GPS Flight Recorder Instructions

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The GPS Flight Recorder is a standalone device that records and displays multiple parameters of interest during the flight of a radio-controlled vehicle. Everyone likes to know "how fast does it go" and like any GPS device this will give you max speed. It's also useful for measuring receiver voltage since it can catch any dropout much faster than a telemetry module.

The GPS Flight Recorder is easy to use: No complex setup, external hardware, or telemetry are required, only an input DC voltage source such as the receiver voltage. It can also be powered by a stand-alone battery for use in other vehicles such as verifying the speedometer of an automobile or boat.

Seven parameters are recorded and displayed:

- flight number (increments unless you reset it so you'll know how many flights you've made)
- minimum input voltage (i.e. receiver if plugged into an open slot or Y)
- maximum GPS speed
- maximum GPS AGL
- maximum 3-D distance from start
- odometer
- current number of satellites received.

All parameters, except for flight number, are reset to zero at power on. (These instructions use the term "GPS" generically. The GPS Flight Recorder uses both the U.S. Global Position Satellites (GPS) and the Russian GLONASS navigation satellites, providing a faster and more accurate fix that using GPS alone.)

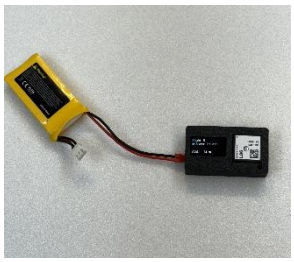
One of four display formats can be selected using the push button switch:

- Display flight number, minimum voltage, maximum speed, and maximum AGL in imperial units
- Display maximum distance, odometer, and number of satellites in imperial units.
- Display flight number, minimum voltage, maximum speed, and maximum AGL in metric units
- Display maximum distance, odometer, and number of satellites in metric units.

The flight number increments whenever a minimum altitude and speed are exceeded. This enables the user to keep track of the number of flights on the vehicle. The flight number can be reset to zero by holding down the push button during power on.

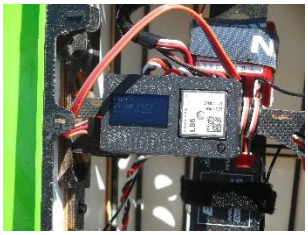
The minimum receiver voltage is important to capture during a flight as an indication of the robustness of the power source, i.e., whether high servo loads are causing power spikes, whether a "brown-out" condition could be occurring, etc. The voltage is sampled at over 10,000 times per second to capture short dropouts in the receiver voltage. If a separate battery is used to power the GPS Flight Recorder, of course only that battery voltage and not the receiver voltage is measured.

Installation and Start Up



The GPS Flight Recorder can be connected to any open servo port, including the Bind port, or a Y-connection to any port on the receiver. The signal wire is not used, **only power and ground**. The voltage must be between 4 and 9 VDC. (A 2-cell LIFE, 2-cell LiPo, 4-5 cell NiMH are fine.)

While the current draw is low, the GPS Flight Recorder should not be left connected to a battery for an extended time (greater than several hours, depending on the battery) as it will eventually discharge the battery. This should not be a problem if the GPS Flight Recorder is connected to a receiver port as the receiver should be powered down after each flight.



For best satellite reception, the GPS Flight Recorder must be installed with the antenna opening (the white GPS chip) facing up as shown in the picture with as clear a path as possible to the open sky. Avoid to the extent possible any conductive object blocking the path of the antenna, ideally from horizon to horizon. The accuracies of the GPS measurements are dependent on providing a good antenna installation. Generally, GPS altitude is not an accurate measurement, particularly when there is an obstructed view of the satellites at turn on or during operation

During startup the following screens display:

- Name and version number displays for about 2 seconds
- GPS ready displays for a half second
- Searching for GPS fix displays until it locates satellites (up to 3 min on first use)
- GPS finding satellites will display for a few seconds
- Flights so it is ready to use, go have fun!

It is best to have the GPS Flight Recorder outside when first powered up. This is so it can find the GPS satellites. While in most cases it will work inside the home, any metal shielding such as a metal roof will prevent it from finding a GPS fix.

Specifications

Input voltage: 4 to 9 VDC (reverse voltage protected)
Input current: 50 mA typical
Weight: 24 g (0.8 oz)
GPS (GNSS) sampling rate: 5 Hz
Input voltage sampling rate: > 10 kHz