

B. Antenna Stabilization Procedure

Documentation is pending, RCP02 procedure is given below

After the initial power-up and cabling has been completed, configuration of the RCP02 must be carried out in a particular order. A suggested sequence is given below, which is based on the assumption that none of the parameters are yet correct. When changes are later made to one particular area, it is not always necessary to redo this entire sequence of steps. Detailed instructions for modifying parameter values are described in Chapter 4.

1. Install the jumpers for tachometer voltage range, then adjust the tachometer and drive gain potentiometers to match the requirements of the antenna electronics.
2. Use the "site display" command to choose the parameters you would like to show on the front panel display.
3. Define most of the fixed information for each axis — the number of bits and the polarity of angles, the coding format, the validation and start signals, and so forth. This is performed using the "axis" command.
4. For the elevation axis — temporarily set the shutdown limits short of mechanical stops, leaving enough distance for the antenna to coast to a stop in case of errors. Also, set the limit switch options and polarity.
5. Determine the motor starting drives, the nominal drive slope, and the maximum angular velocity. Determine the tachometer and drive signs, then set the tach and the drive filter time constants fairly short (.03 second). Set the velocity feedback dead zone to 0.3, and the feedback slope to 25. The velocity servo should now be stable and optimized for best operation.
6. Set up the position servo parameters to achieve a stable motion between two positions that are separated by an angular distance.
7. Make absolute velocity calibration; set up the velocity check and the unresponsive-antenna check.
8. Set up the host computer's serial communications line.

It may be necessary to disable the soft limit protection, especially when the initial dynamic antenna measurements are performed or while setting up the velocity and position servos. If the servos are not properly set up, the computed safety limits may be incorrect and could actually cause damage rather than protect against it. A temporary measure to prevent this from occurring is to set the shutdown limits of travel to 15° short of either extreme. If the antenna becomes unstable, this will ensure a shutdown of the RCP02 and allow the antenna to come to a stop under zero-drive conditions.

The RCP8 is controlled by a two-way, asynchronous RS-232 data line that is typically run at speed of 19.2K baud. A host computer controls the servo and the antenna while receiving feedback status. The information is then transferred in packets consisting of two or more bytes—each packet begins with a SYNC byte and ends with an END byte of FF(Hex). All SYNC bytes have the MSB set and the value indicates the type of packet to follow. The variety of packets currently available are 80(hex) for antenna, C0(hex) for BITE, and B0(hex) for time. The packet layouts are described in the following paragraph. Each packet-type has a specific direction of travel, such as to or from the RCP8, but packets can arrive in any order within the serial stream.