



# RC3500

## Satellite Earth Station Antenna Control Unit



Avoid the time consuming tasks of manually positioning your mobile antenna and tracking inclined orbit satellites. The RC3500 allows even non-technical personnel to automatically locate and position a mobile antenna within minutes from power up. The RC3500 is derived from the RC3000 ACU for mobile antennas.

### FEATURES

- **Automatic Positioning**  
*precisely positions antenna with the press of a single key, automatic stowing*
- **Optional Step Track Memory**  
*Step Track, Memory Track & Intelli-Search™ modes*
- **Optional support Norad TLE**  
*Norad Two Line Element Track*
- **Non-volatile Memory**  
*store position and polarization data (including inclined orbit track data) for 50 satellites*
- **Automatic Recall of Stored Satellites**  
*inclined orbit tracking automatically initiated*
- **User Friendly Interface**  
*operator interaction similar to industry standard RC2000 fixed base controllers*
- **Continuous Antenna Status Monitoring**  
*motion limits, jammed and runaway sensing*
- **Multi-Band Operation**  
*supports C, Ku, L, Ka and X-band satellites*
- **RS-422 or RS-232 Control Interface**  
*remote control from many popular PC software packages*
- **Resolver Type Position Sensors**  
*0.005 deg resolution, 3.5 minute accuracy*
- **Optional DISA compliant Beacon Receiver**  
*A low threshold of 43dBHz, fast re-acquisition of less than 1s and high linearity, manufactured by Novella Satcoms Ltd.'s receivers the preferred choice for small antenna field deployable stations (C,X , Ku and Ka Band) requiring fast automatic satellite acquisition.*
- **Directly Interfaces to High & Low DC Motors**  
*Optional support for Antenna Interface Units to drive AC motors.*

# Research Concepts, Inc.

5420 Martindale Road  
Shawnee, Kansas 66218-9680  
USA  
Phone: 913.422.0210

[www.researchconcepts.com](http://www.researchconcepts.com)

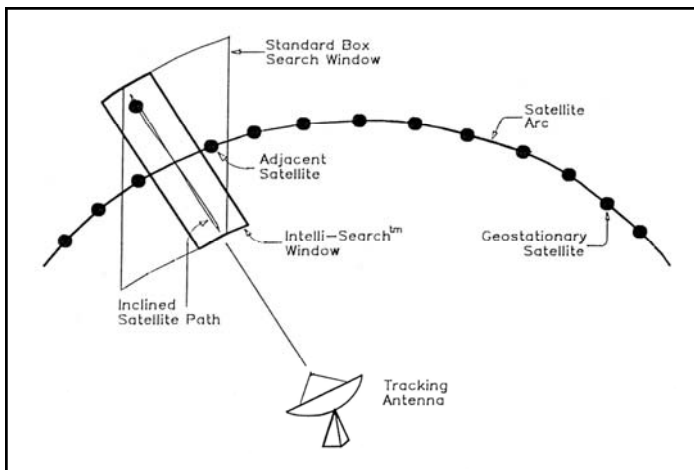
## TRACKING ALGORITHM

The RC3500 tracking algorithm can be divided into three distinct stages - STEP\_TRACK, MEMORY\_TRACK, and SEARCH.

In **STEP\_TRACK**, the controller periodically peaks the receiver's AGC signal strength by jogging the antenna. The time and position are recorded in a track table maintained in the controller's non-volatile memory. The interval between peakups is determined by antenna beamwidth (determined from antenna size and frequency band), satellite inclination and a user specified maximum allowable error (in dB). When a track table entry exists for the current sidereal time, STEP\_TRACK switches to MEMORY\_TRACK.

In **MEMORY\_TRACK**, the controller smoothly moves the antenna to azimuth and elevation positions derived from entries in the track table. The time between movements is determined by the same factors which govern the time between peakup operations in STEP\_TRACK. By increasing the maximum allowable error, antenna movements can be performed less frequently. In MEMORY\_TRACK, the accuracy of the track table is monitored by periodically peaking up the receiver AGC signal. If the error exceeds a level set by the user, all entries in the track table are flagged for update.

**SEARCH** is entered when the satellite signal has been lost. The RC3500 utilizes Intelli-Search, an efficient search algorithm that minimizes errors associated with traditional box searches and frees the user from having to update vague search window parameters. This scheme accounts for the specific mount geometry, calculates the nominal trajectory for the satellite and then searches in an area that coincides with the satellite's expected path. When the satellite is located, the controller re-enters the STEP\_TRACK mode.



## SPECIFICATIONS

### PHYSICAL

<b>Size:</b>	19.0" x 3.5" x 17.0" (rack)
<b>Weight:</b>	20.0 lbs. (A model), 18.0 lbs. (B model)
<b>Temperature:</b>	0° – 50° C
<b>Input Power:</b>	115/230 VAC: switchable (A model), specify input power when ordering (B model), 50/60 Hz., 50 W idle, 850 W when moving – CE compliant
<b>Display:</b>	4 x 40 LCD

### INTERFACES

<b>Position:</b>	Elevation inclinometer, azimuth & polarization potentiometers, azimuth & elevation pulse sensors (Reed, Hall Effect, Optical), discrete limit switches
<b>Serial:</b>	RS-422/RS-232 (Jumper selectable on PCB)
<b>AGC Input:</b>	-15 to +15 VDC input range, 2M $\Omega$ input
<b>Output:</b>	12 – 36 VDC motor drive (A model), 90 VDC motor drive, 180 optional (B model)