

HOLUX

Wireless GPS Logger

M-241 Plus



User Manual

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1. Overview

The HOLUX **M-241 Plus** wireless GPS logger provides real time coordinate logging and easy-to-use trip guiding service. The **M-241 Plus** can record up to 250,000 positions, each position including longitude, latitude, time, and altitude. The log file can be transferred for analysis via USB connection. You can combine these positions with your Digital camera photos to share the track histories and photo locations to mapping application software such as Google Earth.

Position information, moving speed, free logging volume and the date & time can be shown on the LCD display directly at any time. The M-241 Plus supports distance and time logging modes, kilometer and mile distance units, and 5 languages (English, Traditional Chinese, Simplified Chinese, German, and French).

Because the M-241 Plus provides a Bluetooth Low Energy (BLE) interface, you can use it freely while driving without the clutter of cables.

Enjoy the GPS life!

The M-241 Plus is a high performance wireless GPS logger with the following features:

1. Support GPS/ GLONASS dual system.
2. Using Bluetooth Low Energy (BLE) interface (support GATT Profile)
3. Powered by one AA battery.
4. LCD display (32mm (L)* 8.9mm (W)) to show position information, speed, capable logging memory size, date & time.
5. Capable memory size to record up to 250,000 positions, including longitude, latitude, time, and altitude.
6. Personal settings to select the logging mode by distance or time, unit by Kilometer or mile, and multi-languages support.

Applications:

- Vehicle tracing & Location base services
- Navigation with PC/Notebook/Smartphone devices
- Car navigation
- Marine navigation
- Distance measurement
- Sports and Recreation
- Fleet Management

Software application program:

A user-friendly ezTour software utility is provided with the following functions:

- Transfer recorded data to PC.
- Recording mode setting (Time/ Distance)
- Erase recorded data
- Output data format
 - (1) Save exploring data to KML file format (Interface with Google Earth)
 - (2) NMEA file format (*.txt)
 - (3) GPX file format

2. Packing List

Thank you for purchasing the M-241 Plus wireless 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.

- | | | |
|----|--------------------------------|-------|
| 1. | M-241 Plus wireless GPS logger | 1 Set |
| 2. | AA Battery | 1 Set |
| 3. | USB cable | 1 Set |
| 4. | M-241 Plus Quick Guide | 1 Pcs |
| 5. | Warranty card | 1 Pcs |
| 6. | Nylon strap | 1 Pcs |

3. Main features

1. Built-in MTK Low power consumption GPS/GLONASS chipset.
2. 32 parallel satellite-searching channels for fast acquisition and reacquisition.
3. Superior sensitivity, up to -165 dBm. (in tracking mode)
4. Built-in WAAS/EGNOS/MSAS Demodulator without any additional hardware.
5. Bluetooth Low Energy (BLE) interface (support Generic Attribute Profile (GATT))
6. Provide expanded terminal contact to other systems without the BLE device.
7. Support NMEA0183 V 3.01 data protocol
8. Compact and lightweight design for ease of use.
9. LCD display (32mm * 8.9mm /128 * 32 pixels) to show position information, speed, capable logging memory size, date & time.
10. Capable memory size to record up to 250,000 position data, including longitude, latitude, time, and altitude.
11. Personal setting to choose the logging mode by distance or time, unit by Kilometer or mile, and multi-languages (English, Traditional Chinese, Simplify Chinese, German, and French) support.

4. Specification

- 22 tracking / 66 acquisition-channel GPS receiver
 - Receiver: L1, 1575.42 MHz (GPS), L1, 1602Mhz(GLONASS)
 - Update frequency: 1 Hz.
 - Antenna type: Built-in
 - Satellite signal reception sensitivity: -165dBm
- Specifications**
- Dimensions: 32.1mm X 30mm X 74.5mm
 - Weight (excluding battery): < 39g.
 - Switch: Slider switch
 - Operating temperature: 0 °C to + 50 °C
 - Storage temperature: -10 °C to + 60 °C
 - Operating humidity: 5% to 90%
-

- Positioning**
- ◆ **Non DGPS (Differential GPS):**
 - Position : 3.0 M CEP excluding SA
 - Velocity: 0.1M / sec.
 - Interval: 0.1 sec to Sync GPS
 - ◆ **DGPS (EGNOS/WAAS/MSAS):**
 - Position: < 2.2 M., Horizontal deviation 95% time
< 5 M., Vertical deviation 95 % time

*The above data is based on the specifications of the MTK GPS chip

- Positioning
Timing**
- Time to reposition < 0.1 sec average
 - Hot boot <1 sec
 - Warm boot <30 sec
 - Cold boot <31 sec

*The above data are based on specifications of the MTK GPS chip

- Protocol and
Interface**
- ◆ **the Generic Attribute Profile (GATT)**
 - Bluetooth Low Energy V4.0 compatible
 - Frequency: 2.400 to 2.480 GHz
 - RF channels: 40
 - Input sensitivity: -93dBm
 - Output power: +0dBm
 - ◆ **Output port: Mini-USB (CMOS Level)**
 - **NMEA protocol output: V 3.01**
Baud rate: 38400 bps
Data bits: 8
Sync bits: N
End bit: 1
-

• **Output interface:**












Standard: GPGGA (1 time per second), GPGSA (1 time per second), GPGSV (1 time per second), GPRMC (1 time per second), GPVTG (1 time per second).

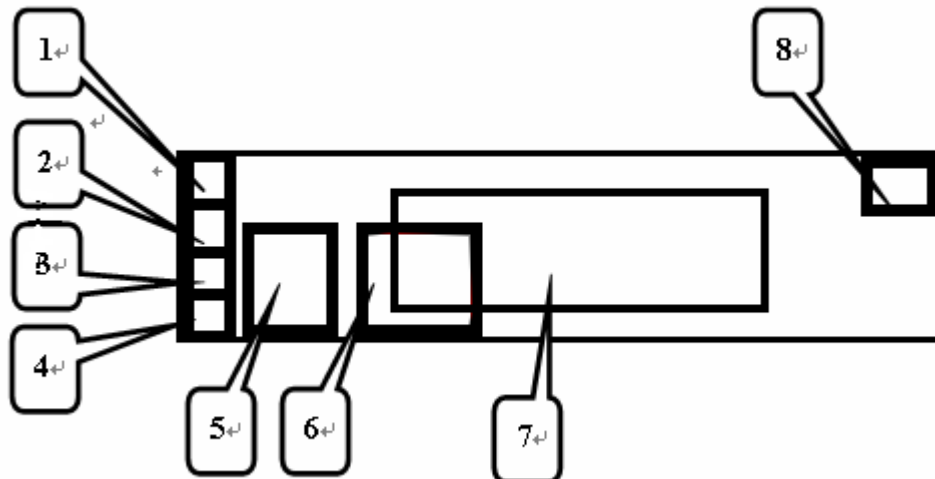
- Physical Specifications**
- **Sea level: Max** 18,000 M (60,000 feet)
 - **Velocity:** Max 515 M./sec (1000 knots)
 - **Acceleration:** Max 4G
 - **Vibration:** 20 M/ second³, Max.
-

Buttons 1 Power switch, 2 Buttons (Menu and Confirm)

- LCD display page**
- System and satellite positioning status
 - Time
 - Position
 - Velocity
 - Distance measurement
 - Setup
-

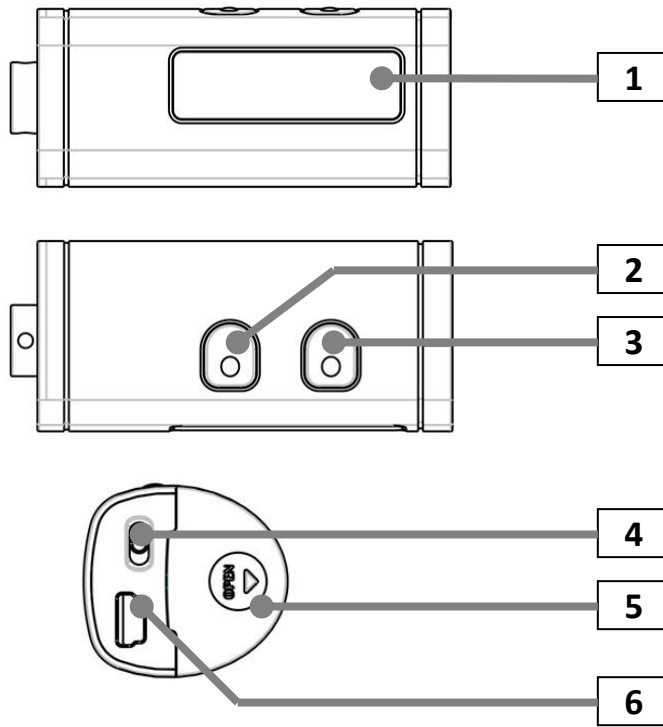
5. Icons & Indicators

Position	Icon	Descriptions	Position	Icon	Descriptions
1		Log by Time	2		Measure Distance On
1		Log by Distance	4		Lock On
3		Log On	7		Device & PC Connected
4		Waypoint	8		Battery is Full
6		GPS Fix	8		Battery is exhausted
5		BLE Connection			



6. Product Overview

- 1. LCD Screen
- 2. MENU Button
- 3. ENTER Button
- 4. Power Switch
- 5. Battery Cover
- 6. USB Port



7. Basic Operations

Before you use

1. If the user wants to use M-241 Plus to record the coordinate for matching the GPS coordinate of the picture in the camera, because the integration of the two parties is performed under the comparison of the time, it is recommended for the user to adjust the clock time in the camera to match the GPS time in the M-241 Plus.
2. M-241 Plus does not have the water-proof feature; please pay attention to the moisture while using it in a rainy day.
3. Before turning off, please press “stop” button to prevent log data damaged when in logging mode.
4. Before changing a new battery, please turn off power first.

Button Definition

MENU Button -> Change & Select function.

ENTER Button -> Confirm your select.

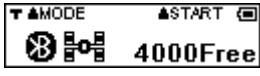
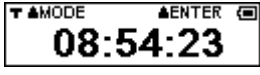
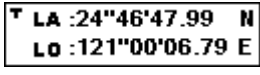
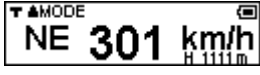
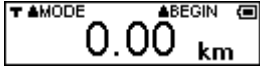

Except during the Setting Mode, user may press the “MENU” key and “ENTER” key at the same time, all keys function will “LOCK”, and press the “MENU” key and “ENTER” key at the same time again, to cancel the “LOCK” status.

* LCD screen will show the reference button function.

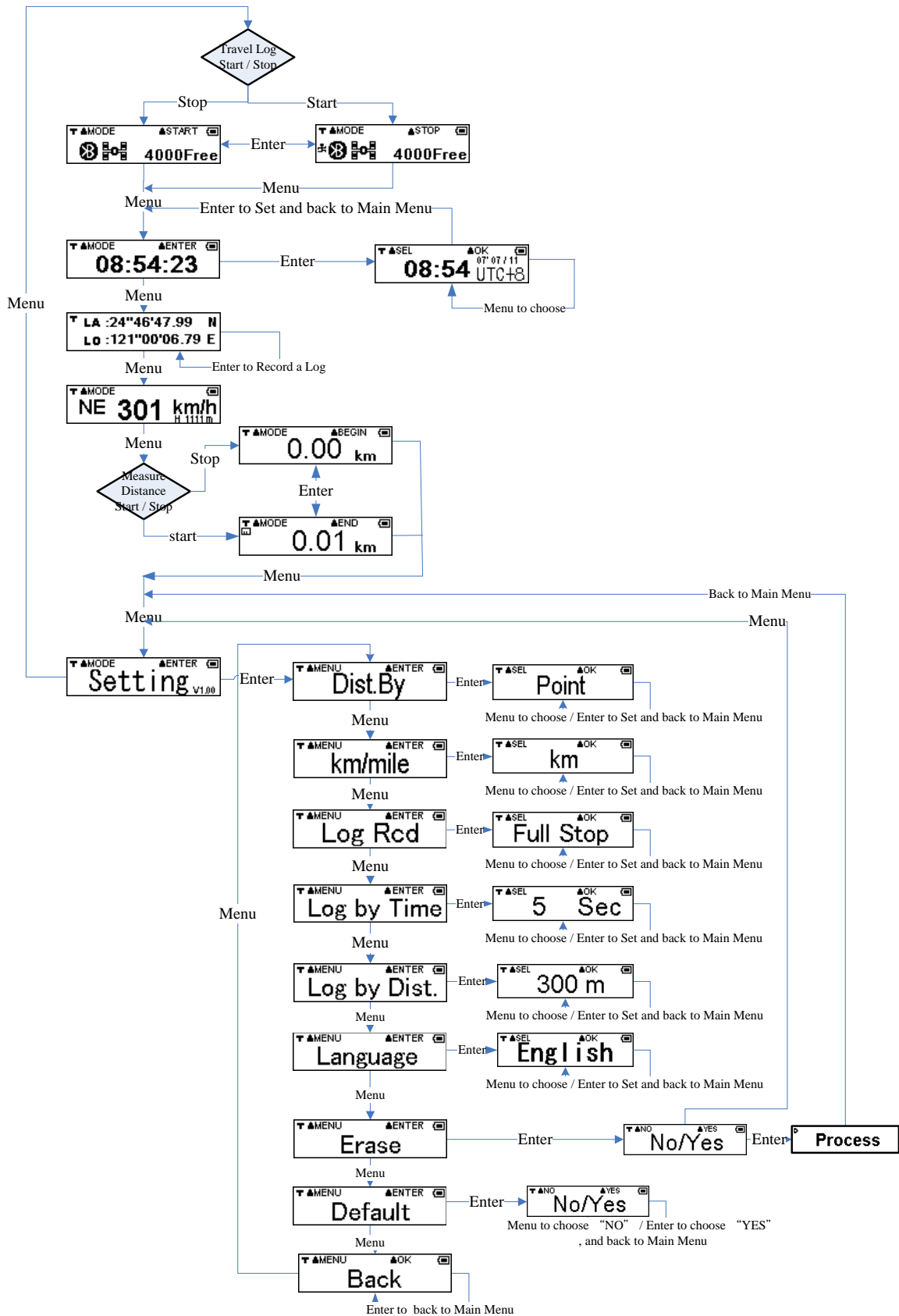
How to select a mode

1. Turn on the power switch. The device will turn on and show the Track Log Mode on the LCD.
2. There are 6 operational modes on this device. Please use the MENU Button to change operation mode.

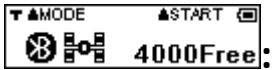
(Track Log Mode -> Time Mode -> Show Position Mode -> Show Speed & Altitude Mode -> Measure Distance Mode -> Setting Mode -> Track Log Mode.)

	: Track Log Mode
	: Time Mode
	: Position Mode
	: Speed & Altitude Mode
	: Measure Distance Mode
	: Setting Mode

Operational flow



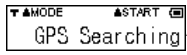
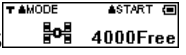
Operational menu description





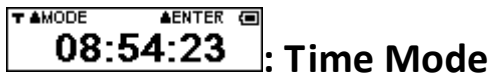
Menu: Go to Time mode

Enter: Start / Stop the recording GPS data.

Note:

1. When power on M-241 Plus, user will see “  ” before GPS acquisition. After GPS is fixed, you will see the screen as  .

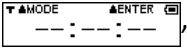
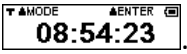
2. When user starts the “Track Log” function, the “  ” icon will appear on the bottom-left corner of the screen.
3. The “ xxxxFree ” signifies how many log data can be recorded.
4. When BLE is connection, the icon “  ” will show up.

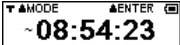
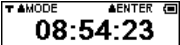


Menu: Go to Position Information mode

Enter: Go to select the Time Zone Adjustment

Note:

1. This is UTC* time receiving from GPS, which can't be adjusted but time zone selecting is allowed. .
 *UTC means the Greenwich Mean Time (Coordinated Universal Time).
2. The RTC inside the GPS will continue to keep time information while the battery power is available. Time information will be lost with the absence of battery power.
3. GPS fresh from the factory, before GPS acquisition, or with recent firmware update, or no battery power will show “  ” only.
4. After the first GPS acquisition, the RTC will start to retain time information and the screen will start to show time like  .
5. With time information retained the RTC will show time with a quote in the front when no GPS is

acquired like . Time shown will return to quoteless like  after GPS acquisition.

**: Time Zone Adjustment**

Menu: Adjust the UTC time to meet user's local time (circular: +8,+9,+10,+11,+12,+13,-12,-11,-10,-9,-8,-7,-6,-5,-4,-3,-2,-1,0,+1,+2,+3,+4,+5,+6,+7,Esc*)

Enter: Setting and back to Time mode

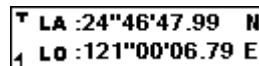
***Esc:** means to cancel the change and restore to the previous setting.

**: Position Information Mode**

Menu: Go to Speed & Altitude Information mode

Enter: Record a current track log data once

Note: When Recording a current track log data once, the "📍" icon will show for one second on the bottom-left corner of the screen.



Note: Because the satellite signal may be shifted easily due to the interference when the moving speed is less than 10 km/hr or under the environment with tall buildings that the satellite signal is not good, it is normal that the user may see the shift of the satellite coordinate while being in the static state.

**: Speed & Altitude Information Mode**

Menu: Go to Measure Distance mode

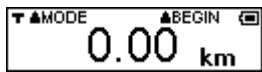
Enter: No Function

Note:

1. Current Speed (Unit: km/h or mph) and altitude (Unit: m or ft) will show on the LCD.
2. You can select the unit in setting mode, refer to km/mile menu.

Because the satellite signal may be shifted easily due to the interference when the moving speed is

less than 10 km/hr or under the environment with tall buildings that the satellite signal is not good, it is normal that the user may see the shift of the satellite coordinate while being in the static state.




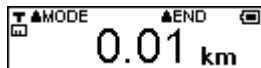
: Measure Distance Mode

Menu: Go to Setting mode

Enter: Start / Stop to measure distance

Note:

1. When user enables the “Measure Distance” function, the “” icon will shows on the top-left corner of the screen.



2. Because the satellite signal may be shifted easily due to the interference when the moving speed is less than 10 km/hr or under the environment with tall buildings that the satellite signal is not good, the user may see the shift of the satellite coordinate while being in the static state. Thus, while the distance is being measured, it is normal that there might be accumulated error and the displayed total measured distance will be different from the actual distance.
3. You can select the unit in setting mode, refer to km/mile menu.



: Setting Mode

Menu: Go to Track Log Mode page

Enter: Go to “Setting” menu of Setting mode

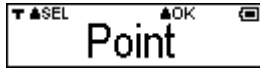


Menu: Go to Distance By menu of Setting mode

Enter: Go to select “Point” or “Route”

Note:

1. “Distance By” signifies that Measure Distance is by “The beeline between Begin Point and End Point” or by “Route (Path) of all points”.



Menu: Select “Point” or “Route”

Enter: Setting and back to Setting mode

Note:

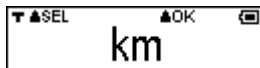
1. When the user select the “Point” logging method, the logged distance is the straight line distance between the starting point and the end point.
2. If the “Route” logging method is selected , the logged distance will be the accumulated distance of each segment between the log points. However, because the distance between any two log points may have error, the accumulated distance value may have increased error with the increase of the number of the log points.



Menu: Go to km/mile mode menu of Setting mode

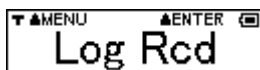
Enter: Go to select “km” or “mile”

Note: “km/mile” signifies that the Units of Measure Distance and show speed are “km” or “mile”.



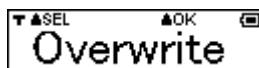
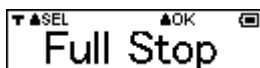
Menu: Select “km” or “mile”

Enter: Setting and back to Setting mode



Menu: Go to Log record menu of Setting mode

Enter: Select “Full Stop” or “Overwrite”

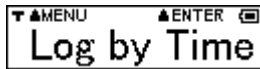


Menu: Select “Full Stop” or “Overwrite”

Enter: Setting and back to Setting mode

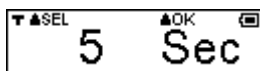
Note:

1. " Full Stop" -> Recording log data -> flash full -> Stop recording.
2. " Overwrite" -> Recording log data -> flash full -> Overwrite the first log.



Menu: Go to Log by Time menu of Setting mode

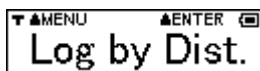
Enter: Set Log Mode to "By Time" and select number of Sec.



Menu: select the logging frequency. (circular: 1,5,10,15,30,60,120, Esc*)

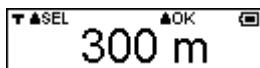
Enter: Setting and back to Setting mode

***Esc** means to cancel the change and restore to the previous setting.



Menu: Go to Log by Distance menu of Setting mode

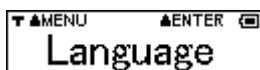
Enter: Set Log Mode to "By Distance" and select the number of meters.



Menu: select the logging interval. (circular :50,100,150,200,300,500,1000 meters , Esc*)

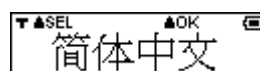
Enter: Setting and back to Setting mode

***Esc** means to cancel the change and restore to the previous setting.



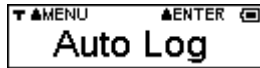
Menu: Go to Language menu of Setting mode

Enter: Select Language



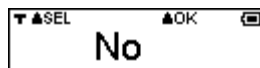
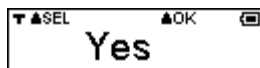
Menu: Select Language. (circular: English, 繁體中文, 简体中文)

Enter: Setting and back to Setting mode.



MENU: go to auto log setup

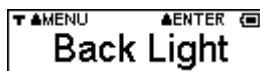
ENTER: select yes or no



MENU: Choose to activate auto log mode.

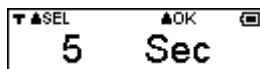
ENTER: confirm selection and return to setup.

Note: once activated the M-241 Plus will start in the auto log mode and record logs automatically after power on.



Menu: Go to Backlight menu of Setting mode

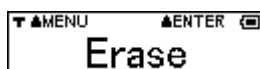
Enter: Go to "YES / NO" status



Menu: select the backlight interval. (Circular: 5, 10, 15, 30, 60 seconds, Esc*)

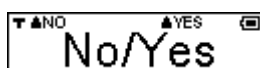
Enter: Setting and back to Setting mode

*Esc means to cancel the change and restore to the previous setting.



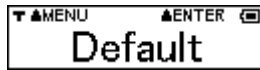
Menu: Go to Erase menu of Setting mode

Enter: Go to "YES / NO" status



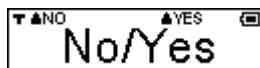
Menu: Not erased and back to Setting Mode

Enter: Erase all of track log data and back to Setting Mode



Menu: Go to Default menu of Setting mode

Enter: Go to "YES / NO" status



Menu: No change and back to Setting Mode

Enter: Restores device back to factory default settings and back to Setting Mode



Menu: Go to Back menu of Setting mode

Enter: Back to Setting Mode

8. Connecting the device to the PC

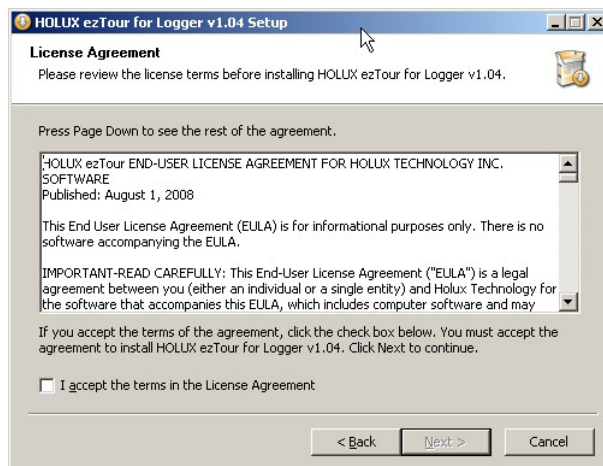
To download the recorded track log and view it on your computer, firstly you will need to install the bundled **ezTour**.

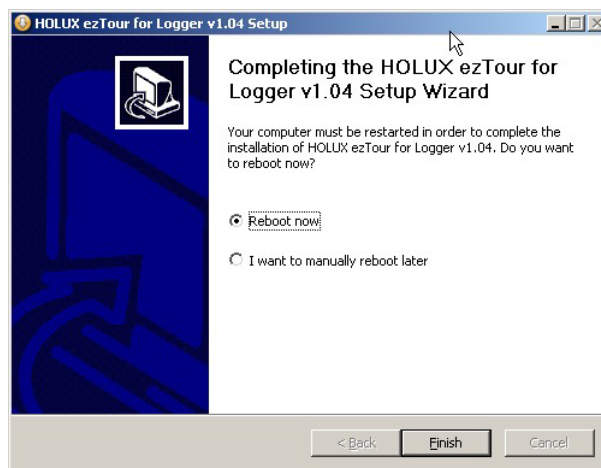
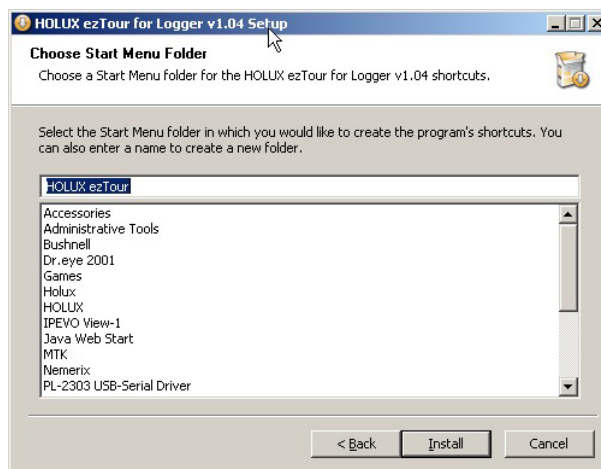
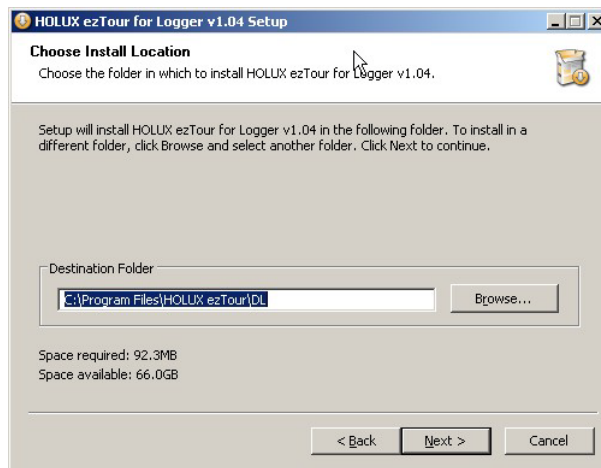
Installing ezTour

- (1). From HOLUX website to download and install ezTour software.
<http://market.holux.com/Software/SU/>




- (2). Click Next to begin the installation. The License Agreement screen opens.
- (3). Read the agreement, click I accept the terms of the license agreement, then click Next.
- (4). Follow the on-screen instruction to proceed. The installation wizard will guide you through the steps.



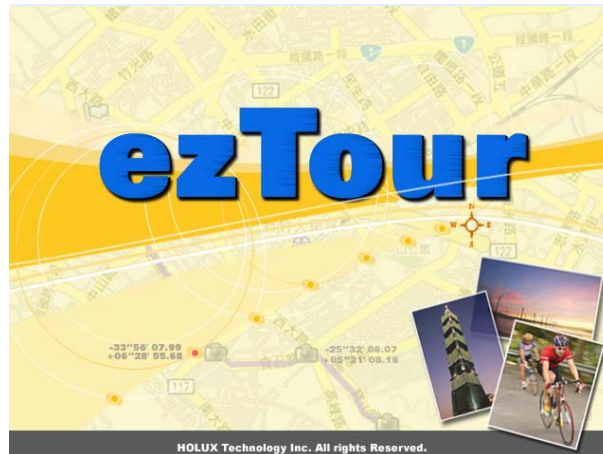


Click Finish to exit the wizard.

Starting ezTour

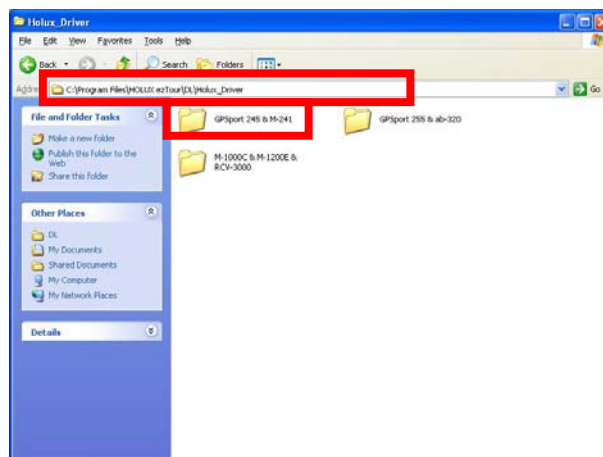
Once the **ezTour** is well installed in your computer, the ezTour icon  will appear on your desktop as a shortcut. Double-click the icon to start ezTour.

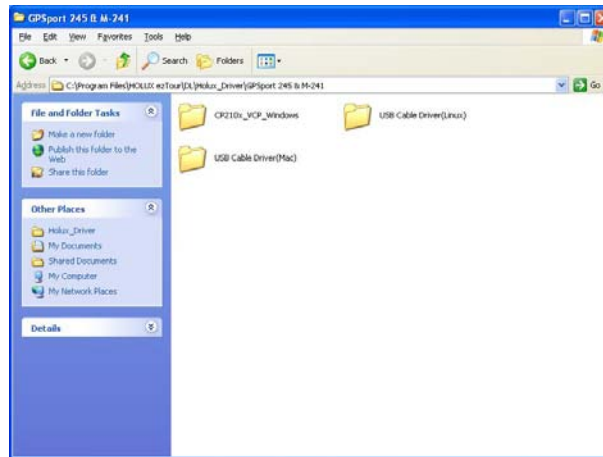
The following opening screen appears and you are ready to use the software.



Installing Driver

- (1). After the ezTour is installed, you can open the "Holux_Driver" folder and install driver.
For 32bit OS: the path is "C:\Program Files\HOLUX ezTour\DL\Holux_Driver".
For 64bit OS: the path is "C:\Program Files(x86)\HOLUX ezTour\DL\Holux_Driver".





- (2). Select "GPSport 245 & M-241 Plus" folder, and click the driver program that you need to install.
- (3). Follow the on-screen instruction to proceed. The installation wizard will guide you through the steps.

Click Finish to exit the wizard.

9. Power

1. M-241 Plus is powered by the AA size battery, the alkaline battery is recommended for the environmental protection and a longer working time. The following table shows the reference working time for different battery types. When M-241 Plus is operated under an environment at a low temperate, the working time of the battery will be shorter than that in the room temperature.

Note: DO NOT use rechargeable batteries to avoid malfunction.

When battery low, the icon "☐" will flash from the battery low warning to shut down that depends on different types as about 60~90minutes.

2. The reference working time for different battery types.

Condition Type	Room Temperature	Low Temperature	High Temperature
Alkaline Battery	12 hours	2 hours	10 hours
Ordinary Battery	4 hours	NA	NA
Rechargeable Battery (1700mA)	10 hours	NA	NA

10. Warranty

The **M-241 Plus** is guaranteed 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 repaired at no charge to the customers.

11. Troubleshooting

Problems	Possible Reasons	Methods
No GPS output but GPS timer is counting	Weak or no GPS signal at the place of M-241 Plus	Test under an open sky at a fixed location and run the Mini GPS Viewer “Cold start” function.
	The ephemeris and almanac data in the GPS memory are no longer valid after an extended period of nonuse.	Remove the Battery for 120 seconds and re-insert, then power on to test again. This operation is the same as “Cold Start”.
BLE execute fail	BLE function unstable	Power On/Off M-241 Plus.
Cannot open the COM port	BLE connection interrupted or COM port is conflicted/ occupied by other programs.	Check the BLE connection again, Check and close other programs that might conflict with.
No display	Battery low	Please check battery.
Logger function on, but no POI recorded	No acquisition	Please move to open sky to reacquisition.
	Log mode is by distance, so it won't record if no movement.	Change log mode to “by time”
	log mode is by long interval	Ensure you interval setting meet your situation.
Velocity and position shifting when static	Because the satellite signal may be shifted easily due to the interference when the moving speed is less than 10 km/hr or under the environment with tall buildings that the satellite signal is not good,	It's a GPS character, just move to open sky area to get better GPS signal.
Logger function can't work	When device is suddenly shut down in flash memory erase process, the initial process of flash will be failed.	Power on again to erase.

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 Logger.
- Connect the equipment into an outlet on a circuit different from that to which the Logger 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 is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.