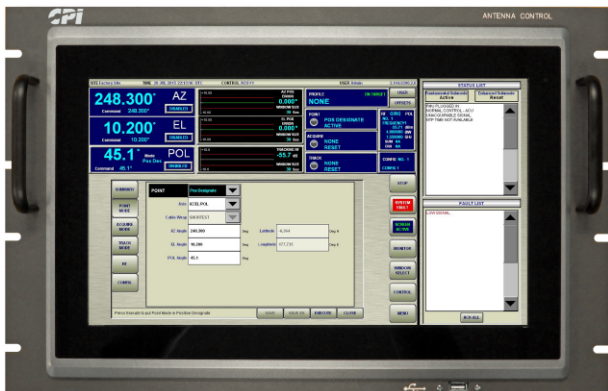


Antenna Technologies



System

The CPI Antenna Technologies' Model 990, offers excellent satellite tracking and control. It is ideally suited for almost any full motion antennas for precision satellite, spacecraft, or celestial tracking applications. The system is comprised of an Antenna Control Unit (ACU), Tracking Receiver Unit (TRU) and a Power Drive Unit (PDU) which are linked via dedicated Ethernet connections. This provides flexibility in locating the key system components, allows for variable separation distances and provides immunity to electrical ground plane transients.

The Model 990 is Intelsat- Standard A compliant for great tracking performance, offers extensive modes for pointing, acquisition and tracking and its software is field-upgradable via a simple USB interface. In addition, the Model 990 is CE compliant for EU applications and features a touch-screen large viewing angle color display for modern user interfaces.

Tracking Accuracy

Optrack- Normally better than 5% of the receive beamwidth in winds of 30 mph gusting to 45 mph, satellite inclination of up to 15° and signal scintillation of up to 2 dB.

Monopulse- For dynamic targets, normally better than 3% of the receive beamwidth for 30 mph gusting winds. Minimum scintillation sensitivity.

Pointing Accuracy

Normally better than 0.010° RMS in winds of 30 mph gusting to 45 mph as measured at the axis position transducer. The ACU bias correction model will significantly suppress systematic errors affecting RF beam spatial accuracy.

Overview

For over 50 years, CPI Antenna Technologies has been developing high-precision satellite tracking and control systems. As the world's leading manufacturer of satellite and ground-based products and services, our systems are designed using cutting edge technology by our experienced engineering team.

Our control systems can be used with almost any antenna and support a wide range of applications. The systems feature an easy-to-use, modern ethernet interface, and are software upgradeable to protect your investment. All control systems come with an end-to-end warranty and are supported 24/7/365 days a year by our technical customer support team.

FEATURES:

- Tracking, Pointing, and Acquisition Modes
- Highly customizable - multiple motors per axis, multiple axes
- AZ/EL/POL, X-Y, HA/DEC, AZ/EL/TILT and others
- Single or Multi-Band Operation

BENEFITS:

- Full motion, full featured linear drive control with enhanced backlash compensation

APPLICATIONS:

- All Bands and All Orbits (GEO, MEO, LEO, HEO)
- Communications, Data, Broadcast, TT&C, RADAR, Celestial, Lunar, Cis-Lunar, Telescopes
- New Antennas or Upgrades and Retrofits

Operational Modes

Tracking	Pointing	Acquisition	Other
Optrack Steptrack Monopulse	Intelsat 11 Memtrack Star Track Preset Designate NORAD Table Track	Box Scan Spiral Scan Geo Scan Raster Scan	Maintenance Manual Stop Computer Simulator Polarization Test

Antenna Control Unit

The Antenna Control Unit (ACU) is the primary control and monitor interface point for the entire system, featuring embedded processing and a friendly touch screen windowed interface.



7RU ACU with 15 Inch Touch Screen

FEATURES:

- Detailed status with color enhancement
- Easy touch screen operation
- Informative display with color readouts
- Extensive diagnostic monitoring and test capabilities
- Antenna and satellite simulators
- Time based active parameter display
- Ethernet ACU-PDU control link

ACU Options

- Dual/remote ACUs
- Fiber Optic Ethernet
- Tracking Receiver Display with Spectrum Analyzer
- Dual Ethernet



2RU TRU with 5 Inch Touch Screen

Tracking Receiver

- Beacon or Carrier
- Monopulse or Signal Strength for Optrack
- Digital Signal Processor (DSP) Based Receiver

Portable Maintenance Unit

The Portable Maintenance Unit (PMU) provides manually commanded, bi-directional control of all axes.

It has the following features:

- Hand held ruggedized unit with a 10-ft pendant cable and 40-ft extension for convenient local operation at the antenna
- Backup means of moving antenna and is ACU independent
- Four line, 20 character display for axis positions, tracking signal strength, mode and scrolling status messages
- Modes include position jog, Hi/Lo speed (variable)
- Weather proof access junction boxes at convenient antenna locations
- Enable/disable per axis



Manual Control Unit

The Manual Control Unit (MCU) provides manually commanded, bi-directional control of all axes.

- Slim, 1RU Chassis
- PMU Functionality

System Options

- Fiber Optic ACU-PDU Link
- Redundancy
- Manual Control Unit
- Rack Mount Tracking Receivers
- Stainless steel PDU for Salt Environment
- Extended Temperature Ranges
- Time Synchronization via NTP, IRIG, or 1PPS
- High Level EMI Suppression
- PDU Configurable for Various Motor Sizes and Polarization Controls
- Axis Stow Pin Control

Power Drive Unit (PDU)

The Power Drive Unit (PDU) provides all digital control to the linear DC drive motors and contains the hardware/firmware logic to close the position and tracking loops with high resolution. It also provides controlled maximum acceleration and deceleration profile limit windows.

A lockable handle secures the access doors while the system is operating. Lockout, tagout power disconnects are provided within the cabinet interior. Mounted in the enclosure is a panel assembly consisting of the Antenna Control Board (ACB), power supplies, motor controllers, and various ancillary devices. Status interlocks and position signals report to the ACB and, while in constant communication with the ACU, the ACB transmits information and receives commands to effect movement on any antenna axis. PDUs are FCC and CE compliant and are equipped with EMI/RFI protection.

PDU Features

- The all digital ACB includes embedded processors for local position and rate loop closures
- Dedicated ethernet link to ACU (fiber optic optional)
- Antenna interlock switches monitored by redundant hardware for safety shut down
- Outdoor rated NEMA cabinet
- Available in brushless DC, SCR, or vector motor controller configurations



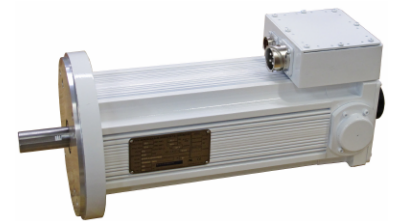
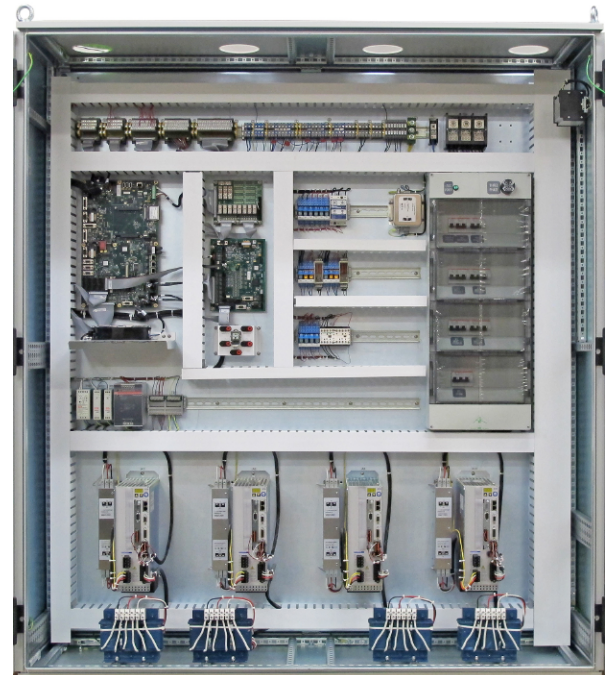
Transducers

High Accuracy Encoder

- 0.00001° resolution, 0.0028° accuracy
- 25 bit optical design

Position Encoders (optional)

- Absolute position
- Available with resolution up to 29 bit, and accuracy to sub arc seconds

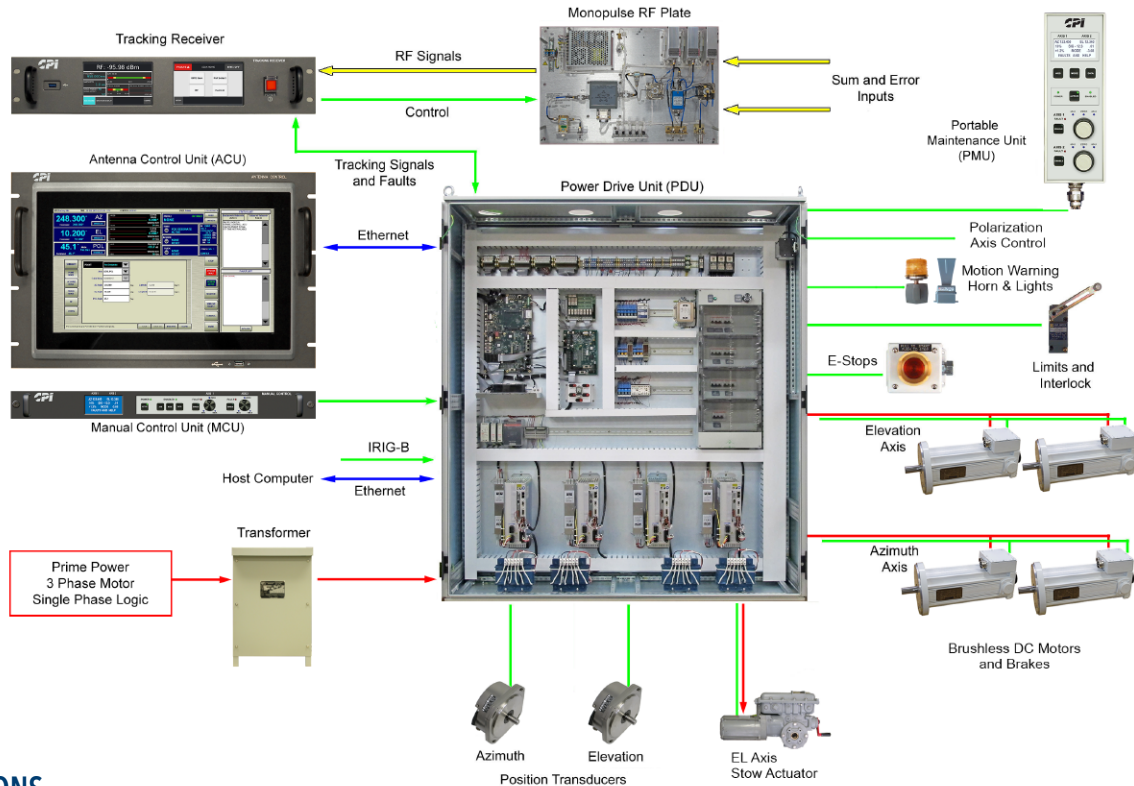


DC Brushless Motor

- Outdoor rated (IP67), with epoxy painted laminations and exterior, stainless steel and anodized aluminum hardware, high grade lubrication & sealing, and pressure equalization diaphragm
- Optional handcrank access via extended rear shaft with personnel access safety interlock
- High efficiency
- Ideal torque source
- Wide range of available configurations to match application requirements
- Motor resolver, DC Tach, Virtual Tach, and Incremental Encoder for motor rate feedback

Antenna Control System

Model 990



SPECIFICATIONS

UNIT	SIZE	WEIGHT	POWER
ACU- 7RU rack mount chassis with slides	12.25" H x 19" W x 3" D	10 lbs	Single phase, 90-240 VAC~ 350 VA
PDU-Brushless,DC/SCR/Vector, 4 Drive Cabinet (typical)	79" H x 71" W x 20" D	1400 lbs	Three phase 208/380/415 VAC~, KVA Motor Dependent
MCU- 1RU rack mount chassis	1.75" H x 19" W x 8" D	5 lbs	Single phase, 90-240 VAC~ 15 VA
TRU- 2RU rack mount chassis with slides	3.50" H x 19" W x 20" D	23.5 lbs	Single phase, 90-240 VAC~ 200 VA

ENVIRONMENTAL	TEMPERATURE	HUMIDITY
Indoor Equipment	0° to 50° C (Operating)	95% Non-Condensing
Outdoor Equipment (optional)	-20° to 50° C (Operating)	100% Condensing

Contact us at CustomerCareSAT@cpii.com or call us at +1 770-689-2040

The data should be used for basic information only.
Formal, controlled specifications may be obtained from CPI for use in equipment design.



Antenna Technologies
1000 Klein Rd,
Plano, TX
USA 75074

+1 770-689-2040
1 888-874-7646
(In North America)
1 619-240-8480
(Outside North America)
CustomerCareSAT@cpii.com
www.cpii.com

For more detailed information, please refer to the corresponding CPI technical description if one has been published, or contact CPI. Specifications may change without notice as a result of additional data or product refinement. Please contact CPI before using this information for system design. © 2023 Communications & Power Industries LLC. Company proprietary; use and reproduction is strictly prohibited without written authorization from CPI.

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