Q:
Our school will be using Nova to control the satellite interface most of the time, but I would like to design some projects for my advanced students to command the satellite interface with their own software. Is EASYCOM the protocol? Is there a specification that will help us write custom software to steer our G5500 rotor?

A:
The interface uses the EASYCOM format which basically is "AZ ###.# EL ###.#". Some programs will adjust to and add more information to this format. If you feed the output of NOVA to HyperTerminal, you can see and study the serial stream that is being sent by NOVA. In the Sat688 program, the serial stream sent in the EASYCOM format is captured, the decimals and 1/10th degree is stripped away and the ASCII data is converted to BCD so that some math can be done on the numbers.

The feedback from the G5500 rotor is a voltage that corresponds to the position of the rotor, these voltages are adjusted for full scale readings by the pots in the back of the rotor control box. The Sat688 interface is set up for a voltage from the rotor of 4.5 volts for 180 degrees EL and 3.61 volts for 360 degrees (right hand north).

The interface is set up so that 2 ADCs of the PIC read the EL and AZ voltages, converts those voltages to binary numbers. The program then takes the commanded position, converts that to the equivalent ADC value. The commanded ADC value is compared to the actual ADC value, then a decision of direction is made and the appropriate really closed to move the rotor. The PIC then monitors the voltages coming out of the rotor and when the returned voltage is within the programmed range of the commanded position, the relay is opened. The interface moves AZ first then EL.

That is what happens in the software in a nut shell. Have your students look over the opening comments and then the comments within the program and they should get some ideas of how it all works.

It would be a good project to have your students wire their own programs in VB or C++ to send commands to the rotors. Again, a good place to start is to try HyperTerminal to see the output of NOVA and then use HyperTerminal to control the rotors.