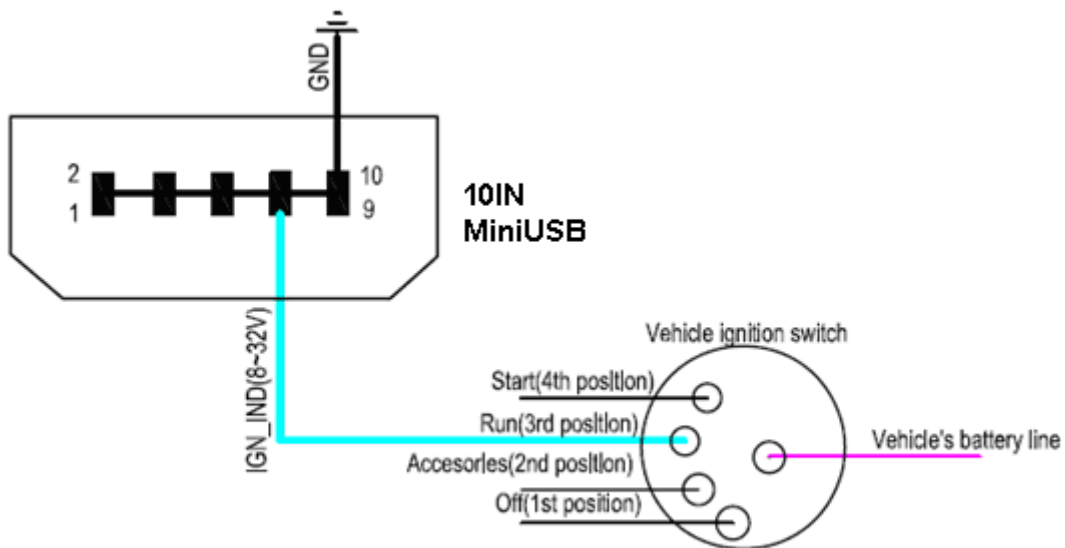
2.4.2. External Battery Interface

The Pin 8 on Mini-USB connector is for external battery and named as EXTBAT pin, It can be connected to 3.7V Li-ion or Li-Polymer battery to power ENDURO PLUS 3G.

2.5. Ignition Detection

The Pin 7 on Mini-USB connector is for ignition detection when ENDURO PLUS 3G is used in vehicle tracking application, It is named as IGN_IND pin.

Another easy way is to connect PIN7 to a power output in the fuse box of the vehicle which is only enabled after the vehicle is ignition on. For example: the power output for radio FM.

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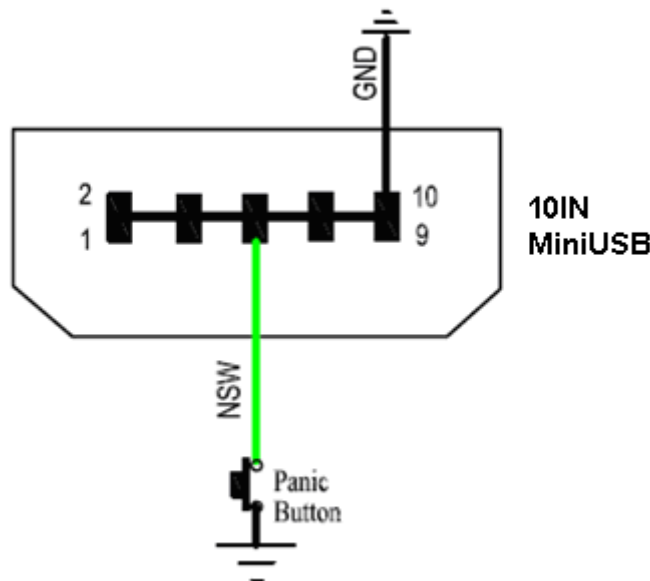
2.6. External Input Interface

The Pin 5 on Mini-USB connector is a negative trigger input in newer hardware version. It is named NSW pin. For negative trigger input the electrical conditions are:

Logical State	Electrical State
Active	0V to 0.8V
Inactive	1.7V to 32V or Open

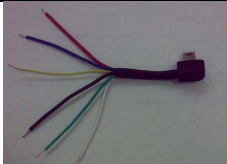An input example is shown as following figures:

Example of NSW pin connect to a panic button

3. Getting Started

3.1. Parts List

Name	Picture	Remark
ENDURO PLUS 3G Locater		The WCDMA/GPRS/GSM/GNSS/GPS locator.
AC-DC Power Adapter (Standard accessory)		It is used to charge the internal battery of ENDURO PLUS 3G.
ENDURO PLUS 3G Data Cable (Optional accessory)		It is the USB data cable which can be used for firmware upgrading and configuration.
ENDURO PLUS 3G External Cable (Optional accessory)		It is the extend cable which include the charger interface and external battery interface on ENDURO PLUS 3G. It also includes the ignition detection interface on the ENDURO PLUS 3G.

3.2. Battery Charging

- Please connect AC-DC power adapter with ENDURO PLUS 3G.
- Insert the AC-DC power adapter into the power socket.
- During charging, the PWR LED is flashing fast. When the battery is full charged, the PWR LED will be Ever-light.
- You can also charge the battery by USB cable which connects ENDURO PLUS 3G with the PC.
- Charging time is about 5 hours.

Note: Before the first time using ENDURO PLUS 3G, please full charge the battery.

3.3. ENDURO PLUS 3G External Cable Interface

- ENDURO PLUS 3G External Cable is a cable with a Mini USB connector and six wires which include the external power interface, ignition detect and input interface for ENDURO PLUS 3G. Please find the detail description in following table.
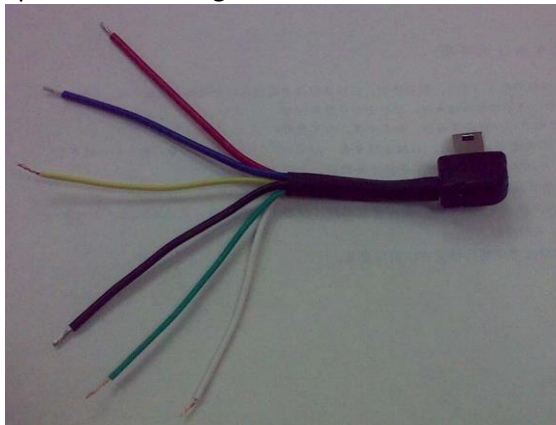
Color	Name	Remark
RED	External DC IN (5V)	Please refer to 2.4.1 for detail
Black	Ground	Please refer to 2.4.1 for detail
Blue	External Battery IN (DC 3.4V to 4.2V)	Please refer to 2.4.2 for detail
White	Ignition Detect	Please refer to 2.5for detail
Green	NSW（negative trigger input）	Please refer to 2.6 for detail

3.4. Turn on/Turn off

- Turn on:
- ◆ Method 1: Press the Power key at least 3 seconds and release it to turn on ENDURO PLUS 3G. At the same time, PWR LED will light on.
- ◆ Method 2: Connect device to charger or external battery, and it will turn on automatically, PWR LED will light on.
- Turn off:
- ◆ Method 1: Press the power key about 2 seconds; PWR LED will fast flash and then turn off, it indicates that ENDURO PLUS 3G is turned off. The time of power off is depended on the quality of network. The maximum time of power off is 90 seconds. It is only valid to turn off when using internal battery. Please note the end-user cannot power off ENDURO PLUS 3G when the power key is disabled by protocol.

Method 2: If using external battery, device power will turn-off when external battery disconnect.

4. Troubleshooting and Safety info

4.1. Troubleshooting

Trouble	Possible Reason	Solution
After ENDURO PLUS 3G is turned on, the CEL LED flashes quickly always.	The signal is too weak; ENDURO PLUS 3G can't register to the network.	Please move ENDURO PLUS 3G into place with good UMTS coverage.
Messages can't be reported to the backend server by GPRS.	APN is wrong. Some APN cannot visit the internet directly.	Ask the network operator for the right APN.
	The IP address or port of the backend server is wrong.	Make sure the IP address for the backend server is an identified address in the internet.
Unable to power off ENDURO PLUS 3G.	The function of power key was disabled by **AT+GTFKS**.	Enable the function of power key by AT+GTFKS.
	Unable to power off ENDURO PLUS 3G if charger connected or using external battery.	Disconnect charger or external battery, and try again.
No response from UART when configure ENDURO PLUS 3G through UART	ENDURO PLUS 3G is in power saving mode.	Remove the Data_Cable_M, and plug it in again. After this operation, ENDURO PLUS 3G will exit from power saving mode for 10 seconds.
		Re-try ENDURO PLUS 3G manager tool again, it will try to wake up device.
ENDURO PLUS 3G can't get successful GPS fixing.	The GPS signal is weak.	Please move ENDURO PLUS 3G to a place with open sky.
		It is better to let the top surface face to sky. (The same surface with indication LED)

4.2. Safety info

- Please do not disassemble the device by yourself.
- Please do not put the device on the overheating or too humid place, avoid exposure to direct sunlight. Too high temperature will damage the device or even cause the battery explosion.
- Please do not use ENDURO PLUS 3G on the airplane or near medical equipment.

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