



# RC2000X

## Tracking/ Remote Controlled Antenna Controller for Dual Axis Antennas



### FEATURES

- **Inclined-Orbit Tracking**  
*Step Track, Memory, & Search modes supported, allows setup for continuous Step Track operation, Track Table may be edited*
- **Intelli-Search™**  
*eliminates problems associated with traditional searches – search mode may be overridden for transmit applications*
- **Polarization Control Interface**  
*optional automatic or manual polarization control for rotating feeds with potentiometer feedback*
- **High-Resolution Pulse Sensor Interface**  
*ensures accurate Ku-band positioning*
- **Software Controlled Limits**  
*provides backup to mechanical limits*
- **Non-volatile Memory**  
*stores 38 preset position and polarization Combinations*
- **Serial Remote Control Interface**  
*includes RS-422 Serial interface. automated control with many popular packages; basic PC-control software is included. supports Remote Front Panel*
- **Ethernet Control**  
*Optional Ethernet control via web browser available using the RCI Web Server device*
- **Solid-State Drive Circuitry**  
*provides reliable, quiet operation, rated at 10A with built-in over-current protection for use with 36V DC linear actuators, control of large antennas possible*
- **Dual Speed and Speed Compensation**  
*user programmable dual speed for fast slewing, fine positioning. Adapti-Drive™ maintains speed with varying load*
- **Multi-Band Operation**  
*support for tracking inclined orbit satellites at C, Ku, X or Ka-bands and optionally for L band*

**Research Concepts, Inc.**

9501 Dice Lane  
Lenexa, Kansas 66215 USA  
Phone: 913.422.0210  
Fax: 913.422.0211  
E-mail: sales@researchconcepts.com

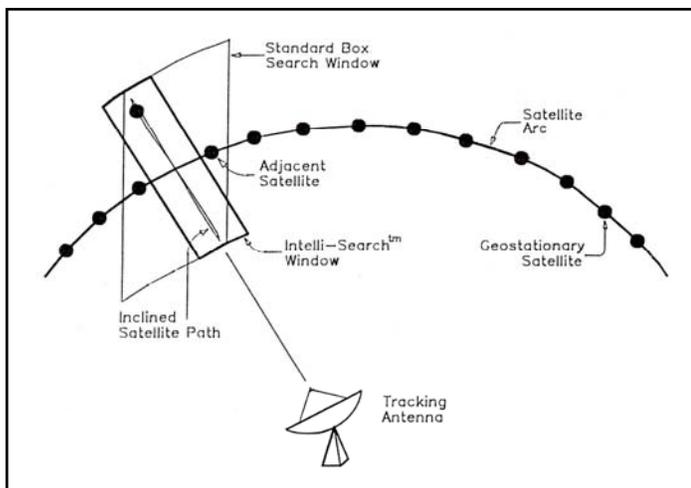
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## RC2000X OVERVIEW

There are a number of differences in the RC2000X compared to the RC2000C antenna controller. The user may edit AZ/EL positions in the track table. The RC2000X may be configured to step track any time signal strength is available and may also be configured to remain in step track mode and periodically peak a geostationary satellite that is not in an inclined orbit. The RC2000X may control a Seavey-style motorized feed but cannot control a 3-wire PWM servo-based polarization motor such as the Polarotor. The RC2000X can support an AZ/EL speed select bit output. The RC2000X supports full Remote Front Panel operations and may be controlled via Ethernet connection using the RCI Web Server device.

## TRACKING ALGORITHM

Unique to the RC2000 series tracking controllers is Intelli-Search, a novel and very 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. Once an inclined



satellite has been stored in the RC2000X, finding it again is as easy as locating a fixed satellite. Simply move to Auto mode, select the satellite from the list of those available, specify the proper polarization, and let the RC2000X do the rest.

The tracking algorithm used by the RC2000 antenna controllers can be divided into 3 distinct parts - STEP\_TRACK, PROGRAM\_TRACK and SEARCH. To initiate the track process, the user jogs the antenna to the satellite and verifies the identity of the satellite. The system then enters STEP\_TRACK mode.

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). STEP\_TRACK mode is active until a time is reached that corresponds to a segment of the

satellite's motion which has previously been stored in the track table. When this occurs PROGRAM\_TRACK mode is activated.

In PROGRAM\_TRACK mode 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 mode. In particular the user can specify the maximum allowable error between the antenna's actual position and the position specified by the track table. By increasing the maximum allowable error, antenna movements can be performed less frequently, thus avoiding unnecessary wear on the antenna actuators. In PROGRAM\_TRACK mode 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. The period between these accuracy checks is specified by the user, and typically varies from once a day to once a week.

SEARCH mode is entered from STEP\_TRACK mode when the satellite signal has been lost. When the satellite is located, the controller re-enters the STEP\_TRACK mode.

## SPECIFICATIONS

### PHYSICAL

Size:	19.0" x 3.5" x 9.0" (rack)
Weight:	12.5 lbs.
Temperature:	0° – 50° C
Input Power:	115/230 VAC, 50/60 Hz. 48 W

### TRACK MODE

Antenna Size:	0.4 – 10.0 meters
Mount Type:	Az/El (Elevation over Azimuth)
Maximum Inclination:	+/- 10° standard
Tracking Modes:	Intelli-Search™, Step Track, Program Track
Inclined Satellites:	5 maximum
2 AGC Inputs:	0 – 10 VDC input range, 2MΩ input impedance

### DRIVE

Output:	36 VDC, 10 Amps; 280 VA
Sensor Input:	Pulse-type: Reed, Hall Effect, Optical, Single-phase pulses @ 50 Hz. max
Polarization:	Optional Rotating Feed-drive to control a 24VDC motor @ 500mA max with potentiometer feedback