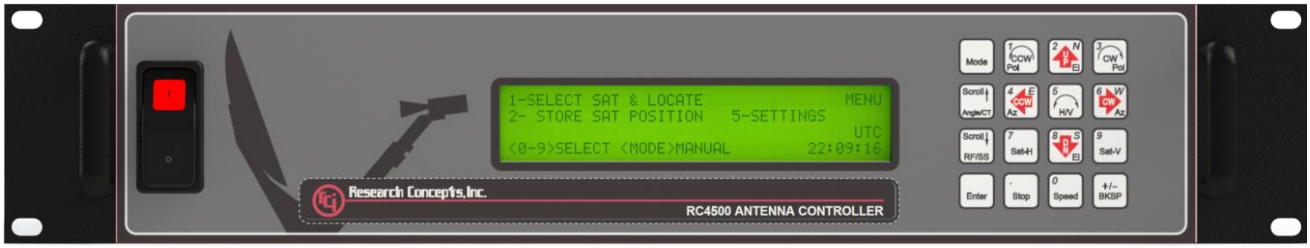
Research Concepts
RC4500 Antenna Control System



About Research Concepts

For almost four decades, Research Concepts has led the market in user-friendly and dependable antenna control systems. The RC4500 control system upholds this tradition of reliability while integrating the modern features operators demand.

Like all Research Concepts products, the RC4500 is supported by the industry's top technical team, comprised of the engineers who designed it. Throughout our company's history, we have never discontinued support for any product. We proudly stand by our commitment: "If it bears our name, our technical team is here to support the product."

Flexible Configuration

The RC4500 Antenna Control System consists of a 2RU rackmount Antenna Control Unit (ACU) featuring a 4x40 LCD display and a 4x4 tactile keypad for user interaction.

It is paired with an Antenna Interface Unit (AIU), which is installed at the antenna and drives the Azimuth, Elevation, and Polarization motors.

The ACU supports an optional internal Beacon Tracking Receiver (BTR) for enhanced tracking capabilities. Additionally, it provides native control for external BTR units, offering flexibility in system configuration.

Features

- Precise 3-Axis Antenna Control
- Industry Standard RCI User Interface
- Ethernet Remote Interface
  - ♦ Enhanced Graphical User Interface
  - ♦ UDP Remote Protocol
  - ♦ SNMP
- Up to 15° Inclined Satellites
- Flexible Antenna Interface Units
  - ♦ Variable Frequency Drive
  - ♦ Dual Speed Contactor
  - ♦ Single Speed Contactor
- Multiple Tracking Modes
  - ♦ Step Tracking
  - ♦ Enhanced Predictive Tracking (EPT)
  - ♦ Two-Line Element Tracking (TLE)

Nominal System Accuracy		
Wind Speed	Calm Winds	30 gusting 45mph
Pointing[1]	0.02° RMS	0.05° RMS
Step Tracking	10% HPBW	10% HPBW
EPT Tracking	5% HPBW	5% HPBW
1 – Not including structural deflection		

This datasheet provides preliminary information only. For comprehensive details, please reach out to us at sales@researchconcepts.com or call +1 913-422-0210.

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Antenna Control Unit

The RC4500 Antenna Control System's Antenna Control Unit (ACU) serves as the central hub, managing all control and monitoring functions by directly interfacing with the system's components.

Handheld Remote Control

The Handheld Remote Control (HHRC) allows independent jogging of each axis on the antenna with fast and slow speed options. It provides limit status for each axis and alarm status for Azimuth and Elevation , making it ideal for antenna setup and troubleshooting.

Position Sensors

The RC4500 Antenna Control System indeed offers robust flexibility for position sensors across its Azimuth, Elevation, and Polarization axes, supporting industry-standard size 11 resolvers and multiple optical encoder configurations. This ensures compatibility with both new and existing antenna systems.

Size 11 Resolver

- 0.0055° Resolution
- Accuracy up to ±0.05°
- IP65 with boot kit

Optical Encoder

- 0.00001° Resolution
- Accuracy up to ±0.0055°
- IP67 Housing, IP64 Shaft

Beacon Tracking Receivers

The RC4500 Antenna Control System can include an optional built-in Beacon Tracking Receiver (BTR) for tracking inclined orbit satellites. It supports analog signal strength and lock inputs and is optionally compatible with external BTR units from Novella, ASC, Avcom of Virginia, CPI, and many others.

Inbuilt BTR Specifications	
Input Frequency	950-2150 MHz
Tuning Step Size	10 kHz
Input Level	-90 to -30 dBm
Tracking Sensitivity	43 dB-Hz
Acquisition Bandwidth	200 kHz
Tracking Bandwidth	10 kHz
Beacons	CW and BPSK

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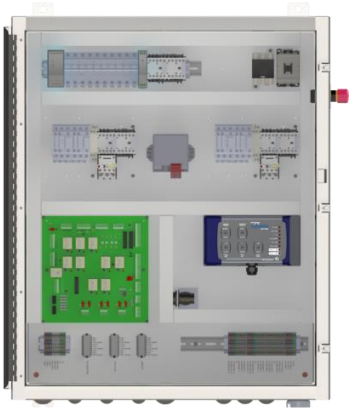
Variable Speed AIU

The Research Concepts variable speed Antenna Interface Unit (AIU) enables configurable dual-speed operation for 3-phase AC motors for the Azimuth and Elevation axes. Leveraging advanced solid-state drive technology, it provides speed ratios exceeding 10:1 with standard inverter-rated AC motors.

With Brakes for Azimuth and Elevation, as well as Polarization motorization available in the standard configuration, the variable speed AIU can be tailored to the requirements of new and existing AC motor powered antenna system.

The AIU is housed in a NEMA 4X (IP66) rated electrical enclosure, ensuring durability in harsh conditions. Equipped with standard thermostat-controlled fans and a heater, it delivers reliable performance in extreme environments.



Contactor Based AIU

The Research Concepts Contactor Based AIU is a specialized solution for antenna systems incompatible with standard variable speed drives. Utilizing IEC 60947 (UL508) compliant contactors, it supports single and dual-speed configurations, including systems with separate fast/slow motors, dual-speed motors, pole-switching motors, or single-speed motors not suited for variable speed inverters.

With the same environmental specifications as the variable speed AIU, a contactor based AIU ensures legacy antenna systems remain fully operational, extending their service life.

System Specifications			
System results are dependent on antenna mechanical functions Encoders recommended for beamwidths < 0.25°		Geosynchronous satellite operation RoHs, REACH, and WEEE Compliant	
Component	**Power Requirement**	**Size**	**Weight**
ACU	85-265VAC, 50-60Hz, 125VA	2RU (3.5” H x 19” W x 8.5” D)	10 pounds
AIU	200VAC ±10% - 3ø, WYE 5 HP Max AZ/EL, KVA Motor Dependent	36” H x 30” W x 10” D 54” H with optional stand	90-175 pounds
	400VAC ±5% - 3ø, WYE 7.5 HP Max AZ/EL, KVA Motor Dependent		
Environmental	**Temperature**	**Humidity**	
Indoor Equipment	Storage: -40C to +85C Operational: -20C to +60C	95% Non-Condensing	
Outdoor Equipment	Storage: -40C to +75C Operational: -40C to +50C	100% Condensing	

Product specifications are subject to change without prior notice.

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