GPS Project Kit

Modification and Program
By Tim Laren

I started with the two articles by Eric Williams and Ken found on the Mavin Web page (http://mavin.com/slickitems.html). I found that both articles were a great start. By combining information from both articles, I was able to make the modification easier and the data more useful. After that, I created a program using Visual Basic that would readout all critical data and do the proper conversions. The program gives Latitude, Longitude, Elevation, Speed and satellite statistics.

For this project you will need the following:

- Exacto knife
- Small soldering iron
- Solder
- 6" small gage wire
- 8 pin mini-din connector
- DB-9
- 12V DC

I found an old cable with the 8 pin connector attached, I think it was some Mac mouse or ADB cable. This was the only thing that may be hard to find, and unfortunately I have not looked into a source because I already had one.

1. Look at picture below and find the two traces identified with the red CUT line. Use the Exacto knife and cut two sharp lines through these traces. By cutting through twice you have a better chance of actually separating the traces without making it too ugly.
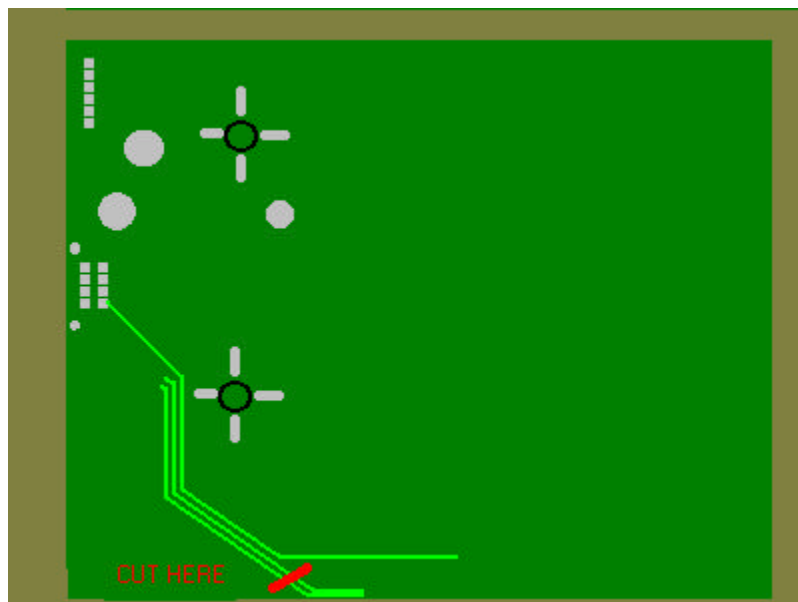
2. Look at the next picture and find the VIA's labeled A1 and B1. Use Exacto knife and clean off the green solder mask from the top of the VIA's.
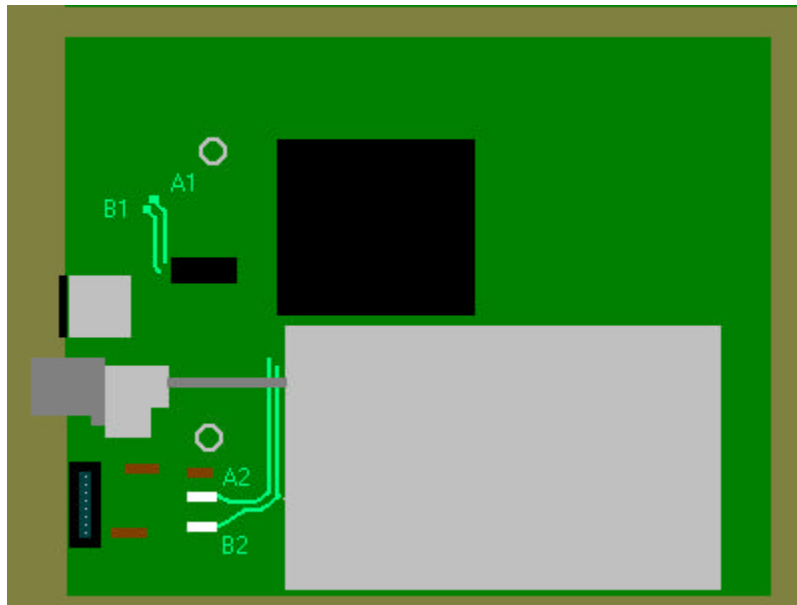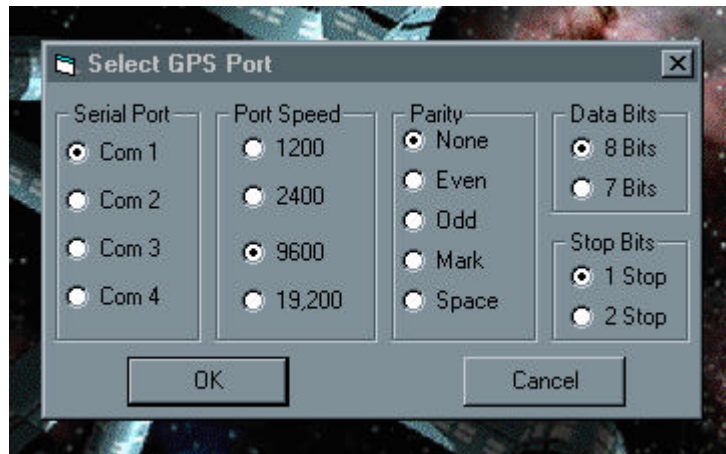

3. Tin the VIA's with a little solder.
4. Find the two points A2 and B2, at FL3 and FL4. Place some new solder on the end of the FL's that is farthest from CN1.
5. Cut two wires to length and strip and tin the ends. These wired will connect A1 to A2 and B1 to B2.
6. Place one wire over the VIA A1 and press down with the soldering iron till the solder flows.
7. Place the other end of the wire over the end of A2 (FL3) and press down with the soldering iron till the solder flows. Note: If you apply too much heat you may break loose FL3. In this case, just attach the wire to the pad where FL3 was attached.
8. Place one wire over the VIA B1 and press down with the soldering iron till the solder flows.
9. Place the other end of the wire over the end of B2 (FL4) and press down with the soldering iron till the solder flows. Note: If you apply too much heat you may break loose FL3. In this case, just attach the wire to the pad where FL3 was attached.
10. Connect the +12V DC cable to CN1 Pin 1. Connect the GND cable to CN1 Pin 2. On my first unit I removed the connector CN1 and attached a cable to a cigar lighter plug. Removing CN1 was not easy. On my second unit I just tagged the wires to the backside of the board and put silicon over the wires for support.

11. Make a cable connecting the DB-9 to the 9 Pin DIN connector as follows:

```
9 Pin D        8 Pin DIN
   5  ───────── 4
   3  ───────── 3
   2  ───────── 5
   4  ⌐
   6  ⌐
   7  ⌐
   8  ⌐
```
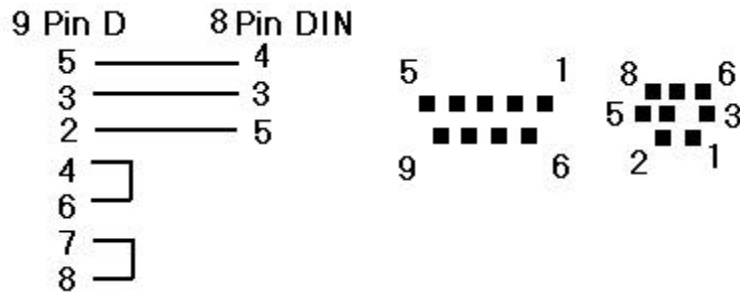
12. Connect the antenna and place it facing the sky.
13. Connect the 9-Pin D to a serial port on your computer.
14. Apply +12DC to the receiver.
15. At this time the GPS will start sending out data to the serial port.
16. Boot up GPS.exe program.

Select GPS Port

| Serial Port	Port Speed	Parity	Data Bits
● Com 1	○ 1200	● None	● 8 Bits
○ Com 2	○ 2400	○ Even	○ 7 Bits
○ Com 3	● 9600	○ Odd	**Stop Bits**
○ Com 4	○ 19,200	○ Mark	● 1 Stop
		○ Space	○ 2 Stop

OK   Cancel

After the program is started select the proper Serial Port, Port Speed, Parity, Data Bits and Stop Bits and Click the OK button. All should be the default except maybe the Serial Port. I use Com 1. Click OK and the Navigate window will appear.
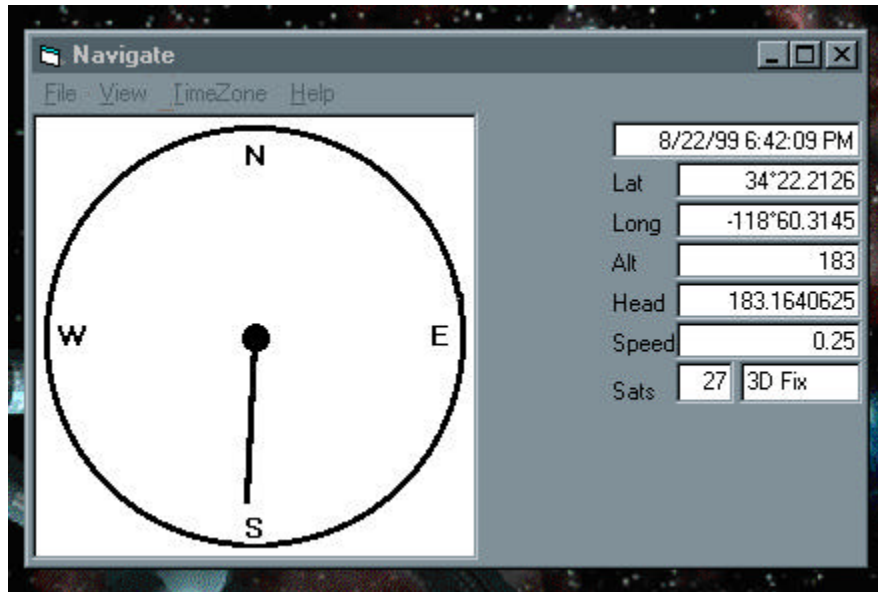
Within a few seconds the Time and Date should start updating. Within 3 minutes the Lat and Lon should be accurate. The 'Sats' box shows how many 'healthy' satellites are flying around and the box next to it lets you know what satellites you are seeing. You will see a 2D fix for a two dimensional fix and 3D for a fix with three or more satellites. The compass will start moving and match the Heading.

Adjusting the width of the program box will change the size of the display. The text and the readings will stick to the side and the dial will grow to fill the remaining space. Also the box will never shrink too small that the reading cannot be read. You can exit program by the File|Exit or the standard corner exit box. The Time Zone Menu allows setting your local time zone. The default is for California, My home.
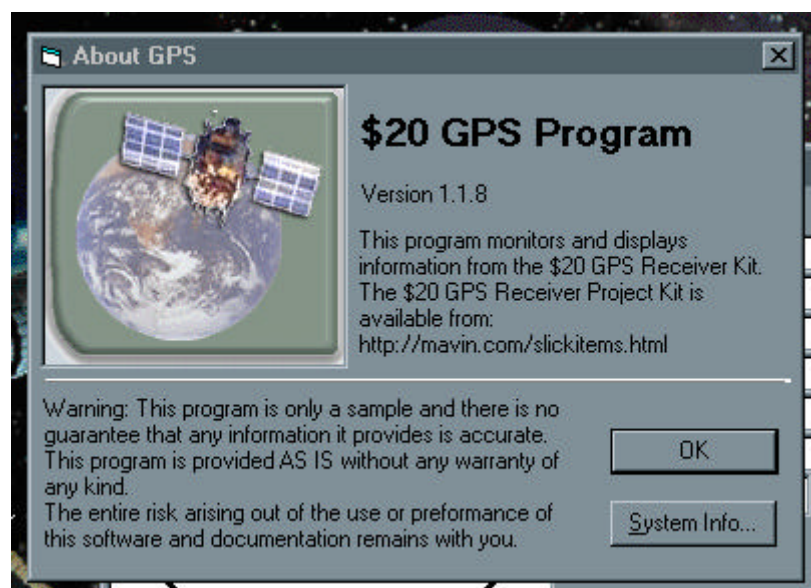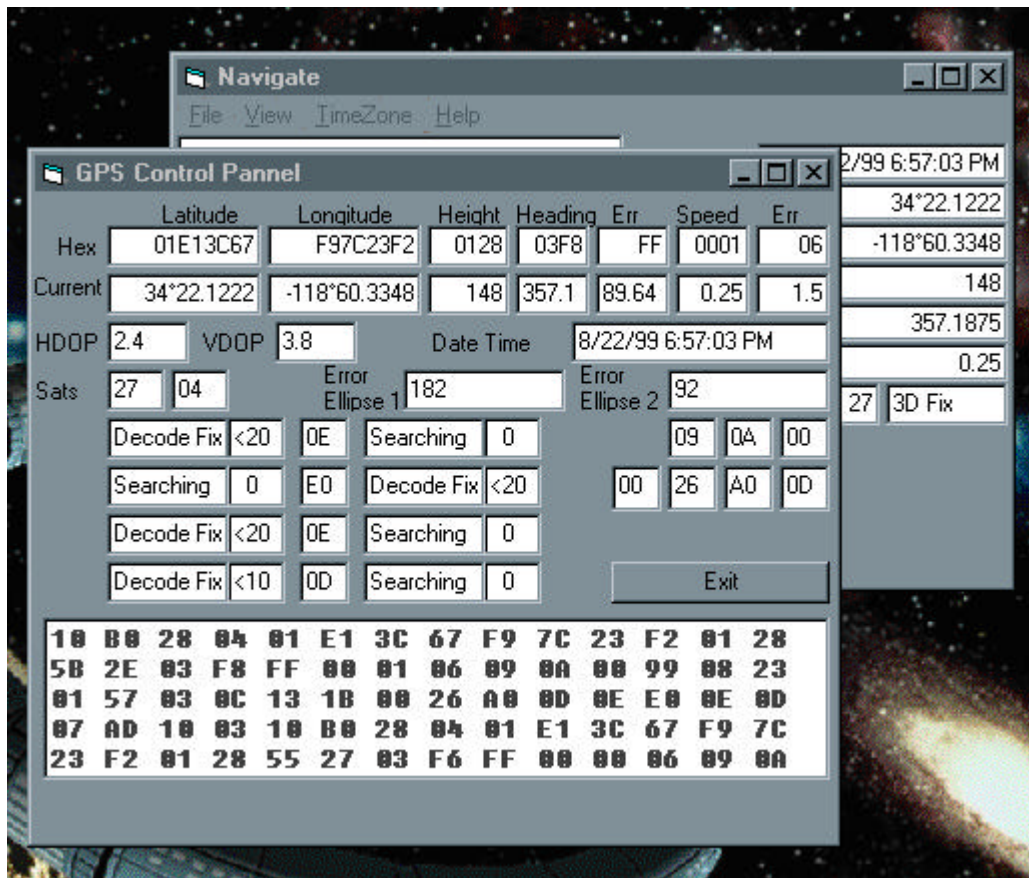
The View menu allows showing more information about what is being received from the satellite. The Sats box should soon say 27 and the next box will start at 0 and go to 2 for a 2D fix and 4 for full 3D fix. 1 is 1 satellite, 2 for 2 satellites and 3 is for 2D fix and 4 for 3D fix (3 or more locked satellites). In the following picture you will see several boxes that show "Decode Fix" and "Searching". These show up to 8 satellites that you are tracking. The smaller box shows the signal level.