

RC GPSlog

GPS data recording system for cross-country flying (OLC)



Manual version: 1.0

RC Electronics

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Introduction

The RC GPSlog was designed to provide a complete solution for cross-flying online competition (OLC). It was designed especially for use on board a radio controlled (R/C) aircraft, but would be useful in other applications too. The RC GPSlog is able to save GPS data to a micro SD card for later review on PC and upload on OLC server. It has built-in GPS receiver, pressure sensor and ENL (Environmental Noise Level) sensor.

Key features

- Lightweight at only 12 grams with micro SD card.
- Small: 36 mm x 20 mm x 10 mm.
- Integrated **ENL** detection sensor.
- Signal LED light for various status reports.
- 66 channels for GPS receiver.
- Records various flight data for later review.
- Wide range of input power: 4 – 10 volts DC. Powered from your aircrafts receiver battery.

How it works

The RC GPSlog module uses a very sensitive GPS sensor for detecting position. After take-off, module will record all required data to micro SD card in IGC file format. After flight, this file can be uploaded to OLC server for scoring. Status LED light indicates various states of operation to inform the pilot when module is ready for use.

Specifications

Board Dimensions	36 mm x 20 mm x 10 mm
Weight	12 grams
Temperature Range ¹	-10°C ~ +60°C
Input Voltage Range	4.0 – 10.0 volts DC
Input Current	90 milliamps
Measured voltage	4.0 – 10.0 volts DC

¹ Specifications are taken from component ratings and system limits and may not have been tested to the full extent of the specified ranges.

Physical Overview

Figure 1 shows the RC GPSlog module.

On board microphone is used to detect ENL level (when model is using motor for take-off). Motor status is recorded to IGC file.

RC GPSlog can also be used as vario module and altimeter. Extension cable with 4pin connector is needed for connecting the RC GPSlog to the telemetry module (RC TRX30).

Micro SD card is seen on figure 2.



Figure 1: The RC GPSlog module.

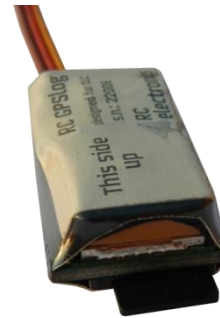


Figure 2: Micro SD (uSD) card.

Using the RC GPSlog module

Powering the module

To power the RC GPSlog module ON, plug the 3-pin JR female cable into a spare channel of the R/C aircraft receiver or connect it directly to the battery. Be sure to observe proper polarity when plugging the connector into the receiver.

Mounting the module

The module must be mounted in such manner that no metal or carbon is placed above GPS antenna. "This side up" label is indicating how the module must be placed.

It can be mounted:

- **Inside the fuselage of the aircraft.** In this case, there should be an opening of at least 0.5 sq. cm to allow air pressure inside the fuselage to equalize with the atmospheric pressure outside the aircraft. In many aircrafts, the fuselage is not airtight and is sufficiently vented to the outside air.
- **On the outside of the aircraft.** In this case, the pressure sensor should be at the right angle to the airflow for maximum accuracy. This means the air stream is flowing across the hole in the pressure sensor, not directly into or away from it. If possible, mount it away from the prop wash, because the measured altitude can increase by over 60 meters due to airflow from the prop.

The module can be mounted using double-sided tape, cable ties or Velcro. Velcro is recommended so that the module can be removed and interfaced with PC to download flight data.

Be sure the module is not touching any metal surfaces. Shorting the metal contacts on the module will result in a radio system failure.

Do not mount the module on top of the power batteries when using electric planes. They get hot and this can affect the altitude readings by up to 30 m.

Also be sure to keep the module away from water, fuel and other liquids.

Always range check the aircraft's radio system before flying with the RC GPSlog module installed to verify there is no system interference.

Operation

Each time you turn the module ON it will check if micro SD card is inserted. If micro SD card is present, any new pilot settings are read from card and saved to internal non-volatile memory for later use. After this, module starts searching for GPS satellites. When it is ready to use, it indicates this state via LED light. During flying all recordings are saved to an IGC file on micro SD card.

Led status

- Flashing with 1Hz: GPS location is BAD and you should wait with take-off.
- Flashing with 5Hz: Micro SD Card error. Check card.
- Always on: Ready for use. GPS location is detected and all is OK with micro SD card.

Revision history

September 2013	Initial release of owner manual.
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