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
Can be used with almost any full motion antenna for precision satellite, spacecraft, or celestial tracking applications. The system comprises 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.

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

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

Pointing Accuracy
Normally better than 0.010º 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.

Model 970 Antenna Control System
Full Featured Linear Drive Control

Overview
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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.

- Features
  - Detailed status with color enhancement
  - 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

ACU Options
- Dual/Remote ACU
- Fiber Optic Ethernet
- Tracking Receiver Display with Spectrum Analyzer
- Dual Ethernet Tracking Receiver
- 2RU TRU with 4.3” touch screen
- Beacon or Carrier
- Monopulse or Signal Strength for Optrack
- Digital Signal Processor (DSP) Based Receiver

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
- CE Certified
- Fiber Optic ACU-PDU Link
- SNMP Monitor and Control
- Redundancy
- Manual Control Unit
- Rack mount Tracking Receivers
- Stainless Steel PDU for Salt Environment
- Extended temperature ranges
- Time Synchronization via NTP, IRIG-B 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) logic, power supply, 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 of any antenna axes. PDUs can be optionally equipped with EMI/RFI protection, and/or CE certification.
- The all digital ACB includes 3 embedded microprocessors for local position and rate loop closures
- Dedicated Ethernet link to ACU (fiber optic optional)
- Antenna interlock switches monitored by redundant hardware for microprocessor independent safety shutdown
- Outdoor rated NEMA cabinet
- Available in Brushless DC, SCR, or Vector motor controller configurations

Transducers
- High Accuracy Resolver
  - 0.0001º Resolutions
  - 0.003º RMS Accuracy
  - 20 bit, 16:1 multispeed electrical design
- Position Encoders
  - Absolute Position
  - Available with resolution up to 26 bit, and accuracy to sub arc seconds

DC Brushless Motor

- Outdoor rated (IP67)
- Optional handcrank access via extended rear shaft with personnel access safety interlock.
- DC tach for motor rate feedback