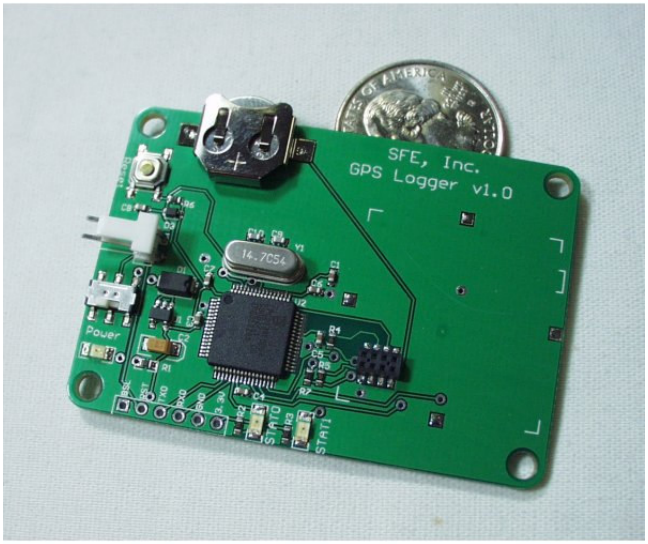


GPS Logger v1.0

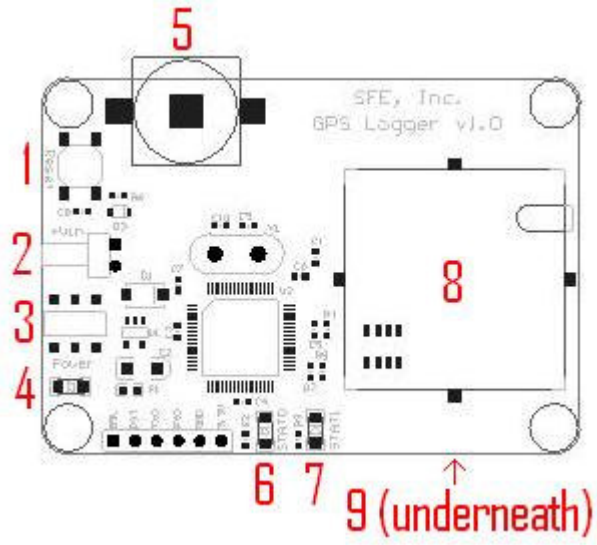
Where'd it go? Now you know!

3/1/2006

Here's a new gadget from Spark Fun Electronics more focused on entertainment than development. The GPS Logger V1.0 utilizes a Lassen IQ GPS module and can log data for up to 440 hours (KML mode) on a 256Mb SD card in two different formats depending on your application. In "NORMAL" mode, it will log all of the NMEA statements issued by the Lassen IQ. In "KML" mode, it will parse out the NMEA statements and rearrange them so that they can be "cut and paste" into a KML file to be read by Google Earth and plot your path over a satellite view of the planet! Now you don't have to give your relatives vague descriptions of your vacation, you can just email them the file!

1 Overview

The layout of the device is as follows:



1) Reset for the LPC2138
2) Battery connection, 4V to 7V
3) Power switch
4) Power LED
5) Coin cell battery holder (for the Lassen IQ's almanac)
6) Stat0 LED, KML format logging activity
7) Stat1 LED, normal format logging activity
8) Lassen IQ GPS module
9) SD card socket

2 Setup and Operation

Install a CR1225 or equivalent 12mm coin cell battery in the coin cell holder and install your Lassen IQ module (don't forget to install your antenna before placing the Lassen IQ if you intend to solder down the ground tabs!). Install a blank SD card (formatted in FAT16) , connect your battery

source and turn it on. The power LED will light up and the STAT0 and STAT1 LEDs will blink sequentially during initialization. If the STAT0 and STAT1 LEDs continue to blink, turn the unit off and check and/or reformat your SD card. One or two seconds after successful initialization, the STAT1 LED will start to blink indicating that it's logging data from the Lassen IQ in NORMAL mode. The duration of the LED pulse will be short at first while the unit acquires a lock, then will become longer after it gets a lock. Let the unit run for at least 15 minutes so the Lassen IQ can download an almanac.

After 15 minutes or so, turn the unit off, pull out the SD card and put it in your card reader. You will find 2 files on the card, one called GSPCON.txt and one called GPS0.txt.

3 Files

3.1 Configuration

GPSCON.txt is the configuration file for the GPS Logger and contains a single line, "MODE = NORMAL". This can be changed to "MODE = KML" to log KML format (longitude, latitude and altitude).

It is worth noting that files logged in "NORMAL" mode can be quite a bit larger than files logged in "KML" mode. This is because "NORMAL" mode logs everything that the Lassen IQ outputs, whereas "KML" mode compresses the data and only logs the three important dimensions (longitude, latitude and altitude).

The GPS Logger can log up to 256 separate files, and they will be named in sequence as GPS0.txt to GPS255.txt. If you want to start a new file, just hit the reset button.

3.2 NORMAL Mode

GPS0.txt contains the data logged during the device's first power-up. You will notice that the first lines of the file contain no coordinate information. This is the period that the Lassen IQ is acquiring a lock. You will see this at the beginning of all of the normal mode log files, though it will be considerably smaller after the device has an almanac to draw on to minimize locking time.

3.3 KML Mode

As stated earlier, you can change the logging format to "KML" mode by changing the word "NORMAL" to "KML" in the file GPSCON.txt. In this format, the GPS Logger will log longitude, latitude and altitude (in that order). The advantage of this format is that the data can literally be "cut and paste" into a KML file to be viewed by Google Earth. As a teaser, here's a top view from our demo file "Casey's Lunch.KML":

To view KML files in Google Earth, you must first install it on your computer, then you

can just double click on the KML file and Google Earth will start. Please visit http://earth.google.com/ for details.

When powering up the GPS Logger in "KML" mode, the device will go through the same initialization as in "NORMAL" mode, but the STAT0 LED will be active instead of STAT1. It may take up to a few minutes for it to start blinking though, as it doesn't start logging until the Lassen IQ acquires a lock. If it doesn't lock after several minutes, try moving your antenna around.