

The GPS Logger function enables you to save the location data from a GPS receiver onto a microSD card as a log. The GPS Logger saves Latitude, Longitude, Altitude, Positioning state, Course, Speed, Date, and Time. If you use this GPS Logger while traveling, you can check your trip history on a mapping software. D-STAR (Digital Smart Technology for Amateur Radio) is a digital radio protocol developed by JARL (Japan Amateur Radio League).

### About the log file

If you have the log file imported to a mapping software, you can display your route as you move on the software map.

① The log files may not be compatible with all mapping software.

② This manual explains how to use the GPS Logger using ID-31A PLUS/ID-31E PLUS as an example.

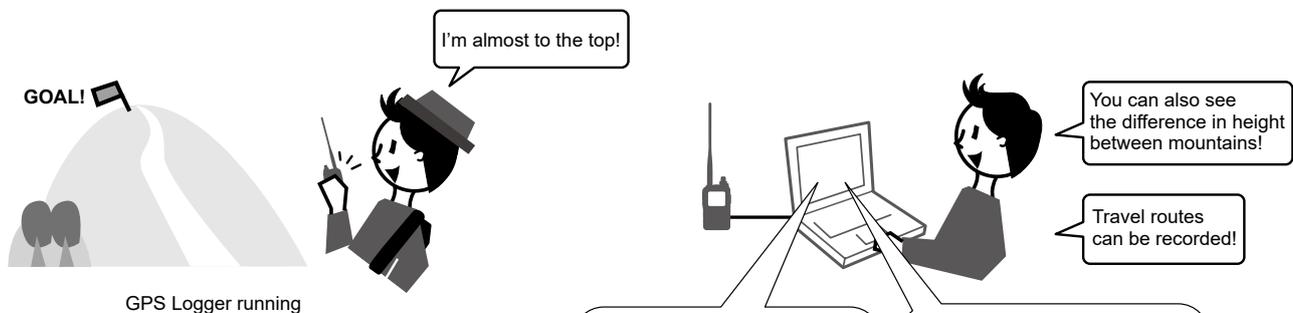
#### NOTE:

- The GPS Logger function requires a microSD card (User supplied).
- Once the GPS Logger function is turned ON, the transceiver continuously saves position data from the GPS receiver, even if the transceiver is turned OFF, then ON again. To cancel this function, turn OFF the function. While this function is ON, and when the transceiver is turned OFF, the log file will be closed. Then the transceiver is turned ON, and the GPS receiver carries out positioning, a new log file will be created.
- When the microSD card is full, this function is automatically paused.

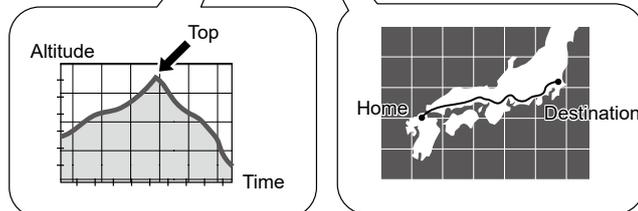
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## 1. How to use the GPS Logger function



- Record your favorite mobile operation location with the logger.
- Record the altitude of the routes you have hiked with your friends.



- Record the routes traveled by rail or car as a reminder of our trips.

Refer also to the instruction manual of the transceiver you are using.

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## 2. Before Using the GPS Logger function

When using the GPS Logger function, check the following items.  
Set the Recording Interval and Recording Sentence as necessary.

1. Inserting a microSD card (User supplied).
2. Check that the GPS signal has been received by the GPS icon on the transceiver (  lights).
3. Confirm the GPS Logger function is set to ON.

↓  
Setting completed (You can start the GPS Logger function)

### ◇ Setting the GPS record interval

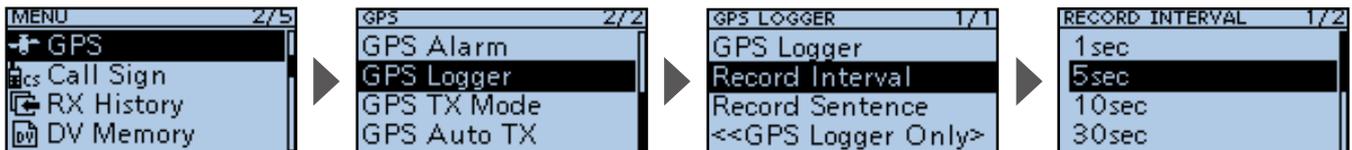
Set the recording interval of the GPS Logger function.

If you set a short recording interval for walking, the same location will be recorded, so change the setting according to the means of travel. You can also reduce battery consumption by increasing the recording interval.

① The recording intervals that can be set may differ, depending on the transceiver you are using.

#### How to set the recording interval

1. Push [MENU] on the transceiver.
2. Select "GPS."
  - The GPS screen is displayed.
3. Select "GPS Logger."
4. Select "Record Interval."
5. Select the recording interval you want to set.
6. To exit the MENU screen, push [MENU].
  - The standby screen is displayed.



#### How to select the recording interval

When the recording interval is short, the battery will run down more quickly. In addition, the accuracy of the trajectory increases because the number of recorded points increases, but the amount of data will increase, and the acquisition to the map will be slower. On the other hand, when the recording interval is long, the battery consumption will be reduced, but the accuracy of the log will be lower.

Shorten the interval when traveling on a high-speed vehicle, or set a longer recording interval when walking on a hill, such as climbing.



## 2. Before Using the GPS Logger function

### ◇ Setting the GPS record sentence

Select the GPS sentence of the content you want to record.

All sentences are selected by default.

Cancel the recording sentence setting to reduce the amount of data when using the GPS Logger function.

#### Contents of GPS sentence

Sentence	Lon /Lat	Alt	UTC	Date (UTC)	Status	2D /3D	COG (True)	SOG (knot)	Others
RMC	✓		✓	✓	✓		✓	✓	Mode Indicator
GGA	✓	✓	✓		✓				Number of satellites in use, HDOP, Geoidal separation, Age of Differential GPS data,
VTG							✓	✓	COG (Magnetic north), SOG (km/h), Mode Indicator
GSA					✓	✓			ID numbers of satellites used in solution, PDOP, HDOP, VDOP

#### How to set the sentences to record

1. Push [MENU] on the transceiver.
2. Select "GPS."
  - The GPS screen is displayed.
3. Select "GPS Logger."
4. Select "Record Sentence."
5. Select the sentences you want to record.
6. To exit the MENU screen, push [MENU].
  - The standby screen is displayed.



#### How to select the sentences to record

When you want to record the altitude information such as mountain climbing in addition to the latitude and longitude information, select GGA as well as RMC.

See page 8 for a detailed description of each sentence.

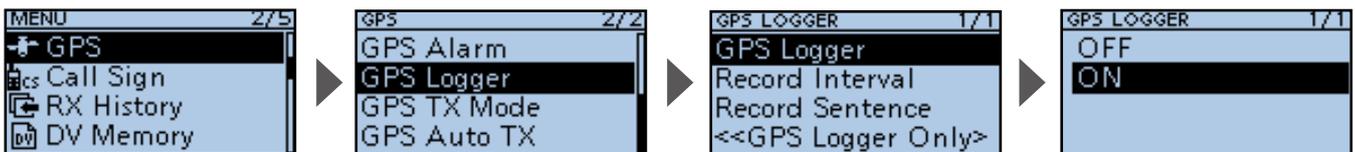
### 3. To use the GPS Logger function

Set whether or not to record the information received from GPS.

When "ON" is set, the data received by GPS is recorded on a microSD card for each recording interval.

#### How to set the GPS Logger function

1. Push [MENU] on the transceiver.
2. Select "GPS."
  - The GPS screen is displayed.
3. Select "GPS Logger."
4. Select "GPS Logger."
5. Select "ON."
6. To exit the MENU screen, push [MENU].
  - The standby screen is displayed, and starts the GPS Logger function.

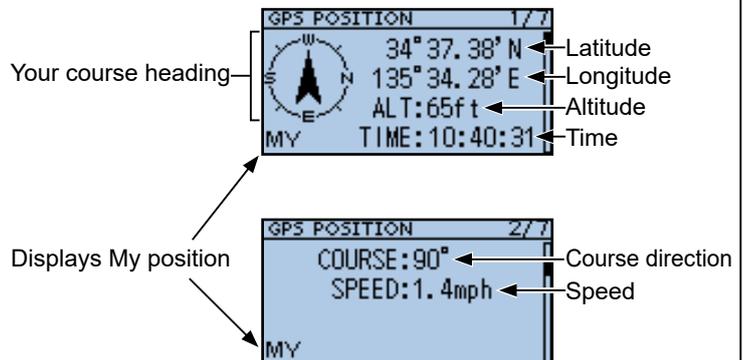


**NOTE:** When using an external GPS, only the supported sentence is recorded among GGA, RMC, GSA, and VTG.

#### About the GPS POSITION screen

When the GPS signal is received, recording is automatically started.

The recorded information is displayed as shown the right, and can be checked in real-time.



#### GPS Logger Only mode

This mode is useful when you do not want to use the transceiver for communication while moving, and want to use it only as a GPS Logger for a long time. It also helps to protect the battery from draining.

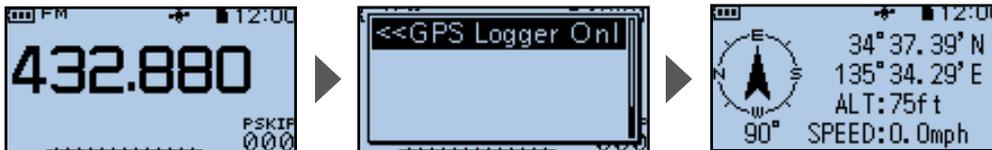
## 4. How to use the GPS Logger Only mode

You can activate the GPS Logger Only mode from the Quick Menu window displayed by pushing [QUICK] on the transceiver. This mode is useful when you do not want to use the transceiver for communication while moving, and want to use it only as a GPS Logger for a long time.

① You can also select the GPS Logger Only mode from the MENU screen. (p. 4)

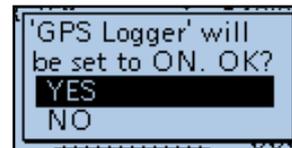
### How to set the GPS Logger Only mode

1. Push [QUICK] on the transceiver.
2. Select "<<GPS Logger Only>>."
  - After the message "Only GPS Logger is now functioning." is displayed, move to the GPS Logger Only mode screen and starts the GPS Logger function.



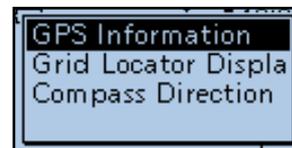
### When the GPS Logger function is set to OFF

When "GPS Logger" is set to "OFF," the right dialog is displayed.  
([MENU] > GPS > GPS Logger > **GPS Logger**)  
To use the GPS Logger Only mode, select "ON."



### To display the GPS information and change the Compass Direction

Push [QUICK] while operating in GPS Logger Only mode to display the Quick Menu window.



### NOTE:

You can check the GPS reception status, change the compass direction, or change the altitude information/grid locator display (only for the ID-31A/E series) by pushing [QUICK] while operating in GPS Logger Only mode. In the GPS Logger Only mode, the transceiver function is disabled.

When using the GPS Logger function while operating the transceiver, set "GPS Logger" to "ON."  
([MENU] > GPS > GPS Logger > **GPS Logger**)

### To cancel the GPS Logger Only mode

To cancel the GPS Logger Only mode, turn OFF the transceiver, then turn it ON again.

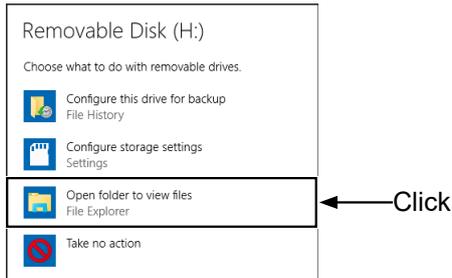
① When the transceiver is turned OFF and ON again, the GPS Logger Only mode is canceled, but the GPS Logger function remains ON.

## 5. Viewing the log data on a PC Map

You can download log information to a PC and check it.

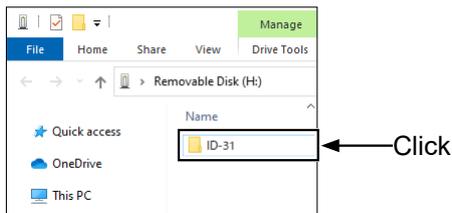
① Windows 10 is used for these instructions.

- Turn OFF the transceiver, and then remove the microSD card.
  - ① To remove the card while the transceiver is ON, unmount it first. (See the transceiver's manual.)
- Insert a microSD card into the SD card slot of the PC or the memory card reader connected to the PC.
- Click the "Open folder to view files" option to access the card.

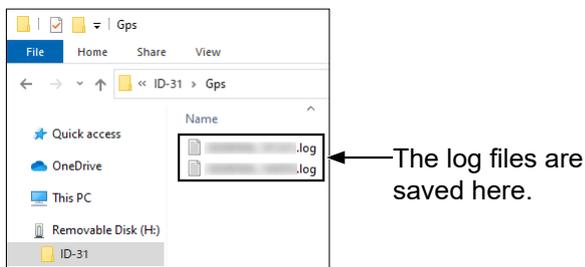
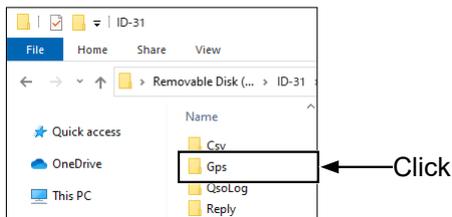


① The folder with the name of your transceiver is displayed.

- Double-click the "ID-31" (example) folder.



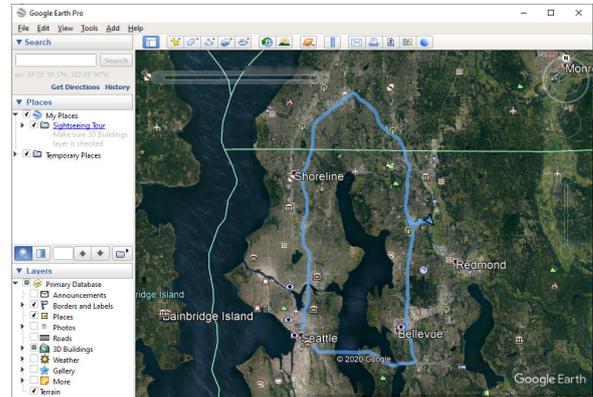
- Double-click the "Gps" folder.



- The log files are displayed.
  - ① The files are named with the time the log was started, in the following format:  
 yyyyymmdd\_hhmmss.log (yyyy: Year, mm: month, dd: day, hh: hour, mm: minute, ss: second).
  - ① You can see your route on the software map by importing the selected log.
  - ① The file may not be compatible with all mapping software.

**TIP:** You can display your route on Google Earth (free map software).

- Select "GPS" in the "Tools" menu of Google Earth.
- Check "Import from file" in the "GPS Import" screen, and then click "Import."
- Select the log file displayed in step 4 on the left.
  - The log is displayed on the map, as shown below.



©Google

The screen that the log file is displayed in Google Earth.

① You can display the logged altitude information by right-clicking on the displayed log, and then select "Show Elevation Profile."

## 6. Q&A (GPS Logger mode)

### GPS signal cannot be received

When "GPS Select" is set to "Manual," change it to "Internal GPS" or "ON," depending on the transceiver.

When "External GPS" is selected, confirm the connection with the external GPS is successful.

- ① Receiving a signal may take time, depending on the operating environment.
- ① When the transceiver is used indoors, signals from GPS satellites may not be received, depending on where the transceiver is installed, or the building's surrounding environment.

### What is the recording interval?

The recording interval of the GPS Logger function depends on the transceiver you are using. When traveling on trains or cars, the recording interval should be shortened. When traveling on foot, such as when climbing mountains, the recording interval should be set longer.

If the recorded log information is too detailed, set a longer recording interval. If the log information is too coarse, set a shorter recording interval.

### When altitude information is not recorded?

Check that the GGA for which altitude information can be obtained is set as a sentence to be recorded.

- ① The altitude information can be obtained when receiving 4 or more satellites.
- ① The more satellites the transceiver is receiving, the more accurate the altitude information will be.

### What models are equipped with the GPS Logger Only mode?

The ID-31A/E and ID-51A/E series, and the IC-R30 are supported.

## 7. About the recorded NMEA sentence for GPS logging

Regarding the GPS logging data of the transceiver, each sentence corresponds to the NMEA standard and is recorded in the following format.

### ◇ GGA sentence

(e.g.) \$GPGGA,161229.487,3723.2475,N,12158.3416,W,1,07,1.0,9.0,M,25.5,M,3.0000\*18<CR><LF>  
 ①            ②            ③            ④            ⑤            ⑥            ⑦            ⑧            ⑨            ⑩            ⑪            ⑫

- |   |  |
|---|--|
| ① GGA protocol header (\$GPGGA)   | ⑦ Horizontal Dilution of Precision (1.0) 0.0–50.0                  |
| ② UTC of position (16:12:29.487)  | ⑧ Altitude re: mean-sea-level (geoid), meters (9.0 meters)         |
| ③ Latitude (North 37° 23.2475') N=North, S=South                          | ⑨ Geoidal separation, meters (25.5 meters)                         |
| ④ Longitude (West 121° 58.3416') E=East, W=West                           | ⑩ Age of Differential GPS data (3 seconds)                         |
| ⑤ GPS quality indicator (1)<br>0=Fix not available or invalid, 1=SPS mode | ⑪ Check Sum (*18) Error detection data started with "*" (hex code) |
| ⑥ Number of satellites in use (7), 00–12                                  | ⑫ End code   |
|   | *Blank shows when not positioned.                                  |

### ◇ RMC sentence

(e.g.) \$GPRMC,161229.487,A,3723.2475,N,12158.3416,W,0.13,309.62,311120,,D\*10<CR><LF>  
 ①            ②            ③            ④            ⑤            ⑥            ⑦            ⑧            ⑨            ⑩            ⑪

- |   |  |
|---|--|
| ① RMC protocol header (\$GPRMC or \$GNRMC*)<br>* When both the GPS and GLONASS satellites are used. | ⑧ UTC date of position ('20 Nov 31st) ddmmyy   |
| ② UTC of position (16:12:29.487)  | ⑨ Mode Indicator (D)<br>A=Autonomous mode, D=DGPS,<br>E=Estimated (dead reckoning) mode,<br>N=Data not valid, R=Almanac data |
| ③ Status (A)<br>A=Data valid<br>V=Data invalid/not positioned                                       | ⑩ Check Sum (*10) Error detection data started with "*" (hex code)   |
| ④ Latitude (North 37° 23.2475') N=North, S=South  | ⑪ End code   |
| ⑤ Longitude (West 121° 58.3416') E=East, W=West   | *Blank shows when not positioned.  |
| ⑥ Speed over ground (0.13 knots)  |  |
| ⑦ Course Over Ground (309.62°; degrees True)<br>0.00°–359.99°                                       |  |

### ◇ GSA sentence

(e.g.) \$GPGSA,A,3,07,02,26,27,09,04,, , , , ,15,1.8,1.0,1.5\*33<CR><LF>  
 ①            ②            ③            ④            ⑤            ⑥            ⑦            ⑧            ⑨

- |   |  |
|---|--|
| ① GSA protocol header (\$GPGSA or \$GNGSA*)<br>* When both the GPS and GLONASS satellites are used.                             | ⑤ Position Dilution of Precision (1.8) 0.0–50.0                    |
| ② Mode indicator 1 (A)<br>M=Manual, forced to operate in 2D or 3D mode<br>A=Automatic, allowed to automatically switch 2D/3D    | ⑥ Horizontal Dilution of Precision (1.0) 0.0–50.0                  |
| ③ Mode indicator 2 (3)<br>1=Fix not available,<br>2=2D (using satellites; less than 3),<br>3=3D (using satellites; more than 4) | ⑦ Vertical Dilution of Position (1.5) 0.0–50.0                     |
| ④ ID numbers of satellites used in solution (07, 02, 26, 27, 09, 04...15)<br>01–32 *Shows up to 12 ID's                         | ⑧ Check Sum (*33) Error detection data started with "*" (hex code) |
|   | ⑨ End code   |
|   | *Blank shows when not positioned.                                  |

### ◇ VTG sentence

(e.g.) \$GPVTG,309.62,T, ,M,0.13,N,0.2,K,A\*03<CR><LF>  
 ①            ②            ③            ④            ⑤            ⑥            ⑦            ⑧

- |   |  |
|---|--|
| ① VTG protocol header (\$GPVTG or \$GNVTG*)<br>* When both the GPS and GLONASS satellites are used. | ⑥ Mode Indicator (A)<br>A=Autonomous mode, D=DGPS,<br>E=Estimated (dead reckoning) mode,<br>N=Data not valid, R=Almanac data |
| ② Course Over Ground (309.62°; degrees True)<br>0.00°–359.99°                                       | ⑦ Check Sum (*03) Error detection data started with "*" (hex code)   |
| ③ Course over ground degrees; Magnetic north  | ⑧ End code   |
| ④ Speed over ground, knots (0.13 knots)   | *Blank shows when not positioned.  |
| ⑤ Speed over ground, kilometer per hour (0.2 km/hr)   |  |