

AC4100+ Antenna Control Unit

Fifth generation Antenna Control Unit (ACU) with high-speed loop closure rates for high-bandwidth, high-dynamic systems tracking LEO, MEO, and GEO satellites.

AC4100+ is a high-accuracy antenna control unit designed for high dynamic systems tracking LEO, MEO, and GEO satellites. The control system performs digital signal processing of servo loop closures for highly accurate position, tracking, rate and torque bias loops required for large aperture antennas operating at Ka-band and beyond.

Modes of operation and tracking

The ACU's operational modes follow a hierarchical format with the highest mode enabled. The modes include:

- › **Standby** Axes are disabled, brakes engaged
- › **Manual** Discrete position commands including position designates and tracking
- › **Slave** Digital slave positioning at a 10 Hz rate
- › **Rate** Velocity commands

There are several tracking modes to ensure accurate antenna positioning. They can be used alone or combined to improve positioning robustness.

- › **Autotrack** Tracking mode follows an RF signal from the satellite; requires a tracking feed and receiver
- › **Adaptrack** Models the inclined orbit of a GEO satellite using beacon receiver signal strength
- › **Program Track** Follows the propagated ephemeris of the satellite
- › **Steptrack** Tracking augmentation that peaks the received RF signal strength in lieu of Autotrack
- › **Scan** Tracking augmentation to assist in initial satellite acquisition

Antenna Control Unit (ACU)

The panel mounted ACU is located in the Viasat Servo Control Unit with control, troubleshooting, maintenance, and configuration managed through a web-based GUI. Features include:

- › 32 digital inputs and 14 digital outputs for RF switch control, additional warnings, etc.
- › Autotrack interface (analog and IP-based)
- › GPS receiver and NTP time server for flexible time system; native IRIG input
- › Programmable transmit inhibit and tracking masks



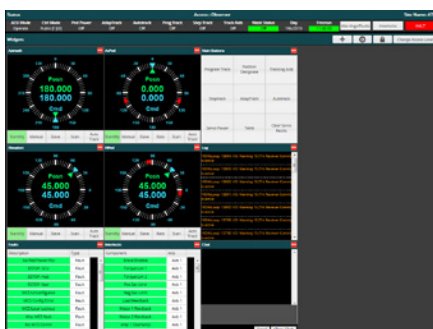
AC4100+ at-a-glance

- › LEO/MEO/GEO including TT&C applications
- › Highly accurate position readout suitable for TT&C applications (0.0001° standard)
- › Ethernet-based monitor and control through web-based GUI or other M&C system
- › Integrated into drive controls, no rack space required
- › Standard built-in GPS/1PPS, IRIG interfaces
- › All setup & operational parameters stored in flash memory (no battery required)
- › Easy security sanitization via removable media

- › Time tagged data output
- › All software and firmware remotely upgradable

Orbit determination

- › Ephemeris updates from GUI or M&C system
- › Track satellites via TLE, Intelsat 11, STDM, Time Tagged Angles, ECI, IIRV, and several other formats
- › Track celestial bodies including the sun, moon and stars
- › Receipt of new ephemeris files does not interrupt current tracking



AC4100+ Antenna Control Unit

Specifications

OPERATOR CONTROLS AND INDICATORS

Remote control	<ul style="list-style-type: none"> > 10/100 Base-TX Ethernet > web-based graphical interface > ASCII-based M&C command set
Local control	Optional walkbox unit
LEDs	Power, summary fault, mode of operation, network link/activity
Buttons	Reset power, reset IP address

TEMPERATURE RANGE

Operational	-40° to +70°C
Humidity	0 to 100% non-condensing

ELECTRICAL

Input voltage	24 VDC (±20%)
Power consumption	12 W typical

MECHANICAL

Weight	1.8 kg; 4 lb
Dimensions (WxHxD)	76 x 318 x 228 mm; 3.0 x 12.5 x 9.0 in.
Finish	Aluminum, chemical conversion per MIL-DTL-5541 Class 1A (Clear) and ASTM-B449-93 Class 2 and Class 3

DIGITAL I/O

- > Fully fault-protected I/O (ESD, surge, shorts, opens, and reverse bias)
- > 14 spare 24 V sourcing outputs
- > 32 spare contact closure sensing inputs
- > 4 temperature sensor inputs

ANALOG I/O

- > Fully fault-protected I/O (ESD, surge, shorts, opens, and reverse bias)
- > 4 tracking or beacon receiver inputs (16-bit, +/-10 V)

TIME SYNCHRONIZATION

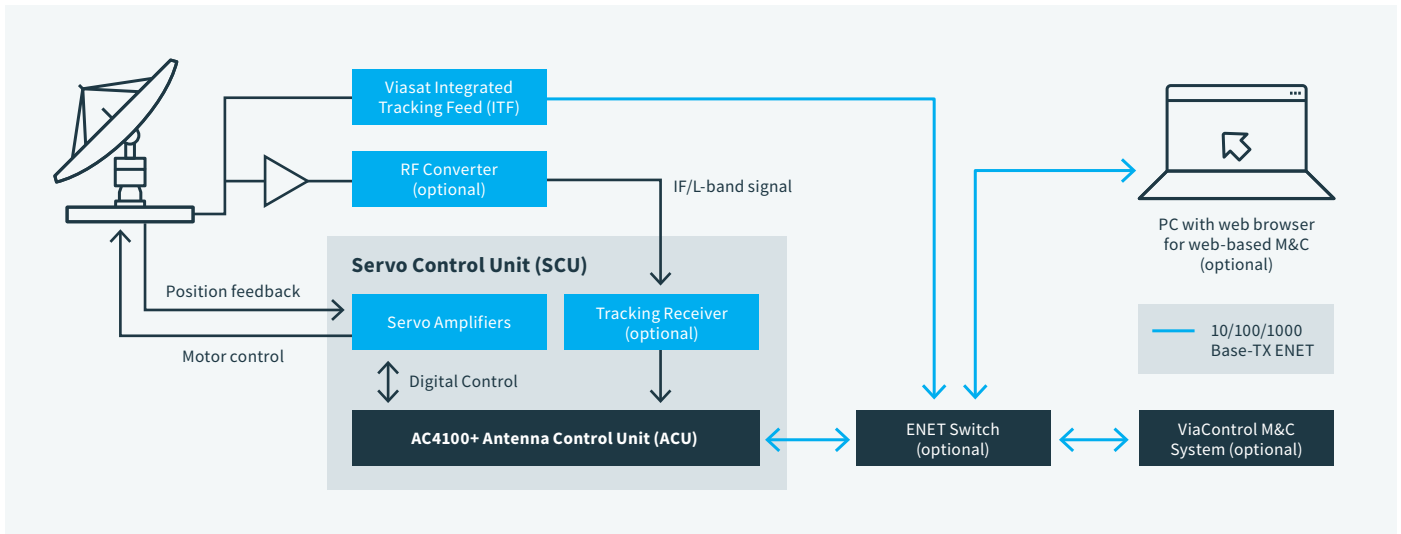
- > Built-in GPS receiver
- > NTP for network time sync
- > 1PPS input/output for enhanced accuracy
- > Built-in IRIG interface

DATA STORAGE AND LOGGING

- > 4 GB removable SD
- > Auto-rotating log files
- > Streaming telemetry information for remote logging

REGULATORY APPROVALS

- > CE mark
- > Machinery Safety Directive (MSD) 2006/42/EC
- > Low Voltage Directive (LVD) 2006/95/EC
- > Electromagnetic Compatibility Directive (EMC) 2004/108/EC



Global headquarters
6155 El Camino Real, Carlsbad, CA 92009-1699, USA



Sales
TEL 888 842 7281 (US Toll Free) or +1 760 476 4755

EMAIL AS-Sales@viasat.com

WEB viasat.com/antenna-systems