sat-nms ACU2-19V2 Advanced Antenna Tracking System

The **sat-nms ACU2-19V2** is an advanced automatic tracking antenna controller, which is based on the reliable and proven **sat-nms ACU2-ODM** module. This specific unit can be used as a cost-efficient antenna control unit to replace the Vertex / General Dynamics SATCOM Technologies Model 7200 Antenna Control Unit keeping the outdoor 7150 Antenna Drive Unit as it is. The replacement is simple plug & play by reusing the existing cables due to fully compatible rear panel connectors in the 19" 1RU chassis.

Compatibility in this case means that hardware interfaces are matching so you can exchange the units against each other. The software inside the unit is SatService own high sophisticated software and pointing / tracking algorithm which is designed by SatService itself. This software provides advanced features like SNMP MIB and adaptive tracking and will be maintained and improved continuously by SatService.

As new features TLE and I11 parameters tracking as well as POL prediction tracking are implemented.

The **sat-nms ACU2-19V2** can be delivered either with the traditional resolver interfaces, but also with the SSI interface for optical encoders providing higher resolution than resolvers. The analogue voltage interface for an existing beacon receiver is available as well. SatService recommends using **sat-nms LBRX19** beacon receiver as this is much more powerful and can interface via Ethernet UDP packets to the antenna tracking system. This beacon receiver is now available not only with L-band IF but also with C-, X-, Ku and Ka band input frequency range.

The **sat-nms ACU2-19V2** points any antenna size precisely on the satellite both for geo- and inclined-orbit-satellite based on a special adaptive tracking algorithm, by TLE or I11 parameters. The **sat-nms ACU2-19V2** records the tracked positions over several days and calculates based on this data a precise mathematical model, which is used to predict the antenna position. This reduces the step-track failures and provides continuous operation in case of a beacon receiver failure. In the Program Tracking Mode the antenna follows a path defined by a file that contains time stamped azimuth, elevation and polarization values.

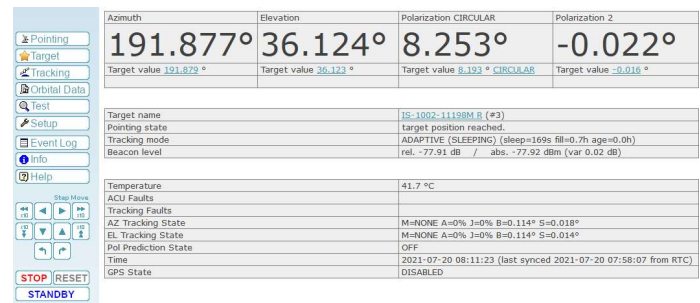The **sat-nms ACU19V2** includes:

- Drive Interface compatible with 7150 Antenna Drive Unit (includes limit switches, alarms, drive control)
- Ethernet UDP Interface for **sat-nms LBRX** and analog voltage interface for 3rd party beacon receivers

The **sat-nms ACU2-19V2** unit comes with an integrated web server and provides its operator interface via web browser. HTTP and FTP for remote diagnosis and support is also included. The system is easy to maintain. Support can be performed remotely and the interface to high-level MNC Systems is provided via Ethernet and TCP/IP or SNMP.

In addition to that, a local keypad and display is available to allow local control via the front panel.

Key Features

- Adaptive Step Tracking with self-learning Orbit Model Tracking Algorithm
- TLE or I11 parameters tracking
- Web-based, user-friendly Operator Interface
- Very compact rack-mount Design in 1RU
- HTTP and SNMP Protocol as MNC Interface
- Resolver or optical SSI angular encoders
- 4th axis and circular/linear switch as option

Technical Specification

Positioning and Tracking

Position Encoding	Resolver or SSI optical encoder interfaces, TBD at time of order per Axis
Quantization Error	Resolver 16bit: 0.0055° Optical SSI: 17bit: 0.0028°, 19bit: 0.0007°21bit: 0.00017°
Display Position Resolution	0.001°
Maximum Travel Rate of each Antenna Axis	1°/sec
Interfaces to Beacon Receivers	*sat-nms* **LBRX** or Analog Voltage Input for other Vendors Equipment
Analog Voltage Input	0 to 10V via D-Sub 9pol Connector
Option Tracking Accuracy	Encoder coupling and Alignment Error should not exceed 0.003° to achieve specified Tracking Accuracy. The Influence of Antenna Structure Thermal Error is not considered.
In step track Mode	Better than 10% of Receive 3dB Beam Width (RMS).
Position Encoding	1 LSB of Resolver / Digital Conversion
Operational Modes	Manual Mode (pointing only), Step Track, Polarization prediction, Adaptive Tracking takes into Account last Days History or TLE/I11 parameters, Program Tracking based on time stamped File Data or TLE/I11 parameters
Number of Presets	200, Storage of ACU Configuration (including LBRX Beacon Receiver Settings)

System Interfaces

MNC Interface	10/100-Base-T, via HTTP GET Requests, RS232 and SNMP, NTP interface
Operator Access	Via Web Browser
To *sat-nms* **MNC** and *sat-nms* **ACU-IDU**	Ethernet RJ45 or RS232
3 Angular Detectors, 4th Axis as option	Resolver or SSI Input via D-Sub Connectors, pin compatible to Vertex 7200
Drive Interface for Limit Switches, Interlock, Motors-off Switches and Drive Interface	Via Opto-Coupler Inputs and Outputs according to the 7150 Antenna Drive Unit. Connector D-Sub 25pol.

MNC Interface Specification

Ethernet Interface for MNC and User Interface	10/100-Base-T, via HTTP GET Requests
Operator Interface	Web Browser and Front Panel Display + Keypad
RS232 MNC Interface	D-SUB9

Electrical and Mechanical Specification, Environmental Conditions

Supply Voltage	110 to 230V /50 to 60Hz 2A
Power Consumption	50 W (10W typ. at idle mode)
Temperature Range	-10° to 50°C
Humidity	Up to 90% non-condensing
Dimensions	19”,1RU, 483x45x510(450) mm (WxHxD)
Weight	5.4 … 6 kg (depending on installed options)

Order codes (other special types available on request):

ACU2-19V2-SSS: standard 3 axes Version with SSI encoder interface at AZ, EL and POL axis

ACU2-19V2-SSR: standard 3 axes Version with SSI encoder interface at AZ and EL, Resolver interface at POL axis

ACU2-19V2-RRR: standard 3 axes Version with Resolver interface at AZ, EL and POL axis

ACU2-19V2-S01: 4 axes special Version with SSI interface at AZ and EL Axis, Resolver interface at POL and 4th axis and circular/linear switch interface