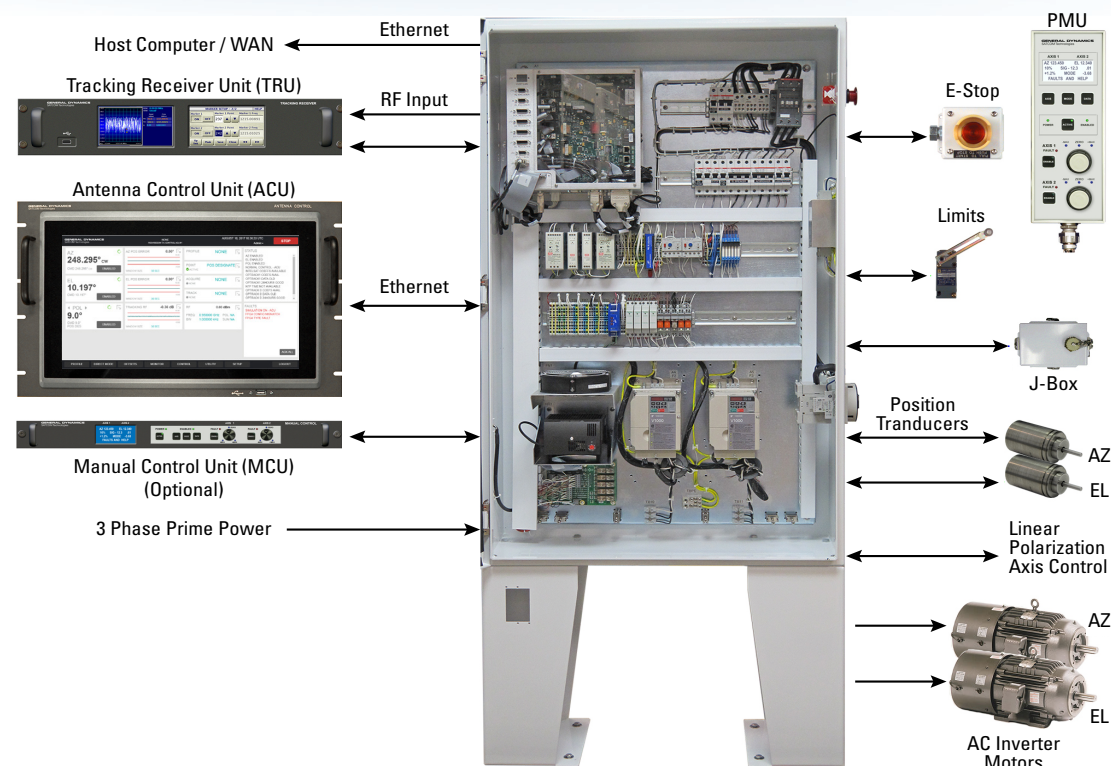


Model 950A Antenna Control System

Full Featured Inverter Drive Control



Overview

For over 50 years General Dynamics SATCOM 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.

System

SATCOM Technologies' Model 950A 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 950A 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 950A is CE compliant for EU applications, 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
- Single, Dual, or Multi-speed antenna motor drives
- Stable to highly inclined GEO targets
- Flexible receiver options
- Designed to minimize site cabling

Precision Satellite Tracking and Control

Minimizes Cross-Site Cabling

Flexible Tracking Receiver Integration

Ethernet interface and Fiber Option for Lightning Protection

Full Software Upgradeability

SPECIFICATIONS

- Tracking accuracy $\leq 5\%$ of Beamwidth
- Pointing accuracy $\leq 0.05^\circ$ RMS
- Total system results are antenna (mechanically) dependent
- CE, FCC Class A compliant, REACH

ACU	Size	Weight	Power
7RU rack mount chassis with slides	12.25" H x 19" W x 3" D	10 lbs	Single phase, 110-240 VAC 350 VA
PDU			
AC Inverter or Single speed contactor.	66.5" H x 30" W x 11.25" D (Including for Floor Stand)	230 lbs	Single Phase Electronics, 100-250 VAC 500 VA 208/380/415 VAC, 3 ϕ , KVA motor dependent Three Phase 200-240 Vac, 7.5 HP max Three Phase 380-480 Vac, 10 HP max Single speed 5HP max, 208/380/415 3 phase
MCU			
1RU rack mount chassis with slides	1.75" H x 19" W x 8" D	5 lbs	Powered by PDU
Environmental	Temperature	Humidity	
Operating-Indoor	0° to 50° C	95% Non-Condensing	
Operating-Outdoor	-20° to 50° C	100% Condensing	
Operating-Outdoor (optional extended)	-40° to 40° C	100% Condensing	
Storage	-10° to 70° C	100% Condensing	

Operational Modes			
Tracking	Pointing	Acquisition	Other
Optrack Steptrack	Intelsat 11 Preset Designate NORAD TableTrack Star Track Sun Track Moon Track.	Box Scan Geo Scan	Maintenance Manual Stop Computer Simulator Polarization Stow

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.

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 full text color readouts
- Extensive diagnostic monitoring and test capabilities
- Antenna and satellite simulators
- Supervisory Control Link
- (Ethernet; TCP/IP or RS-232/422).
- Fully software field upgradable



Manual Control Unit

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

Features:

- Slim, 1RU chassis
- PMU functionality



System Options

- Fiber Optic ACU-PDU Link
- Time Synchronization via NTP
- Manual Control Unit
- Rack mount Tracking Receiver
- Extended low temperature operation
- Extended Warranty
- PDU configurable for various motor sizes and polarization controls.
- E-Stops in panel mount or J-Box

Receiver Options

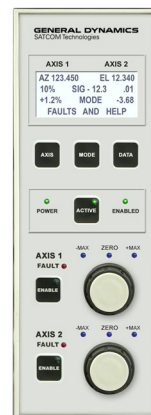
- Model 500 series of Tracking Receivers in Analog, or Digital with Spectrum Display.
- 2 RU Digital Model 550 with dual 5 inch displays
- 2 RU Analog Model 520 with dual 5 inch displays
- Model 520 or 550 Receiver module mounted behind ACU for zero additional rack space requirements.
- Receivers also available with internal block down converters for common frequency bands

Portable Maintenance Unit

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

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, and scrolling status messages
- Modes include position jog and Hi/Lo speed
- Optional weather proof access junction boxes at convenient antenna locations
- Enable/Disable per axis



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 dependant).

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 contains an internal fan for ambient air circulation and "hot spot" avoidance and an optional thermostat controlled, internal heater for cold weather operations. Single speed contactor configurations are also supported.

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 (standard)**
 - 0.0055° Resolution,
 - 0.05° Accuracy
 - Standard 16 bit
- Position Encoder (option)**
 - 0.00001° Resolution,
 - 0.0055° Accuracy
 - 25-bit Optical



AC Motor Support

- Single or multiple inverter duty windings.
- Optional Handcrank interlock.
- 208-480v 3 phase voltage windings available.

