

**GPS Documentation.**  
*4/8/2011 IGVC senior Project*  
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**General Information:**

Two GPS receivers:

*1. Novatel Propak LB-Plus*

Can provide the best accuracy of locations using OMNISTar differential correction service who are willing to provide this service free of charge for IGVC competitors. We also have a sponsorship with. Novatel in which they agreed to take on any not too expensive repairs.

*2. CSI Wireless MiniMax*

This receiver is less accurate, but still can get you to about 1 meter of target using the WAAS DGPS service which is a free differential 60-70 cm potential service network.

**Sponsorships:**

*Novatel:*

Contact Sean Walsh, sales. [Sean.Walsh@novatel.com](mailto:Sean.Walsh@novatel.com).

Get any support software here: <http://www.novatel.com/support/>

1-800-NOVATEL - dial "1" and then if you get a messagerie, press "1"

Info: They were willing to make small repairs to the Novatel Receiver at no cost to us. We agreed to display their logo on our website and their names on our robot at the competition. Stickers are available in a small white envelope to be placed on the finished Yclops robot.

OMNISTar GPS differential service:

Contact John Pointon [jpointon@omnistar.com](mailto:jpointon@omnistar.com)

Info: Can provide 90 days free of charge DGPS service for those who enter the IGVC competition. This service has potential for 10-15 cm accuracy.

**NMEA codes and general information:**

visit <http://www.gpsinformation.org/dale/nmea.htm> for some very insightful information.

NMEA is the standard protocol for sending and receiving GPS information. There are several general functions that will transmit differing information, the most useful we found to be the GPGGA and GPRMC which convey position, velocity, and heading. Also a possibility is the use of GPRMB which can give you information relative to a certain waypoint, use SETNAV to set destination waypoints. Refer to the documentation for BOTH the miniMax and Novatel user manuals (in

documentation folder of GPS) which will provide sentences of commands that can be written over a serial port to the GPS.

Example, to access GPGGA information on the Novatel receiver, one would write:

**log gpgga ontime 1**

This command will ask the receiver to display GPS latitude and longitude coordinates once a second.

Alternatively, the command to perform this same function on the MiniMax receiver is

**\$jasc,gpgga,1**

And will display the same information as mentioned above.

### **Other Considerations:**

#### *Power*

Be sure to supply enough power to both GPS Receivers, see documentation files for power needed. Novatel has been using a 9V 1000mA AC-DC adapter. We had problems when supplying a sub minimum amount (12V 300mA) and it acknowledge reception of power through it's LED but we could not get any readings. MiniMax receiver seems to do ok with less power.

#### *Support Files*

In the support files you will find stuff for MiniMax and for Novatel

Novatel includes the following important files:

1. User Manuals - you will find all NMEA commands and know how necessary here for both Novatel and MiniMax
2. DARPA project files – we didn't really use this, but you may find it to be a good reference.

#### *Software*

You may also find support software for both the Novatel and MiniMax receivers. The Novatel's software is available <http://www.novatel.com/support/> and has traditionally been called support for OEM4. Find a file that also download for "Novatel CDU" which is an interactive display for using the GPS. Also check the documentation if there is a compressed installer available for this program. MiniMax also has support available called "PocketMax".