

GPS Tracklogger

User Manual

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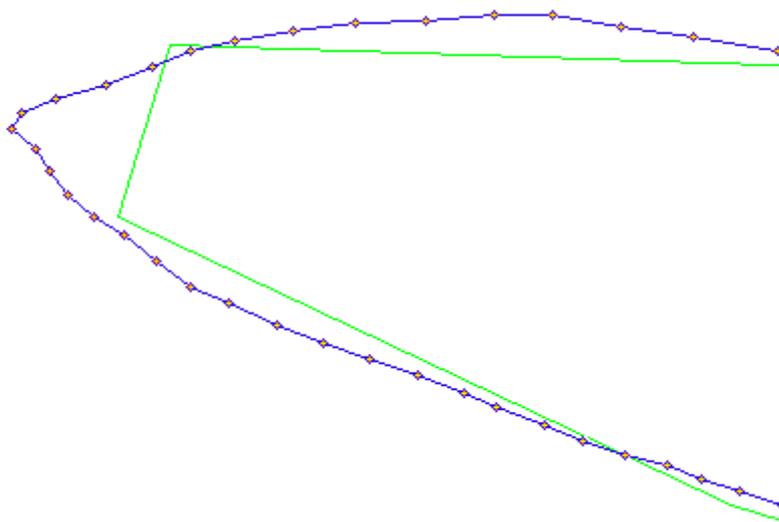
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1. Overview

GPS Tracklogger is a small device that records position data from the GPS receiver. It allows to record tracks very precisely - with 1:10000 arcminute resolution, what means greater then 20 cm accuracy. To get current position the NMEA protocol is used (this protocol is supported by most of GPS receivers). Then, it is stored inside 1MB nonvolatile FlashROM memory, which has 67000 track points capacity. To download data to PC, the LogTool can be used or any other application that uses MLR / Log_It protocol. Unlike the other loggers, Tracklogger lets you decide, how often the position is logged. Logging frequency may be set between 2 seconds and 8 minutes, what means that continuous logging time may vary between 1.5 and 372 days.

The track is stored with grater resolution then the one stored by GPS receiver. The green line, on the graph below, represents the track stored by GPS receiver, the blue line represents the track recorded by GPS Tracklogger.



2. Description

GPS Tracklogger may be used as an extension to your GPS receiver. Since it works with the older models too, it could act as an upgrade. You may consider buying it, especially when your receiver has limited track recording functionality.

The unit uses NMEA protocol to communicate with the GPS receiver. This is the most common protocol used by GPS receivers. The track data may be downloaded to PC by means of various applications, which support MLR / Log_It protocol (e.g. GPSDump). A special cable (null-modem) is required (it may be purchased with Tracklogger). In order to connect Tracklogger to GPS, standard GPS data-cable is needed (the same that is used to connect GPS to PC).

Rugged and pocket-size plastic case (the case size may vary insignificantly) is suitable for all kind of outdoor activities. GPS Tracklogger works on two AA size batteries (or rechargeables). One battery set lasts for at least 400 hours of continuous work (logging). Since it consumes a little power, GPS Tracklogger can even work on used GPS batteries.

GPS Tracklogger is equipped with small LCD display and green LED diode indicating proper work. The LCD display shows reports about current logger's state.

Successive screens displayed by the device during operating:

1. Intro screen:



2. Memory state:



3. Battery state:



4. GPS Tracklogger is ready to work:



5. During the work, the device shows actual time (UTC/GMT) and number of visible satellites. Flickering characters (|, -) means proper work.



Between some screens the actual memory (2) and battery (3) state are shown.

6. There are some additional screens like: low battery warning, low memory warning, etc.

2. 1. Configure track resolution

The current software version enables to skip custom number (from 1 to 254) of track points. That significantly extends logging time. Usually, GPS receiver sends position every 2 seconds. When the skipping function is off, the logger memory lasts for about 37 hours of continuous work (150 hours with the 4MB version). That is enough for a short/medium trip. For a longer trip, the skipping function is required. It is possible to extend logging time up to a year (the batteries would die months earlier), but there is a catch - extending logging time decrease track accuracy.

3. Specification

3. 1. Physical:

- Memory: 1 MB nonvolatile FlashROM memory,
- Tracklog: 67,000 points,
- Size: 2.48" W x 3.27" H x 1.14" D (63 x 83 x 29 mm),
- Weight: 5oz with batteries (140 g),
- Display: Dot matrix LCD screen (8 character * 2 lines),
- Green LED diode (indicates position catch);

3. 2. Optional parameters:

- 4 MB nonvolatile FlashROM memory (stores 270,000 points);
- 2 MB nonvolatile FlashROM memory (stores 135,000 points);

3. 3. Power:

- Power source: 2 "AA" batteries,
- Battery life: Over 400 hours of continuous operation,
- Standby time: Over year;

3. 4. Interface:

- RS232 interface with DB9M socket (standard 9-pin male socket);

Pin #:	Description
2	Data In
3	Data Out
5	GND

Connector diagram (DB9-M plug)

3. 5. Data stored by GPS Tracklogger:

- Date UTC (year, month, day),
- Time UTC (hour, minute, second),
- Latitude and longitude with the 1/10000 arcminute resolution (e.g. 52° 32,7253 E),
- Altitude with 1 meter resolution,
- Number of visible satellites,
- HDOP in the range between 0.1 and 25.5 with resolution 0.1,
- 2D/3D mode;

3. 6. Communication protocols:

- NMEA protocol (used to communicate between GPS and Tracklogger),
- MLR / Log_It protocol (used to communicate between Tracklogger and PC);

3. 7. Compatible software:

- LogTool (uses internal protocol, data stored in OziExplorer format),
- GPSDump (Log_It protocol),
- CompeGPS (Log_It protocol),
- MaxPunkte (Log_It protocol),
- Check'in (Log_It protocol);

4. Using the GPS Tracklogger

4. 1. Before the first use

To use GPS Tracklogger you will need GPS receiver that outputs “*NMEA 0183, Version 2.**” data via serial interface (RS-232). Most current GPS receivers are capable of that. GPS Tracklogger is provided ready-to-use. It only requires a pair of AA batteries to start operating. Please, ensure that the batteries are in the unit and are in good condition.

4. 2. GPS receiver configuration

The NMEA 0183 output should be turned on. The data-rate should be set to 4800 bps.

4. 3. Logging

After insertion of batteries the unit turns on (see chapter 2). Then, it is ready-to-log. After 30 seconds of inactivity it turns to stand-by mode. In this mode it still monitors the COM port, but it consumes a little power. When the position data or signal from PC is found, the logger turns on again.

4. 4. Download data to PC

To download data to PC the standard null-modem cable is needed. There are several PC programs that can be used (see chapter 5).

4. 5. Limitations

GPS Tracklogger is not waterproof. In wet conditions an additional protection is required. The device should be kept away from sources of strong electromagnetic field (like cell phones or radio transmitters). Even though the GPS Tracklogger proved to be reliable device, it is recommended to have a backup (e.g. turned on track recording function in GPS receiver).

5. Software

5. 1. LogTool

LogTool enables to download and erase data from Tracklogger. It is also used to update and restore the firmware. Most current versions allow configuring track resolution ("Configure" button). Downloaded data is stored in a text file (OziExplorer track format).

CAUTION: It is recommended always to use the newest LogTool and firmware versions in order to get rid of errors during track download. The transfer protocol, as well as the data format, differs between particular versions and it is not backward compatible. Before upgrading Tracklogger firmware it is recommended to download and erase the track as the new firmware version may not understand the data correctly.

5. 2. Other software

GPS Tracklogger works with any application that supports MLR / Log_It protocol. You may use:

- GPSDump,
- CompeGPS,
- MaxPunkte,
- Check'in;

6. Contact info

For more information please visit <http://tracklogger.lucznik.pl>.

You may also send an e-mail to: tracklogger@lucznik.pl.

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