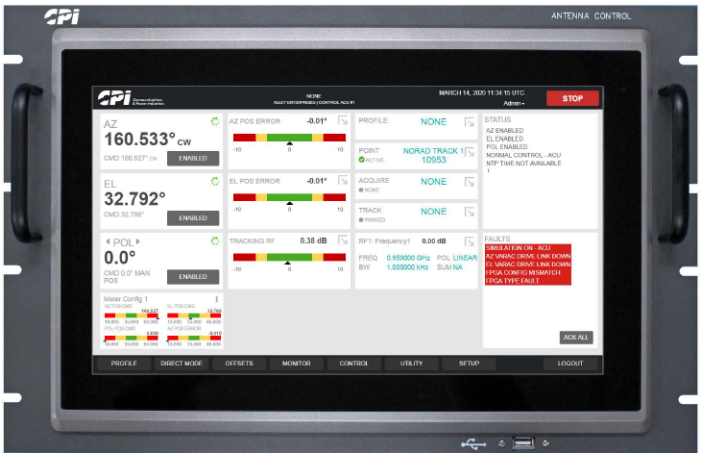
Antenna Control System

Model 950E

Antenna Technologies



Overview

System

The CPI Antenna Technologies' Model 950E, Control 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 configuration provides flexibility in locating the key system components, allows for variable separation distances, and provides immunity to electrical ground plane transients.

The Model 950E 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 or remote interface. In addition, the Model 950E is CE compliant for EU applications and features a touch-screen, large 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.

Pointing Accuracy

Normally better than 0.05° RMS in winds of 30 mph gusting to 45 mph. This includes all drive train errors, but excludes structural errors between the position transducers and RF beam.

FEATURES:

- Tracking, pointing, and acquisition modes
- Ideal for single AC motor (per axis) antennas
- Dual or multi-speed antenna motor drives
- Stable to highly inclined GEO targets
- Flexible receiver options
- Designed to minimize site cabling
- Fully embedded, no rack equipment required
- Wide operating temperature range
- Optional Auto-orientation sensors
- Optional headless (no-HMI) operation
- Optional Single phase technical power variant

BENEFITS:

- Full featured inverter drive control
- Tabbed mounting for flexible installation

APPLICATIONS:

- Can be used with almost any fixed or mobile antenna

Operational Modes

Tracking	Pointing	Acquisition	Other
Optrack Steptrack	Intelsat 11 Preset Designate TableTrack NORAD StarTrack SunTrack Moon Track	Box Scan Geo Scan	Maintenance Manual Stop Computer Simulator Polarization Stow Stow/Deploy

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Antenna Control Unit

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

7RU ACU with 15 Inch Touch Screen

FEATURES:

- Optrack, which provides high performance tracking of stable or inclined orbit satellites with an adaptive self-learning ephemeris modeling mode
- Easy touch screen operation
- Informative display with color readouts
- Extensive diagnostic monitoring and test capabilities
- Antenna and satellite simulators
- Supervisory Control Link (Ethernet; TCP/IP), standard protocol, SNMP, and HTML5 GUI over browser
- Fully software field upgradable

Receiver Options

- Model 500 series of tracking receivers in digital (550A) with spectrum display or analog (520A).
- Internal TRU, inside ACU chassis or inside PDU
- 2 RU Model 550A (Digital) or Model 520A (Analog) with dual 5 inch displays
- Receivers also available with internal block down conversion for common frequency bands

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 cable 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
- Optional weather proof access junction boxes at convienient antenna locations
- Enable/disable per axis

System Options

- Fiber optic ACU-PDU link
- Time synchronization via NTP or GNSS
- Internal or external tracking receiver
- Extended low temperature operation
- Extended warranty
- PDU configurable for various motor sizes and polarization control
- E-Stops in panel mount or J-box
- PDU configurable for fixed or mobile antennas
- Mobile pointing kit: GPS/GNSS, heading and foundation tilt sensors

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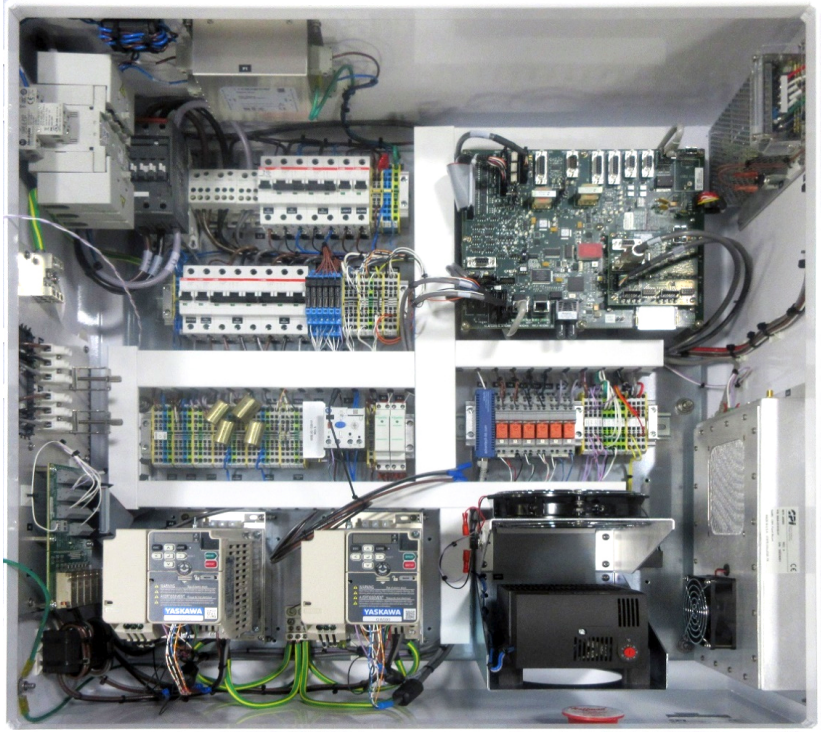
Multi-Speed Inverter PDU

The Power Drive Unit (PDU) provides all digital control to the AC drive motors and contains the hardware/firmware logic to close the position and tracking loops with high resolution. It also provides controlled acceleration and deceleration profile & speed regulation range of up to 15:1 with conventional inverter rated AC motor (antenna system dependent).

The inverter PDU's are free-standing, housed in an NEMA 4 (IP66 equivalent) aluminum enclosure and contains the electrical/mechanical components necessary to move the antenna.
The PDU containsan internal fan for ambient air circulation and "hot spot" avoidance and an optional thermostat controlled, internal heater for cold weather operations.



A lockable handle secures the access door while the system is operating. A Lockout, Tagout power disconnect is provided on the cabinet exterior. Mounted in the enclosure is a panel assembly consisting of the Antenna Control Board (ACB) logic, power supply, inverter drives, 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 control movement of any antenna axes. Communication within the system via Ethernet between ACU, TRU, and PDU by a dedicated controller. A second Ethernet controller and port provides independent connection to M&C or customer WAN.

System design minimizes cable installation cost and complexity, and allows for flexible site layout

Transducers

1:1 Resolver (optional)

- **0.0055° resolution, 0.05° accuracy**
- **Standard 16 bit design**

Position Encoders (standard)

- **0.0001° resolution, 0.0055° accuracy**
- **25 bit optical design**

AC Motor Support

The motor has the following features:

- **Single or multiple inverter duty windings**
- **Optional handcrank interlock**
- **208-480V 3 phase voltage**

CPI Communications & Power Industries

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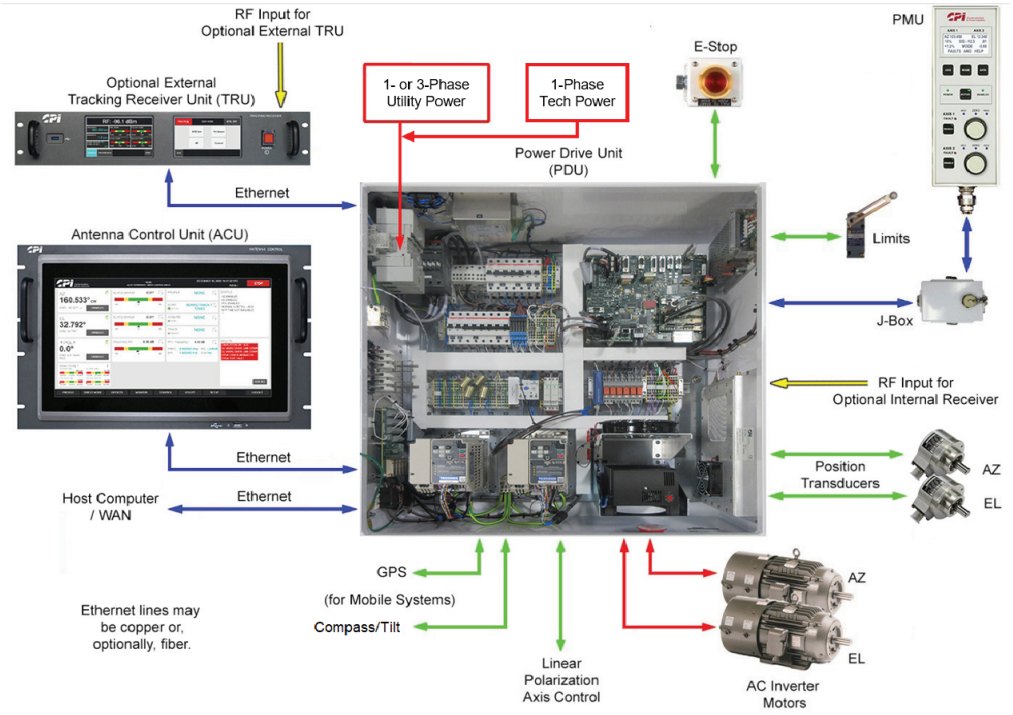

SPECIFICATIONS

- Tracking accuracy ≤ 5% of Beamwidth
- Total system results are antenna (mechanically) dependent
- Pointing accuracy ≤ 0.05° RMS
- FCC Class A compliant, CE

UNIT	SIZE	WEIGHT	POWER
ACU- 7RU rack mount chassis with slides	12.25" H x 19" W x 3" D	10 lbs	Single phase, 100-240 VAC~ 350 VA
PDU- AC Inverter	30" H x 30" W x 11.25" D	150 lbs	**Technical:** Single phase, 100-240 VAC~, 500 VA Utility (Motor) **Utility:** Single-Phase 200-240 VAC~, 3 HP Max Three-Phase 200-240 VAC~, 5 HP Max Three-Phase 380-480 VAC~, 5 HP Max KVA Motor Dependent

ENVIRONMENTAL	TEMPERATURE	HUMIDITY
Operating-Indoor (optional)	0 to 50° C	95% Non-Condensing
Operating-Outdoor	-40 to 50° C	100%-Condensing
Storage	-20 to 70° C (Storage)	100% Condensing
Vibration - US Highway and Jet Transit		

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.

Communications & Power Industries

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