



# RC2000C

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



### FEATURES

- **Automatic Positioning**  
*precisely positions antenna with the press of a single key*
- **Inclined-Orbit Tracking**  
*Step Track, Memory, & Search modes supported*
- **Intelli-Search™**  
*eliminates problems associated with traditional searches – search mode may be overridden for transmit applications*
- **Polarization Control Interface**  
*automatic or manual polarization control for three-wire Polarotor™ or optional control for rotating feeds with potentiometer feedback*
- **Dual Speed**  
*for fast slewing, fine positioning, user programmable*
- **Non-volatile Memory**  
*stores 38 preset position and polarization Combinations*
- **RS-422 PC Control Interface**  
*automated control with many popular packages; basic PC-control software is included*
- **Adapti-Drive™**  
*maintains stable speed with varying load*
- **Solid-State Drive Circuitry**  
*provides reliable, quiet operation, rated at 10A with built-in over-current protection*
- **High-Resolution Pulse Sensor Interface**  
*ensures accurate Ku-band positioning*
- **Software Controlled Limits**  
*provides backup to mechanical limits*
- **Multi-Band Operation**  
*supports Ku, C and L-band satellites*
- **Operates with Many Mount Types**  
*drives Azimuth over Elevation, Elevation over Azimuth, Polar/Declination and Polar/Elevation Mounts*

**Research Concepts, Inc.**

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

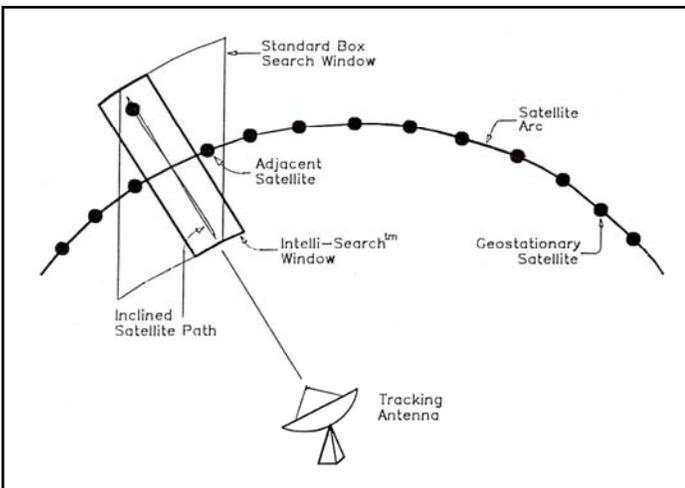
[www.researchconcepts.com](http://www.researchconcepts.com)

## OPERATIONAL OVERVIEW

The RC2000C was designed to provide years of reliable operation through the use of a heavy duty solid-state drive network coupled with a novel microcontroller-based fault monitoring system. The 8 amp rated drive output capability is unparalleled in the market and the Adapti-Drive digital servo speed control optimizes antenna movement for today's demanding Ku-band applications. Additional features like an RS-422 communications port for PC control and a very user-friendly, menu scheme make the RC2000C a unique and highly adaptable piece of equipment. Overall, the RC2000C is well equipped to handle the demanding requirements for both domestic and international inclined-orbit satellite tracking.

## 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 RC2000C, 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 RC2000C 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
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
Polarization:	Standard Polarotor™ Interface, optional Rotating Feed-drive at voltages from 5–36 VDC @ 2A max