OPERATION BY COMPUTER

1. Connect appropriate cable from your computer to Control Unit's DB9 connector on rear panel.

2. The control unit's RS232 interface is configured as follows:

baud rate	9600
bits	8
stop bits	1
parity	none
handshake	present, but not used

A. Commands in upper or lower case are acceptable.

B. All commands are followed by an ENTER (carriage return / cr).

C. Remote operation (Mode 1) is initiated automatically from the terminal.

3. The RC2800DC Azimuth Controller circuit board has an additional port to interface with the MT-Series Elevation Rotor Controller Box. This may be handy if you would like to control your antenna array in both the azimuth and elevation axes via a computer. If you have purchased an M^2 MT-Series Elevation Rotor Controller and wish to control it simultaneously with the RC2800DC Azimuth Controller the following steps must be made:

A. Contact us to order the MT- Series Jumper Cable

B. Remove the top covers of both the RC2800DC and MT-Series Control boxes

C. Attach the MT-Series Jumper Cable to the 10 pin socket labeled J41, with the RED STRIPE UP, on the RC2800DC Azimuth Controller circuit board. J41 is located just right above the RS232 Port cable. Now snake the jumper cable through the rectangular hole in the back plate of the controller.

D. Next insert the jumper cable through the back side of the back plate of the MT-Series Elevation Control Box. Attach the jumper cable to the 10 pin socket labeled J41 on the circuit board, with the RED STRIPE UP.

NOTE: BOTH THE AZIMUTH AND ELEVATION CONTROL BOXES MUST BE TURNED ON TO CONTROL THE AZIMUTH AND ELEVATION AXES.

SUMMARY OF CONTROLLER COMMANDS

Typed commands in bold italics, cr = ENTER or carriage return, # = real number.

FUNCTION	COMMAND		DESCRIPTION
SELECT:	***A*** or ***E***	cr	where A = Azimuth, E = Elevation
SPEED:	***S#***	cr	where S = 1 (minimum speed) through 9 (maximum)
GO TO:	**#**	cr	where # = a number within your programmed parameters
INCREMENT	**+**	cr	where + = bump + approximately .5 degree
DECREMENT	**-**	cr	where - = bump - approximately .5 degree
STOP	***S***	cr	where S = stop movement
UPDATE	***cr***		where cr gives Position, Speed, and Movement (ST=stopped / MV=moving)

CONTINUOUS UPDATE	***U***	cr	where U = continuous update of Position, Speed, Movement while positioner is in operation
RETURN TO 'REQUEST UPDATE'	***N***	cr	where N = return to 'request update' mode from 'continuous update'

HOW THE COMMANDS WORK

1. Status Update is available in two modes.

A. In the default mode (N), ENTER (cr) will cause the controller to return a single status update:

-selected controller (A or E)
-present position (P =)
-speed (S =)
-operation (ST = stopped, MV = moving).

B. For a continuous update mode during MV, type: "U" and enter

A P=135 S=5 MV

Meaning: A (azimuth mode), P (to position)=135 degrees, S (speed)=5 (50%), MV (moving).

C. To return to 'request update' mode, type: "N" and enter

TO SELECT AZIMUTH OR ELEVATION CONTROL

Type one of the commands below and follow with an ENTER (cr):

-for Azimuth, type: A
-for Elevation, type: E

Once azimuth or elevation is selected, the A or E command is no longer needed. All commands that follow will affect only the selected positioner.

TO INCREASE OR DECREASE SPEED (assumes A or E has been entered)

Type the command and follow with an ENTER (cr). Speed changes may be entered while positioner is stopped or moving.

-for minimum speed, type: S1
-for maximum speed, type: S9

Commands S1 through S9 are available. For instance, S4 will set speed to 40% of maximum. Positioner will return a confirmation with "S=4" and update status at time of command. For example, command "S4" might return:

E P=180 S=8 ST

Meaning: E (elevation mode), P (position)=180 degrees, S (speed)=8 (80%), ST (stopped) (or MV -moving).

TO SELECT A POSTION (assumes A or E has been entered)

Type the command and follow with an ENTER (cr). Positions below 0 or above 360 degrees will cause the display to flash:

-select recognized Azimuth and Elevation positions from within your programmed parameters.

Positioner will return a confirmation with "P=XXX" and update status. For example, the command "135" might return:

A P=135 S=5 MV

Meaning: A (azimuth mode), P (to position)=135 degrees, S (speed)=5 (50%), MV (moving).

RETURNED VALUES

All strings, including updates and error conditions, returned to the terminal by the controller are followed by a line feed (OA) and a cr (OD). No echoes are returned.

ERROR CODES:
There are a number of error conditions, returned by the controller to the terminal, as shown below (assume Azimuth):

A ERR=03
"Unexpected character" - returned when the received command is unknown.

A ERR=04
"Unexpected byte" - returned when the number of bytes received exceeds the buffer space.

A ERR=05
"Low 12 volts" - returned when the controller has detected a low 12 volt condition and has saved the current position and speed in a non-volatile memory. If the positioner was moving when this condition occurred, pulses counts could be lost, causing a slight error in the saved position.