

CÖLUMBUS™

V-990 MARK II

Multifunction GPS Data Logger

User Manual



Thank you for choosing our product. Before using it, make sure you have read this User's Manual and understood how to correctly use and maintain it. This will start your pleasant GPS positioning experience!



CAUTION!

This Manual is intended to guide you through the safe and correct use of the product and its accessories, avoiding improper operations that may result in injury to yourself or any other person or cause device damage.

Never manipulate the product when you are driving a car! Before manipulating it, make sure that your car has been securely parked. We cannot assume liabilities for any consequence resulting from the fact that you manipulate the product while driving.

As a precision electronics, the product contains no component that can be repaired by your own. Any attempt to disassemble the product will void the original manufacturer's warranty.

Avoid violently shaking the device or dropping it from a high place. Do not try to damage or puncture the device; otherwise, electrolyte in its built-in battery may leak or combust, causing injury or environmental pollution.

Never clean the product with solvents containing alcohol, gasoline, benzene, or thinner or any other organic solvent, which are likely to cause fires.

Notes on Data Logged on the Unit

Never remove the memory card while the unit is being used; otherwise, information stored on it may be lost.

In case that any position information (GPS log files) is not correctly or completely logged due to a failed logging memory card or system, no compensation can be made for any damaged log data or any damaged photo that contains position information.

Notes on Online Map View

Because the online map service is provided by a third party, it's subject to content change or termination without notice.

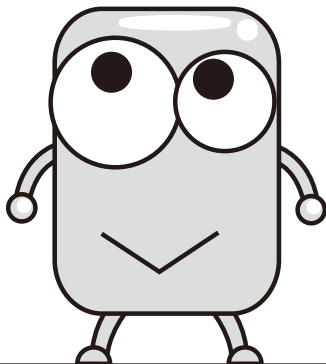
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Packing List

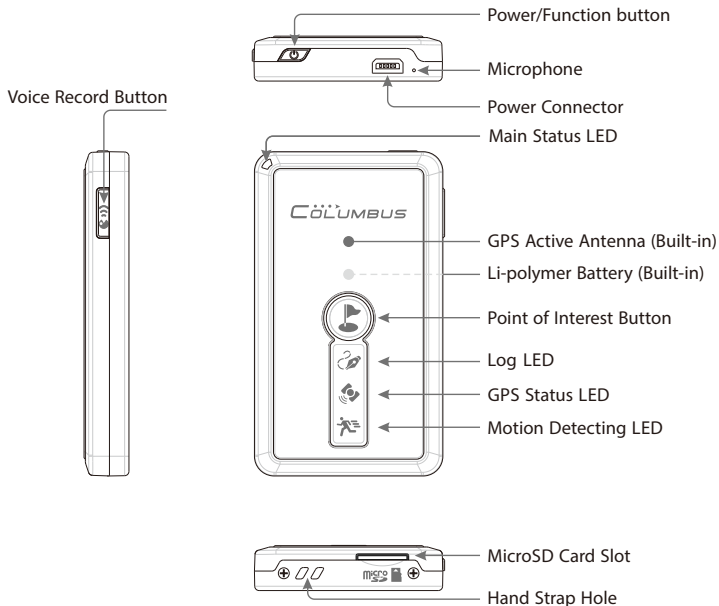
Please make sure that your package includes the following items.

1. V-990 Multifunction GPS Data Logger Main Unit
2. Car Charger (Input: 12V)
3. Charging Cable (Support Auto ON/OFF Function 2 meters)
4. Protective Case
5. Carrying Strap
6. USB MicroSD Reader
7. User Manual
8. Software CD
9. Warranty Card



1

Part Names



2

Functions of Button



Power/Function Button

Long press the key to turn on or off the power supply. Short press it to change among the two modes: Motion Detecting Mode and Normal Mode. Refer to P.16 for detailed operations.



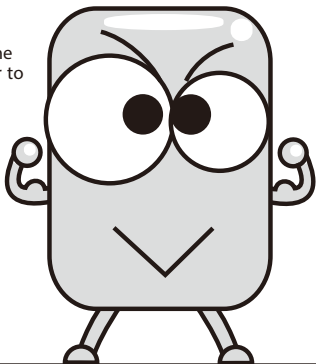
Point of Interest Button

Short press the button to mark the current position as a POI (Point of interest). Long press the button to start a new track. Refer to P.20 for detailed operations.



Record Button

Press and hold the Record button to begin audio recording. Release the button to stop recording and mark the current position as a POI. Refer to P.19 for detailed operations.



3

LEDs and Audible Alerts

There are 3 graphic LEDs on V-990 front face. A status LED is located at the top left. A mini speaker is integrated in the unit. These provide vivid audible and visual indications.



Log LED

This LED indicates the memory card status and whether the log function is on.

1. Log function on: Always On
2. Writing to memory card: Flashing
3. Memory card error: Continuous flashing



GPS LED

This LED indicates the current GPS satellites positioning status.

1. Acquiring satellites: Always on
2. GPS position is fixed: Flashing



Motion Detecting LED
Indicating the current recording mode and state of motion.

1. Motion Detecting Mode on: Always on
2. Device is in motion: Flashing
3. Normal Mode On: Off



Run/Power Status LED

This LED indicates the current operating status, power status, etc.

1. Power on: Green, always on
2. Low battery: Red, flashing
3. Charging: Red, always on
4. Charging completed: Green, always on
5. Spy mode: Blue, always on / flashing
6. Voice recording: Red, always on



Audible alerts of built-in mini speaker
Abundant audible alerts are available to intuitively indicate the current operating status.

1. Power on: 2x Short beep / Power off: 1x Long beep
2. Start of voice recording: 1x Short beep End of voice recording: 2x Short beep
3. Short press POI button (to mark a POI): 1x Short beep
4. Long press POI button (to create a new track): 2x Short beep
5. Insert / remove the card: Melody alert
6. Memory card error: Continuous short beep
7. Over-speed alarm: Continuous beep until the speed falls below the limit

1

Motion Detecting Mode



This device is built-in motion sensor, when the device stops moving or loses the satellite signal more than 5 minutes, the device enters standby mode automatically. In standby mode, when detecting motion, the device automatically wakes up and continues to track. To maximum power savings.

2

Track Log




1. This device can run offline in a standalone mode, in which it is not connected to any terminal. In this mode, it can log the date, time, latitude, longitude, altitude, speed, direction, voice, positioning mode, positioning type, PDOP, HDOP, VDOP, etc.
2. You may start a new track record at any time.
3. You may use the POI button to highlight the current geographical position whenever you want.
4. You may use the supplied software to define your personalized logging parameters, such as the time and distance intervals of logging, the value of over-speed alarm, etc.
5. You may use map software to view the track information along your journey.
6. This data logger innovatively uses a MicroSD* card as the storage medium, delivering larger storage and quicker reading than logging with an internal memory.

* MicroSD cards of mainstream brands with the capacity of 64M to 4G are supported. MicroSD card is also called T-Flash card.

3

Mark a POI Along Your Journey with a Voice Label



This device innovatively enables you to mark a POI using voice. With the  "Voice Record button" on the device unit, you can mark the current geographical position anywhere and anytime. Later, you can listen to and view the marked voice in Google Earth or other map software application.

4

Positioning Photos



You may use the device when you take photos using a digital camera, digital single lens reflect camera, video camera, or a camera phone (collectively referred to as the "camera" hereinafter). If the device operates in the positioning state, it will log the GPS records along your journey in real time. Then you may use the supplied software to match your camera photos to the GPS log file, and geotag and view the places where these photos were taken on a map.

5

Over-speed Alarm



This device allows you to set a certain speed value. When your car travels faster than this value, the unit emits sharp audible alarm until the speed falls below the value. When you drive your car at a high speed, this provides you with the convenience to control the maximum vehicle speed solely with the audible alarm of the unit without occasionally checking the speedometer reading, thereby ensuring driving safety.

6

Spy Tracking Mode



This device is specially designed with the Super-long Dormant Tracking Mode (SPY Tacking Mode). You may set the unit to enter the Dormant Tracking Mode using combination buttons. In this mode, the unit starts at a fixed time interval, acquires the position, logs the current track and other position information, and then shuts down. In dormant operation, the power consumption is extremely low. This can meet your needs of long-term track logging.

7

Vehicular Auto ON/OFF



When you use the unit on your car, the 2m-long charging (auto ON/OFF) cable enables device to follow the power status of the car cigarette lighter socket and start up and shut down automatically, that is, the unit will be turned on/off as soon as you turn on/off the ignition switch.

Accessories

Car Charger



The car charger can work with the 12V car cigarette lighter socket. It can be only used for the device. Using it for any other purpose can damage the car charger and other devices.

The car charger can work with the charging cable to automatically start up and shut down the device and charge it.

Charging Cable



The cable can work with the car charger for auto ON/OFF and standard charging. The device turns on as soon as the vehicle is started and the power supplies to the car cigarette lighter socket, and turns off as soon as the vehicle is shut down and the power supply is disconnected. Thus, the device is automatically turned on or off together with the vehicle.

USB MicroSD Reader



The reader works with a MicroSD card carrying log data and allows you to access, delete, or copy data at a high speed or format the card through a USB port on your computer.

Note: Exporting log data can only be through the card reader.

Carrying Strap



To use the hand strap, simply thread it through the hole at the bottom of your device. You may use the slider mechanism to adjust the tension.

Do not forcefully pull the hand strap; otherwise, it may break.

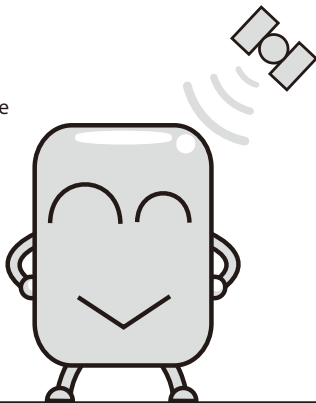
About GPS

The Global Positioning System (GPS) is a satellite-based navigation system made up of a network of 24 satellites placed into orbit by the U.S. Department of Defense. GPS was originally intended for military applications, but in the 1980s, the government made the system available for civilian use. GPS works in any weather conditions, anywhere in the world, 24 hours a day. There are no subscription fees or setup charges to use GPS.

The GPS is operated by the United States government, which is solely responsible for accuracy and maintenance of the system. The accuracy of location data can be affected by adjustments to GPS satellites made by the U.S. government and are subject to change with civil GPS policy and the Federal Radio navigation Plan. Accuracy can also be affected by poor satellite geometry.

Notes:

- (1) The receiver is a positioning device that receives RF signal from GPS satellites, which are 20,000km above the earth. To receive the best signals, use the receiver in open space wherever possible.
- (2) The positions of GPS satellites are continuously changing. Depending on when and where the device is used, it may take long to acquire the position, or positioning may be temporarily unavailable.
- (3) Although sometimes the device can also be fixed indoor, can not guarantee the accuracy of positioning within the enclosed space.
- (4) The device may fail to position and track when you are moving at a speed of more than 800km/h.



1

How to Charge the Battery

This device is built in with a 1000mAh Li-polymer battery, which allows for hundreds of charge-discharge cycles. Proper charging and discharging can effectively maximize the service life of the battery.

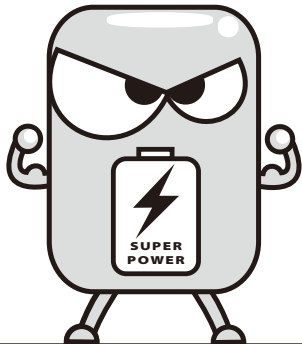
- For vehicular applications, use the car charger included in the accessories in addition to the auto ON/OFF adaptor cable.
- Normally, the charging can be finished in about 3.5 hours. When the Charge LED turns from red to green, it means that the battery has been fully charged. After charging is finished, do not leave the charger at the power-on state for a long time.
- If you will not use the device for an extended period, you should fully charge the battery before storing the device.

Notes on battery duration

The battery duration is dependent on your selected operating mode. The battery duration at different operating modes is as follows*:

- Motion Detecting Mode: Approx. 7 days (Working 4 hours per day)
- Normal Mode: 36 - 40 hours
- Spy Mode: Up to 35 days

* Testing data of the receiver in open spaces.
Duration is subject to the environment of use, operating mode, positioning status, weather, and data format.



2

Place and Carry Your Receiver

This device is built in with a MTK 66-channels, -165dBm highly sensitive super single chipset. It can easily fix positions at most places in your car. If you bring it with you, you also can use it to fix positions in relatively unfavorable outdoor environments. For the first time, it uses the EPS* technology to improve the GPS position accuracy and, in certain degree, reduce the drifting.

*EPS stands for Enhanced Positioning System, a positioning technology we have specially developed for the device.

It is recommended to place the device:

- In the supplied protection case;
- On a shelf or anti-slip pad under the front/rear windshield in your car;
- In your backpack or in an outer pocket of your clothes.

Do not use the device at the following places:

At the following places or locations, the device can fail to fix positions or its storage and maintenance can be adversely affected. Avoid using the device at such places wherever possible.

- A place at the window within a house, or in a tunnel, or in the shadow of a cluster of buildings; or under a viaduct, among tall buildings, or in a narrow street surrounded by buildings;
- An extremely cold, hot, or wet place. For example, if the device is placed in a car directly exposed to the sunshine, the high temperature may cause deformation or malfunction of the device;
- A place on a platform where the device is easy to slip or fall in your car or a place at the airbag in the car;
- A place near a strong magnetic field, such as that near high-voltage cables;
- A place near a device that generates RF signals of the same band as the device: a place near a RF device in 1.5GHz band;
- The device is a precision device. Avoid using it at sandy or dusty places. Keep sand or water out of the device; otherwise, the device may fail and sometimes may suffer unrecoverable failure.

3

Preparing for Use

1 Memory card selection and file format

This device supports MicroSD cards of most brands. The supported storage capacity is 64M to 4G. If you need to use the audio recording function, only high-speed memory cards with the capacity of more than 512M are supported because the access speeds of small-capacity cards are limited.


You have to properly format the memory card of "FAT file system" before using it. Plug the card in the reader and insert the latter to a USB port on your computer. Then operate as follows:



Right click your mouse on the volume label where the card is located. Select "Format".

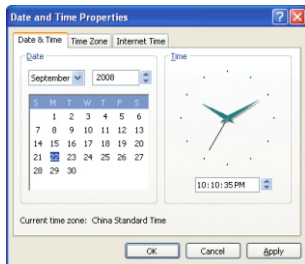
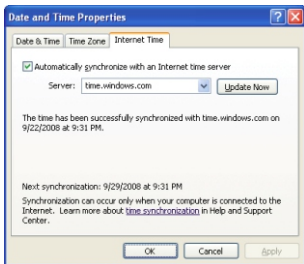


Select the "FAT" file system and click "Start". See the above figure.

- If the card is in a non-FAT file format, the device cannot conduct normal recording. In such a case, it beeps an alarm.
- If the track logging function is enabled but no memory card is plugged or a memory card is improperly plugged, the "Log LED"  flashes, alerting you that GPS track logging cannot be started.
- When you are using the device, do not remove or plug the memory card if the power is on; otherwise, the device can be damaged and data can be lost. Always remove or plug the card after the device shuts down.
- Memory cards ONLY support no more than 512 files under a single directory. Logging files over 512pcs under a single directory may cause data damage. Please backup excessive records to your computer whenever necessary.

2 Setting camera date and time

If the internal clock of your digital camera is incorrectly set, there can be error between the captured photos and track positions. Please adjust the camera time by following the correct procedure below.



- Click the "Time and Date" property at the lower right corner. Open the "Internet Time" tab. Click "Update Now". Make sure the time is successfully synchronized with the Internet time.

- Return to the "Time and Date" tab. Now the time is the correct. It should be the reference when you adjust the internal clock of your digital camera.



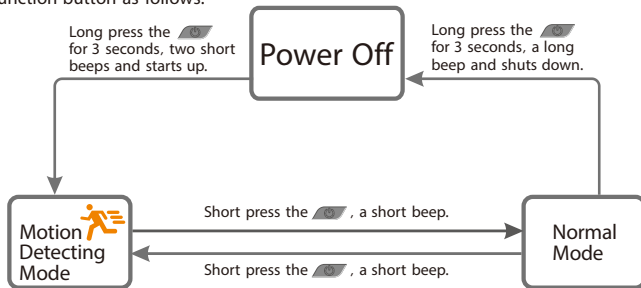
- Open the "Time setting" menu of the digital camera. Usually you can find the menu in system setup of the camera.
- Set the correct time on your camera according to the time and date of your computer. If possible, the synchronized time should be accurate to "second".
- "Second" is unlikely to appear in the time of a digital camera. Let us illustrate with the time to the left. You may set the time to 20:08 at first and then press the "OK" button as soon as the reference time changes from 20:07:59 to 20:08:08.
- In view of the error in the internal clock of your camera, it is recommended to adjust the clock at least once per month.

4

Start to Use

1 Introduction and changeover of operating modes

V-990 has two normal operating modes. You may switch between these modes using the Power/Function button as follows:





Motion Detecting Mode

- In this mode, V-990 will automatically detect the current state of motion, stop motion or when the satellite signal lost more than 5 minutes, V-990 will automatically enter standby mode.
- Once the V-990 detect motion, the device automatically wakes up and continues to track.
- In this mode, simply press the "Power/Function button" to enter "Normal Mode."

Normal mode

- In this mode, the motion detecting function is off, only track.
- In this mode, simply press the "Power / Function button" to enter "Motion Detecting Mode".

2 Acquiring position

- (1) Long press the  "power button" for 3s to turn on the device.
- (2) In a relatively open outdoor environment, point the device reception antenna to the sky. Wait for several minutes until the position is fixed. (The  "GPS LED" flashes after the position is fixed)

3 Notes on acquisition time of the device*

There are three kinds of GPS acquisition at startup: cold start, warm start, and hot start.

(1) Cold start: 35s

A cold start is the startup in any of the following situations: the device is used for the first time; ephemeris is lost due to low battery level; or the device has been moved for more than 1,000km when it is turned off.

(2) Warm start: 32s

A warm start is the startup in one or more hours after the last positioning.

(3) Hot start: 1s

A hot start is the startup within one hour after the last positioning.

*The test environment is a place with relatively open view to the sky.

If it is difficult for the device to fix the position and the GPS LED is always on, you should point upward the antenna part of the device and wait for a while. If the position still cannot be fixed after 5 minutes, perhaps you are situated at a place where GPS signals cannot reach. In such a case, move to a place as open as possible and try to fix the position once again.

It is not recommended for the receiver to fix the position for the first time at an indoor window or any other relatively enclosed environment.

Point upward the GPS reception antenna to help receive satellite signals.




1

Logging a Track



Before running the track logging, you should correctly format your memory card. Refer to P.15 for the operation.

After the device is turned on and already in the positioning state, it automatically logs the current track point once per second. A single track may be unlimited in length. "Log LED"  flashes when the device is writing data to the memory card.

Every time you turn on the device, a new track file is automatically created.

A track record may be in the standard mode or the expert mode. You may define the mode. Refer to P.29 for the operation.

The contents of a standard mode (default) record include:

Date, time, latitude, longitude, altitude, speed, heading, and voice

The contents of an professional mode record include:

Date, time, latitude, longitude, altitude, speed, heading, voice, positioning mode, positioning type, PDOP, HDOP, and VDOP

A MicroSD card with the capacity of 4G may stores about 50 million records.

Note: Never remove the memory card unless the device shuts down; otherwise, the logged track may be lost!

A track is logged on the memory card as a file. You may manipulate and manage the file from your computer. A track is conventionally named as follows:

Example: *16050100.CSV*

It means that the track begins on May 01, 2016. The last two digits "00" represent that the track is the first one of the day, and so on. The range of these two digits is from "00" to "99". There may be up to 100 tracks in a single day.

2

Adding a Point of Interest



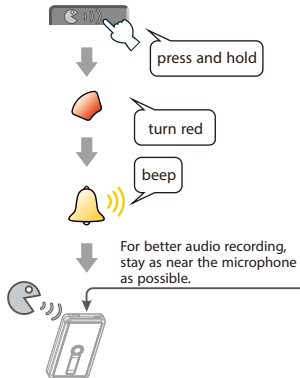
1 Adding a voice mark point

You can add a voice mark to your traveling track at any time*. This is the simplest and most interesting way to take notes along your journey. After that a  symbol can be generated on the map to facilitate your recollection in the future.

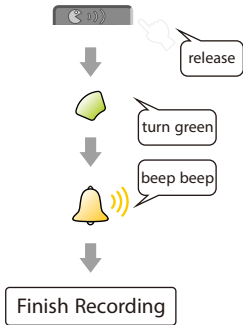
To view a voice label on a map, refer to P.29.

* Audio recording is only supported on a high-speed memory card with the capacity of more than 512M. There's no length limit of a voice mark. The only limit is the card capacity.

- (1) Begin audio recording. Press and hold the Audio REC button. Begin recording after the Run/Power Status LED turns to red and you hear a "beep" sound.



- (2) Finish recording. Release the Audio REC button. When you hear two "beep" sounds and the Run/Power Status LED turns to green, the recording is finished.

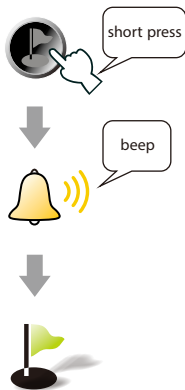


2 Adding a POI manually

You can highlight the current place of interest anytime and anywhere. After that a symbol is generated on the map to facilitate your recollection in the future.

To view a POI on a map, refer to P.29.

- (1) Short press the POI button. After you hear "beep", the current position is marked as a POI.

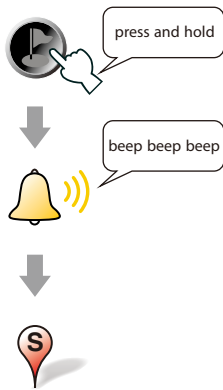


A POI added in the map

3 Starting a new track

You can terminate the track you are logging and start a new track on your memory card.

- (2) Long press the POI button until you hear three "beep" sounds. A new track is started.



A new track log created

3

Motion Detecting Mode



V-990 will remember the last working mode.

The motion detecting LED turns on in this mode.

When the device is stationary, the led is on. When the device is in motion, the led is flashing. When the device stops moving or loses the satellite signal more than 5 minutes, the device enters standby mode automatically.

In standby mode, once the V-990 detect motion, the device automatically wakes up and continues to track.

This mode is suitable for long time records of vehicles and other large objects.

4

Integrating Photos with a Map



Before using this function, always adjust the camera clock to the synchronized GPS time. Refer to P.15 for the detailed operation.

After the time is accurately adjusted, you can bring the device together with the camera and take photos.

Refer to P.29 on how to view photos on a map. The symbol of a photo point is "  " in the map software.

5

Over-speed Alarm



If the speed of the car you are driving exceeds the predefined value of the device, the speaker continuously emits sharp audible alarms until the traveling speed falls below the value.

You may manually cancel the alarm. All you have to do is to short press the POI button, thereby temporarily turning off the over-speed alarm function.

When you drive your car at a high speed, this provides you with the convenience to control the maximum vehicle speed solely with the audible alarm of the device without occasionally checking the speedometer reading, thereby ensuring driving safety.

Note: Over-speed alarm is only available when the track log function is turned on. Refer to P.27 on how to set the predefined speed value.

6

Spy Tracking Mode

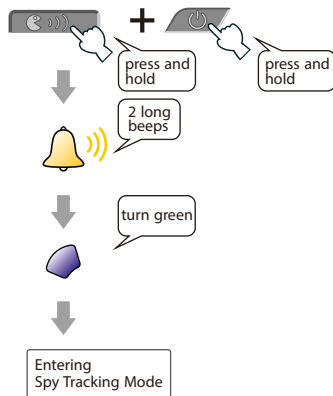


The device is uniquely designed with the Super-long Dormant Tracking Mode (Sky Tracking Mode). In this mode, the device intermittently runs, realizing super long battery duration of up to 30 days.

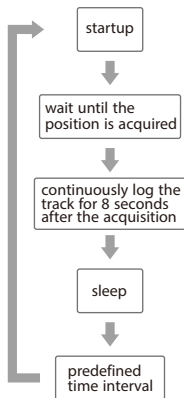
In this operating mode, the device is waked up, started, fixes the position, and logs the track information at a certain time interval*. When the device is standby, the main status LED intermittently flashes in blue. All other LEDs on the device are off and the speaker is mute. This mode is suitable for tracking your car for an extended period, or for places where charging is unavailable, e.g. in a long hiking.

* The value of the interval can be set in software, refer to P.27. Duration is subject to the environment of use, spy mode timer, positioning status.

(1) How to enter the Spy Tracking Mode:



(2) Flow of the Spy Tracking Mode:



7

Vehicular Auto ON/OFF

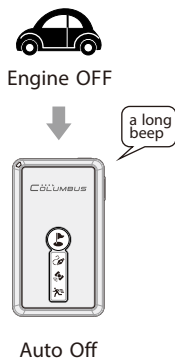
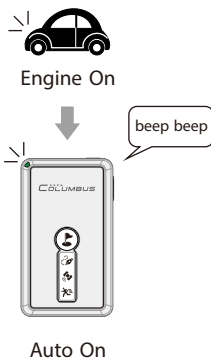


When you use the device in your car, please charge it using the car charger and the charging cable. Auto ON/OFF and standard charging can be realized, that is, the device is turned on as soon as the vehicle is started and the power supply to the car cigarette lighter socket is connected, and turned off as soon as the vehicle is shut down and the power supply is disconnected. Thus, the device is automatically powered on or off together with the vehicle.

If the device is already turned on, using the charging cable will not automatically turn on or off the device.

If you only want to charge the receiver, turn it off manually.

For details on the adaptor and charging cable, refer to P.10.



1

Time Album

1 How to install

The device comes with a CD-ROM that presents the "TIME ALBUM" software. The software is specially designed for the device. You may use it to add photos, voice, and other information to a track, which can be viewed and played back on map software. You may also use "TIME ALBUM" to configure detailed settings of the device.

"TIME ALBUM" is designed with extensive compatibility. It is compatible with the following operating systems:

*Windows® XP / Windows® Vista / Windows® 7 / Windows® 8 / Windows® 8.1 / Linux/
Mac OS® X*

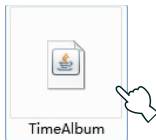
Before installing the software, select the correct version applicable to the operating system you are using.



- (1) First you should install the JAVA virtual machine (JVM). Check your OS platform. There are different JVM versions for Windows/Mac OS/Linux. Double click the icon and continue with the default installation options.



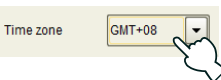
- (2) After the installation is completed, click the "TIME ALBUM" icon to launch the software.



2 Configuring settings

Always configure the following settings when you launch and use "TIME ALBUM" for the first time.

- (1) You need to correct the GPS time, which is the GMT time. Click and choose "Time Zone Setup" and set the time zone of your location. For example, New York is located in the West-4 Time Zone (GMT -4.00).



- (2) Set the vehicle you will take: Car Mode or Fly Mode. If you will travel on walk or by car, please choose the "Car Mode".



Car Mode



Fly Mode

3 Managing tracks

- (1) Importing a track

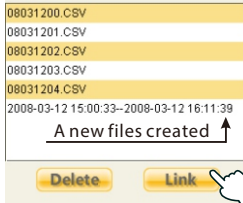
Click the "Add a track" icon. Select the track you want to add. Click and choose the track name. A preview of the track is shown in the left window pane and details of the track appear in the bottom pane.



```
Name: 11050100.CSV
Qty of track point: 15664
Time Album: V1.8
Qty of check point: 07
Qty of voice point: 12
Qty of photo point: 25
Start: 2011-05-01 14:34:24
End: 2011-05-01 19:26:54
Total time: 0days 4hours 52minutes 10second
Distance: 141.37km
Average speed: 43km/h
Max speed: 43km/h
Max altitude: 128m
Time zone: GMT -4.00
Type: Normal track
```

- (2) Linking tracks

Select multiple tracks using the Ctrl button. Click and choose the "Link" button. These tracks are linked together and a complete track is generated. This function is used to merge multiple tracks generated in a travel.











4 Adding voice and photos

- (1) Copy tracks, audio records, photos, and other files from your memory card to the hard disk.
- (2) Click the "Add photos and voice" button. Select the location of the audio records and photos. The software automatically looks for and matches the audio records and photos applicable to the current track and adds them to the track. After the records and photos are added, the quantity of the added files is displayed.
- (3) Notes on the supported file format for addition: The added digital photos have to be JPG files that support the EXIF protocol, which is supported by photos captured on most digital cameras. Before taking digital photos, adjust the internal time of your digital camera. Refer to P.16 for detailed operation.



5 Setting track points

The software can be set to generate the track point icons in Google Earth. You may enable or disable the track point option as needed.

-  Start point: The place where the track starts
-  End point: The place where the track ends
-  Voice label point: A place where there is a voice record
-  Point of interest: A place where you pressed the POI button
-  Photo point: A place where a digital photo was taken
-  Over-speed point: A place where you exceeded the predefined speed
-  Parking point: A place where you stayed
-  Way point: A normal data point of track

6 Exporting a track

Select a track in the left window pane. Click "Export" button. You can export many types of track files which can be easily viewed in GoogleEarth, ViewNX and other software.



KMZ



GPX



NMEA



ViewNX

7 Configuring the device

- (1) Click the "Device Setting" button. An interface is launched. Click "Generate" to generate a *Config.TXT* file. With the help of the USB reader, copy the file to the root directory of your memory card.
- (2) The "Device Setting" interface offers the following options:

Data storage mode:

You may set "Tracking mode" to "Standard Mode" or "Professional Mode". If you are using a memory card with a low capacity, you may choose "Standard Mode" to use less space.

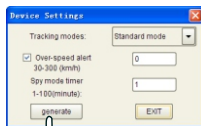
Over-speed alert:

You may set the speed (in km/h) of "over-speed alert". The device emits an alert when the traveling speed of your car exceeds the value. Range of settings: 30km/h at minimum and 300km/h at maximum.

Spy mode timer:

You may set the time interval to turn on the device in the "Spy Tracking Mode". A longer interval will result in a longer total standby duration. Range of settings: 1min – 100 min.

Note: If the receiver does not find configure files, it runs in the standard mode by default: Data storage mode: "Standard Mode", Over-speed alert: "OFF", Spy mode timer: "15min".



8 Track conversion options

Click "Options" button. The detailed options are launched:

- (1) Export every meter: The track is outputted at a certain distance interval.
- (2) Export every second: The track is outputted at a certain time interval.
- (3) Over-speed tag: The point where the traveling speed of your car exceeds the predefined value is marked with an "over-speed icon" on the track.
- (4) Route width: This is used to set the thickness and color of the lines connecting the track points between one another.



For more detailed operations, refer to the help of the software.

2

Google Earth

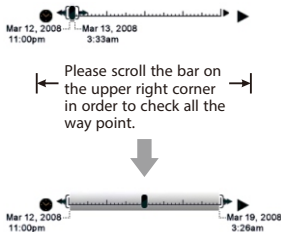
1 How to install

Click the Google Earth® icon and complete the installation.



2 Playing back a track

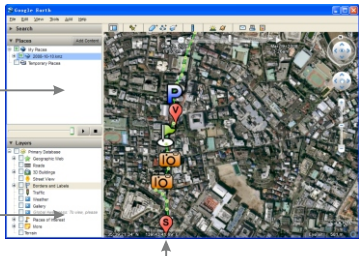
Double click the track file (with an extension of KMZ) generated by "TIME ALBUM" to play back the track of your journey in Google Earth®. Click an icon, such as a "Photo point" or a "Voice label point", on the track to view track point details. There are also some other functions available. For example, you may play back the track by time. Refer to the software instructions for detailed operation.



Track list

Layers

Main window



3 Details on track points

This device can record the following types of track point in Google Earth®:



- (1) Start point. The data point of the first second on each track.



- (2) End point. The data point of the last second on each track.



- (3) Way point. It is the most common type of route point on a track. It generally appears once per second.



- (4) Photo point. It is a place where a digital photo was taken on the track. You may click the icon to view details on the photo and the geographical information of that place.

Time: 17:50:18
Index: 22755
Date: 11-05-01
Latitude: 35.655513 N
Longitude: 139.726391 E
Altitude: 129m
Speed: 25km/h
Heading: 169°
Distance: 24.78km
Voice: [Click here to play](#)



- (5) Voice label point. It is a place where there is an audio record on the track. You may click the icon to play the audio recorded at that time using a media player.



- (6) Point of interest. It is a place where you short pressed the POI button. You may play back a POI highlighted during your journey.



- (7) Over-speed point. When the speed exceeds the predefined value, the track point is highlighted with a plane icon. Refer to P.29 for "over-speed alert" setting.



- (8) Parking point. The system automatically uses this icon to indicate a sightseeing place where you stay. This avoids multiple duplicate track points.

1

Signal Reception

Symptoms	Causes and Remedy	Page
No satellite signal received	Battery level is low. Charge the receiver.	12
Intermittent positioning	<ul style="list-style-type: none">● Avoid using the receiver under an automobile windshield that contains metallic wires or has been coated with a film, or in a house, tunnel, or underground parking lot, or on a patio-like land, or near high-voltage cables, or in any other environment where strong shield or interference presents. If you are using the receiver in any of above environments, move it to a place with an open view to the sky.	17
Inaccurate positioning	<ul style="list-style-type: none">● If you will bring the receiver with you and use it, you should place it at an open space and wait until it acquires the position and receives all ephemeris. This can improve its performance.	13
Serious position drifting	<ul style="list-style-type: none">● For positioning purpose, place the receiver at an open space wherever possible. The symptom can be improved if ideal satellite signals are received. A small drift (an error within 10m) will not affect the position match between the photo and the GPS coordinates.	17

2

Motion Detecting

Symptoms	Causes and Remedy	Page
There is a slight sound when shaking the device	<ul style="list-style-type: none">● This is the sound of speed sensor, is a normal phenomenon.	
The motion detecting LED is still flashing when stop motion	<ul style="list-style-type: none">● There may be drifting due to the bad satellite signal, please place the receiver at an open space.	17
The device can't enter standby mode	<ul style="list-style-type: none">● The device probably can't enter standby mode due to the vibration of a idling car.	

3

Track Logging

Symptoms	Causes and Remedy	Page
Track logging cannot be initiated	<ul style="list-style-type: none"> ● The device has not acquired the position yet. Its logging function cannot be normal until the position is acquired. 	18
	<ul style="list-style-type: none"> ● The logging function has been disabled. Short press the Power/Function button to activate the logging function. 	16
	<ul style="list-style-type: none"> ● The memory card space is full, or there are more than 512 files under the root directory. Back up and remove files from the card whenever necessary. 	14
Log LED continuously flashes and the device emits audible alarms	<ul style="list-style-type: none"> ● Make sure that you have correctly plugged the memory card. 	35
	<ul style="list-style-type: none"> ● Make sure that the memory card has been formatted to FAT/FAT16. 	14
	<ul style="list-style-type: none"> ● The device supports Micro SD/T-Flash memory cards with a capacity of 64M - 4G. Make sure that the capacity of your current memory card falls within this range. 	

4

Photo and Audio Records

Symptoms	Causes and Remedy	Page
There is no photo point on the track	Make sure that you have activated the photo point output function in "TIME ALBUM". The digital photos you added do not support the EXIF protocol.	26
There's no photo in the photo point	<ul style="list-style-type: none"> ● Make sure that the added photos have not been deleted or moved. 	
Photos do not correctly match their track points	<ul style="list-style-type: none"> ● Make sure that you have correctly set the camera time as well as the time zone in "TIME ALBUM". 	25
There is no voice point on the track	<ul style="list-style-type: none"> ● Make sure that you have activated the voice point output function in "TIME ALBUM". 	26
I hear no voice	<ul style="list-style-type: none"> ● Make sure that a media player is correctly installed on your computer. 	

Symptoms	Causes and Remedy	Page
The voice content is too noisy or cannot be heard clearly	<ul style="list-style-type: none">● The voice content cannot be heard clearly in noisy outdoor environments. When you record the audio, stay as near the microphone as possible.	19
The voice content is intermittent	<ul style="list-style-type: none">● If you use a low-speed memory card with the capacity of less than 512M, the recorded voice will be intermittent. Use a high-speed card if you want to access the audio recording function.	19

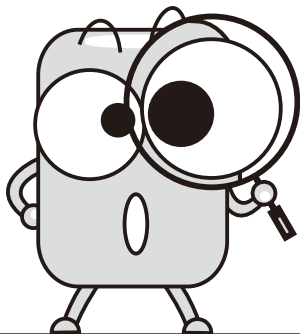
5

Power

Symptoms	Causes and Remedy	Page
The device does not respond when I press the Power button to turn it on	<ul style="list-style-type: none">● Battery level is low. Charge the device.	12
The Run Status LED does not light in red	<ul style="list-style-type: none">● Check that the AC Adaptor or the Car Charger is correctly connected.	
The receiver body feels slightly warm	<ul style="list-style-type: none">● It's normal that the receiver feels slightly warm when it's operating or being charged.	

Notes:

If you encounter any trouble that cannot be removed by your own, consult your local dealer or call the after service telephone number listed on the Warranty Card.



■ Product Specification:

Dimension: 43(L)x74(W)x9.9(H)mm

Weight: 55g

Volume: 32cc

Chipset: MTK 3339 Super chip

Channels: 66-channel all-in-view tracking

Frequency: 1575.42Mhz(L1, C/A code), built-in WAAS / EGNOS / MSAS Demodulator

Sensitivity: better than -165dBm

Fix Capability: 2D fix of 3 satellites, 3D of 4 satellites

Antenna Type: Built-in active antenna

■ Time to First Fix:

Acquisition time (Averaged*1):

Reacquisition: <1 second

Hot Start: 1 second

Warm Start: 32 seconds

Cold Start: 35 seconds

■ Accuracy:

Non DGPS(Differential GPS):

3.0m/CEP(50%) 5.0m/CEP(95%)

With DGPS corrected(EGNOS / WAAS):

1.5m/CEP(30-50%) 2.5m/CEP(95%)

(with EPS2 technology)

■ Dynamic Condition:

Altitude Limit: 18,000 meters (60,000 feet) max

Velocity Limit: 515 meters/sec (1,000 knots) max

Acceleration Limit: 4G max

Jerk Limit: 20 m/sec

Minimal Data Resolution: 1/10000 minute
(Latitude, Longitude); 0.1km/h (Velocity); 0.1 Degree (Direction); 0.1m (Altitude)

■ Protocol:

NMEA Protocol Output: Ver 3.01

Baud Rate: 38,400 bps

Datum: WGS84

Update Frequency: 1 Hz (Default)

Data Bit: 8 Parity: N Stop bit: 1

Output Format: \$GGA, \$GSA, \$RMC, \$GSV

■ Logging Data:

Original Format: CSV file

Export Format: KMZ, GPX, NMEA, LOG (Supports formats converting of most common GPS data logger in market)

Standard Mode: Date, time, Latitude, Longitude, Altitude, Speed, Heading, and Voice.

Professional Mode: Date, Time, Latitude, Longitude, Altitude, Speed, Heading, Fix Mode, PDOP, HDOP, VDOP and Voice.

■ Voice Record Data:

Format: WAV

Rate: 48 kbps

Length Limit: no limited

■ Storage Card:

Type: MicroSD / T-Flash

Capacity: 64M, 128M, 256M, 512M, 1G, 2G, 4G

(Voice recording requires capacity above 512M)

Format: FAT (FAT16) files system

■ USB MicroSD Reader (optional):

Type: MicroSD / T-Flash, support SDHC

USB Type: USB 2.0

■ Power Supplies:

Main Unit: Built-in rechargeable Lithium polymer battery with capacity (1000mAh)

The duration of V-990's built-in battery is dependent on your selected operating mode.

The battery duration at different operating modes is as follows*2:

Motion Detecting Mode: Approx. 7 days
(Working 4 hours per day)

Track Log Mode: 36 - 40 hours

Spy Mode: 20 - 35 days

■ Car Charger:

Model: V-20DC

Input: DC 12V

Output: DC 5.0V, 500mA

■ Operation:

Operation Temperature: -10°C to + 50°C

Store Temperature: -20°C to + 60°C

Operation Humidity: 5% to 95% (No condensing)

*1 The test environment shall be a place in open sky.

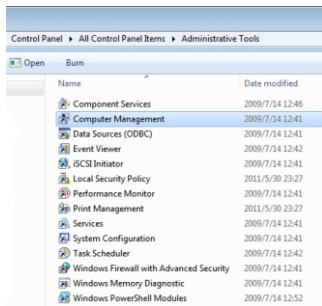
*2 Duration time is subject to the environment of use, operating mode, positioning status, and data format.

We reserve the right to make changes and improvements to any of the products described in this document without prior notice.

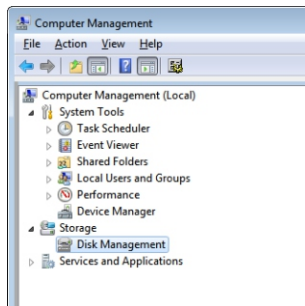
Formatting the MicroSD Card

How to format the 4G MicroSD card to FAT.

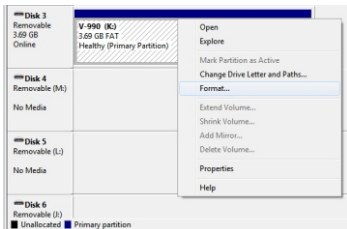
Illustrated with the Windows® 7.



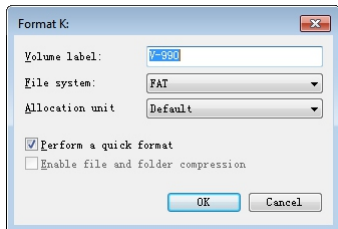
- ① Open "Control Panel", select "Administrative Tools" – "Computer management".



- ② Select "Disk Management".



- ③ Select the location of the MicroSDcard, right click and select "Format".



- ④ Select "FAT" for "File system", press OK to complete formatting.

TimeAlbum Pro



"TimeAlbum™ Pro" is Co-developed by Columbus and RouteConverter, a famous GPS software in Germany.

Features:

- Over 14 map patterns to view the tracks: Google Maps, Google Satellite, OSM Map, OSM Contour Map, etc.
- Supports over 20 GPS track file formats, as well as formats converting of most common GPS data logger in market.
- Supports the whole series of Columbus GPS data logger: V-900, V-990 and V-1000.
- Easy to install with cross-platform and extensive compatibility: Windows, Linux and Mac OS.

To learn more and free download:

<http://cbgps.com/timealbumpro>

Memo

Memo

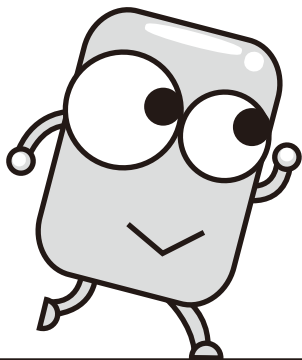
Memo

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CÖLUMBUS



Please visit <http://cbgps.com/v990> for more information.
The newest software at <http://cbgps.com/software>



The user manual is made of
100% recyclable paper pulp.

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