

GPS600

A GPL (General Public License) GPS Receiver with a USB Interface

Introducing the GPS600 Receiver for educational, engineering, scientific and R&D applications.

Key Features

- A General Public License GPS Receiver
- For use with laptop or desktop PC's
- 12 Parallel L1 C/A Channels
- Use with Windows or Linux operating system
- Interface and Configuration Ease

Innovative Features

The all new GPS600 is a commercial GPS receiver board which is programmed using "Open Source" code under the GNU General Public License see: <http://www.gnu.org/licenses/> for more information.

The GPS600 receiver is designed to be used with a laptop or desktop PC running Windows or Linux. The board uses a standard USB to serial port converter IC so the communications to and from the receiver are through standard serial port commands. The GPS600 comes with the "RedBoot" mini OS already installed in flash memory.

Hardware

The GPS receiver hardware is based on a Novatel SuperStar II board which has been modified with additional RAM memory for larger GPL-GPS program storage space. The GPS correlator and ARM microprocessor are combined into one IC, a GP4020 made by Zarlink Semiconductor. The GPS receiver is a plug-in assembly attached to the GPS600 USB Interface board. The GPS600 serial I/O interface uses a FTDI Integrated Circuit to communicate with the PC. The data from the GPS receiver is made



available internal to the PC just the same as if it were a standard serial I/O port. The GPS600 includes a momentary reset switch to re-boot the GPS receiver independently from the USB interface. All communication signals to/from the GPS receiver is by way of the USB interface. The GPS600 has a super cap back-up feature which can be disabled if needed by a simple jumper connection. The 1PPS timing signal output is brought out to a plug-in connection. There is also a programming switch on the GPS600 board for updating the flash memory circuit. Several LED's are installed on the unit providing visual indications of power, USB activity and serial port data transmission.

Software

The GPS600 Receiver is supplied with a working version of GPL-GPS software for ease of initial

setup and operation. This software processes all 12 satellite channels simultaneously. The sample source code provided with the board shows things like pseudorange information, C/A code, sub-frame data, satellite position, tracking as well as some diagnostic information. Information on where to get the opensource compilers is included.

Applications

The GPS600 Receiver is ideal for a wide range of GPS applications including:

- Educational
- Engineering
- Scientific
- Research & Development
- Testing & Manufacturing

GPS600

12 Channel L1 C/A Code OpenSource GPL-GPS Receiver

```
Time = 2008/1/19 2:52:0.449 (state:2)
ECEF = (X:2.437306e+04 Y:-5.224574e+06 Z:3.646447e+06) tb:4.220e-02
LLH = (Lat:35.09332 Lon:-89.73271 Hgt:182.44)
State: positioning = 1, last position valid = 1, busy = 1
Ch: PN C Pr V Ep V Pseudorange Elev Azim.
0: 22 L 1 1 1 3.306172e+07 44.8 83.4
1: 14 L 1 1 1 3.358065e+07 71.2 55.9
2: 7 A 0 0 0
3: 19 A 0 0 0
4: 23 A 0 0 0
5: 1 L 1 1 1 3.432214e+07 73.8 216.0
6: 13 C 0 0 0
7: 21 A 0 1 0
8: 32 L 1 0 0
9: 18 L 1 1 1 3.488372e+07 6.7 92.6
10: 11 A 0 0 0
11: 20 A 0 0 0
```

The picture to the left shows the position solution (LLH) screen which is one of eight different screens in the sample GPL-GPS software included with the GPS600. The source code for each screen is also supplied making it very easy to examine to see how it works and/or modify to meet specific functions. The screens, keyboard selectable, used in the sample code are as follows:

- D=Debug Information
- E=Ephemeris Information
- L=Logging Information
- M=GPS Satellite Message Information
- T=Tracking Information
- P=Position Information (LLH)
- R=PseudoRange Information
- S=Stop/Start Screen Display

STANDARD FEATURES

- Use with Windows or Linux Operating System
- GPS firmware fully Open Source
- 12 simultaneous parallel channels
- L1 band (1575.42MHz) operation
- C/A code (1.023MHz chip rate)
- 1PPS output synchronized to GPS
- GPS receiver based on original Plessey Orion design
- Standard USB interface

PHYSICAL CHARACTERISTICS

- Size:** 95.5 x 63.5 mm (3.75 x 2.5 in.)
- Overall Height:** 19.05 mm (0.75 in.)
- Weight:** 57g (2.0 oz.)
- Power Consumption:** 200mA max @ 5 volts
- Operating Temperature:** -10° to 65° C (Temperature range is limited by VBAT supercap)

TECHNICAL SPECIFICATIONS

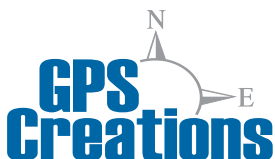
- RF Sensitivity: -150 dBm for tracking
- TTFF: <10 sec hot start (with current almanac, ephemeris, time and position)
<2 min. cold start (with no information)
- Accuracy: Position: 20m 2dRMS without S/A
Timing: 1pps< 1 Microsecond (1 Sigma) of GPS
- Antenna connector: MCX female
- Current limiting (50 mA) voltage feed to GPS antenna (+5 or 3.3 volt)
- Warranty: One year parts and labor FOB GPS Creations factory (Condition must be as original and unmodified)

ORDERING INFORMATION

GPL-GPS OpenSource GPS Receiver - Part Number - GPS600
Includes magnetic base GPS antenna and USB interface cable

The GPL-GPS source code can be downloaded from the internet - see: <http://gps.psas.pdx.edu/GpsSoftware/>

Visit us on the web at www.gpscreations.com for more information on all our products



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