



RC2500

Antenna Controller Retrofit for Harris 9135 ACU



FEATURES

- **Cost Effective**
enjoy advanced features while preserving the large capital investment
- **Automatic Positioning**
precisely positions antenna with the press of a single key
- **User Friendly Interface**
operator interaction is the same as the Industry Standard RC2000
- **Easy to Read Supertwist LCD**
simultaneously displays Az, El and Pol Angles, Received Signal Strength, as well as current Satellite Name and Longitude
- **Non-volatile Memory**
stores 38 preset position and polarization combinations
- **Dual Speed**
fast slewing, fine positioning
- **Inclined-Orbit Tracking**
Step Track, Memory & Search modes supported
- **Solid-State Control Circuitry**
5KV-rated optoisolation, operates with many outdoor boxes
- **Intelli-Search™**
eliminates problems associated with traditional searches – search mode may be overridden for transmit applications
- **Multi-Band Operation**
supports Ku, C and L-band satellites
- **Optional RS-422 PC Control Interface**
automated control with many popular packages
- **High-Resolution Resolver Interface**
ensures accurate Ku-band positioning
- **Software Controlled Offsets**
allows for easy resolver setup
- **Designed for Future Expansion**
designed-in ports for potentiometer-based feed control, RF power measurement circuits, TTL-compatible Digital input, form-C relay output

Research Concepts, Inc.

5420 Martindale
Shawnee, KS 66218-9680 USA
Phone: (913) 422-0210
Fax: (913) 422-0211
E-mail: sales@researchconcepts.com

www.researchconcepts.com

OPERATIONAL OVERVIEW

The RC2500 is designed to provide an upgrade path for users of older, unsupported antenna controllers such as the Harris 9135 system. The large investment in an antenna system is preserved by retrofitting an existing installation with the RC2500. In addition to the ease of use afforded by the industry standard menu scheme of the RC2000 series, the capability of the antenna system can be enhanced to include features such as inclined orbit tracking and PC remote control at an economical cost.

A reliable all solid-state control section interfaces to many standard antenna-pad-mounted drive housings. Optically coupled drive outputs and limit switch inputs provide isolation between the existing outdoor unit and the rack-mounted RC2500. The RC2500 can support a single summary limit input or individual limits for each axis, as well as single and dual-speed outdoor units.

Antenna position sensing is performed by a high precision-low voltage resolver system. Angular measurement accuracies to better than 0.08° with precisions and repeatability to 0.01° are possible with the RC2500. An extensive menu of user accessible drive options such as motion coast thresholds and fast/slow speed switch points compensate for the dynamics of individual systems.

RETROFIT INSTALLATION

The required equipment for retrofitting the RC2500 Antenna Controller to an existing Harris installation depends upon the details of the particular installation. In general, the following items are required: RC2500, resolvers for each axis to replace the existing synchros and appropriate cable for each resolver. The RC2500 is designed to be plug compatible with the drive command and limit indication input cable. The three resolvers are connected to the RC2500 through standard 9-pin D connectors. The indoor ACU and terminal is replaced with the RC2500 potentially freeing up 5 or more rack units of space.

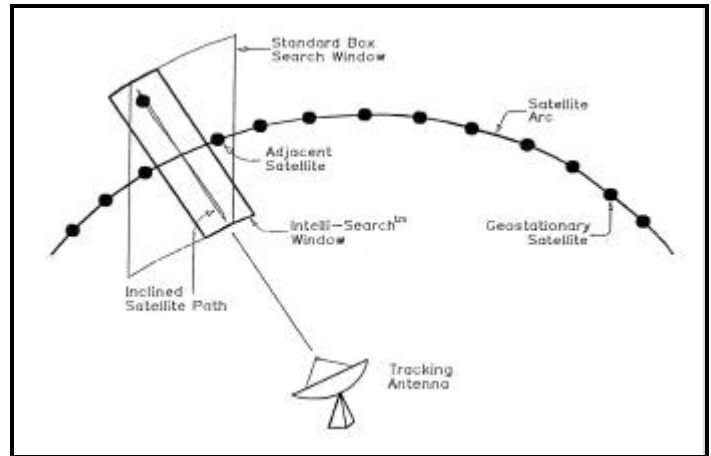
TRACKING ALGORITHM

The Inclined-orbit tracking algorithm used by the RC2500 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** mode 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. 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. 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. The controller periodically sweeps the region of space where the satellite is calculated to be. 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:	10.0 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	+/- 10° standard
Tracking Modes:	Intelli-Search™, Step Track, Program Track
Inclined Satellites:	5 maximum
2 AGC Inputs:	-15 to +15 VDC input range,

ANTENNA INTERFACE

Control Output:	Open-Collector Relay drivers (Imax: 700mA, Vmax 60V)
Alarm Output:	3A @ 30 VDC or 3A @ 125 VAC both NO and NC
Positioning	Low Voltage Resolver Interface
