

sat-nms ACU19V2 Advanced Antenna Tracking System

The **sat-nms** ACU19V2 is an advanced automatic tracking antenna controller, which is based on the reliable and proven **sat-nms** ACU-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. The system is based on the **sat-nms** ACU-ODM Module and provides Model 7200 ACU fully compatible rear panel connectors in the 19" 1RU chassis.

Compatibility in this case means that the hardware interfaces are matching so that 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 GmbH itself. This software provides advanced features like SNMP MIB and adaptive tracking and will be maintained and improved continuously by SatService.

The **sat-nms** ACU19V2 can be delivered either with the traditional resolver interfaces, but also with the SSI interface for optical encoders providing higher resolution than resolvers. Also the analogue voltage interface for an existing beacon receiver is available. SatService recommends to use its **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** ACU19V2 points any antenna size precisely on the satellite both for geo- and inclined-orbit-satellite based on a special adaptive tracking algorithm. The **sat-nms** ACU19V2 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 receive failure. In the Program Tracking Mode the antenna follows a path defined by a file that contains time stamped azimuth, elevation and polarization values.

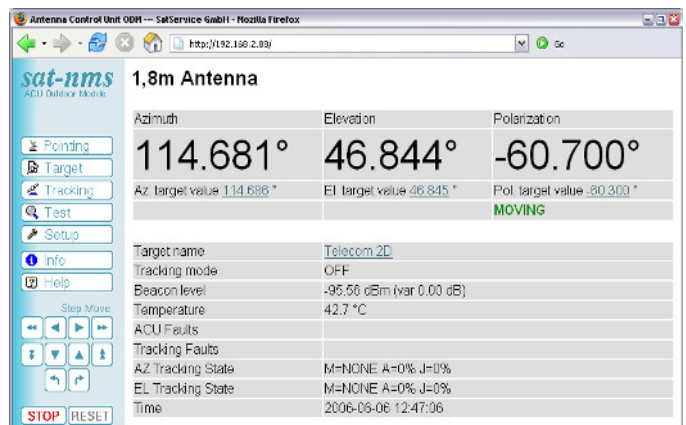


The **sat-nms** ACU19V2 includes:

- 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** ACU19V2 unit includes an integrated web server and provides its operator interface via web browser. The **sat-nms** ACU19V2 includes also http and ftp for remote diagnosis and support. The system is easy to maintain. The 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.



1,8m Antenna		
Azimuth	Elevation	Polarization
114.681°	46.844°	-60.700°
Az target value 114.686 *	El target value 46.845 *	Pol target value -60.300 *
MOVING		
Target name	Telecom 2D	
Tracking mode	OFF	
Beacon level	-95.58 dBm (var 0.00 dB)	
Temperature	42.7 °C	
ACU Faults		
Tracking Faults		
AZ Tracking State	M=NONE A=0% J=0%	
EL Tracking State	M=NONE A=0% J=0%	
Time	2006-06-06 12:47:06	

Key Features

- Adaptive Step Tracking with self-learning Orbit Model Tracking Algorithm
- Web-based, user-friendly Operator Interface
- Very compact rack-mount Design in 1RU
- HTTP and SNMP Protocol for external MNC Interface
- Resolver or optical SSI angular encoders

Contact Information

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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	Manuel Mode, Step Track, Adaptive Tracking takes into Account last Days History, Program Tracking based on time stamped File Data
Number of Presets	99 Storage of ACU Configuration (including LBRX Beacon Receiver Settings)

System Interfaces

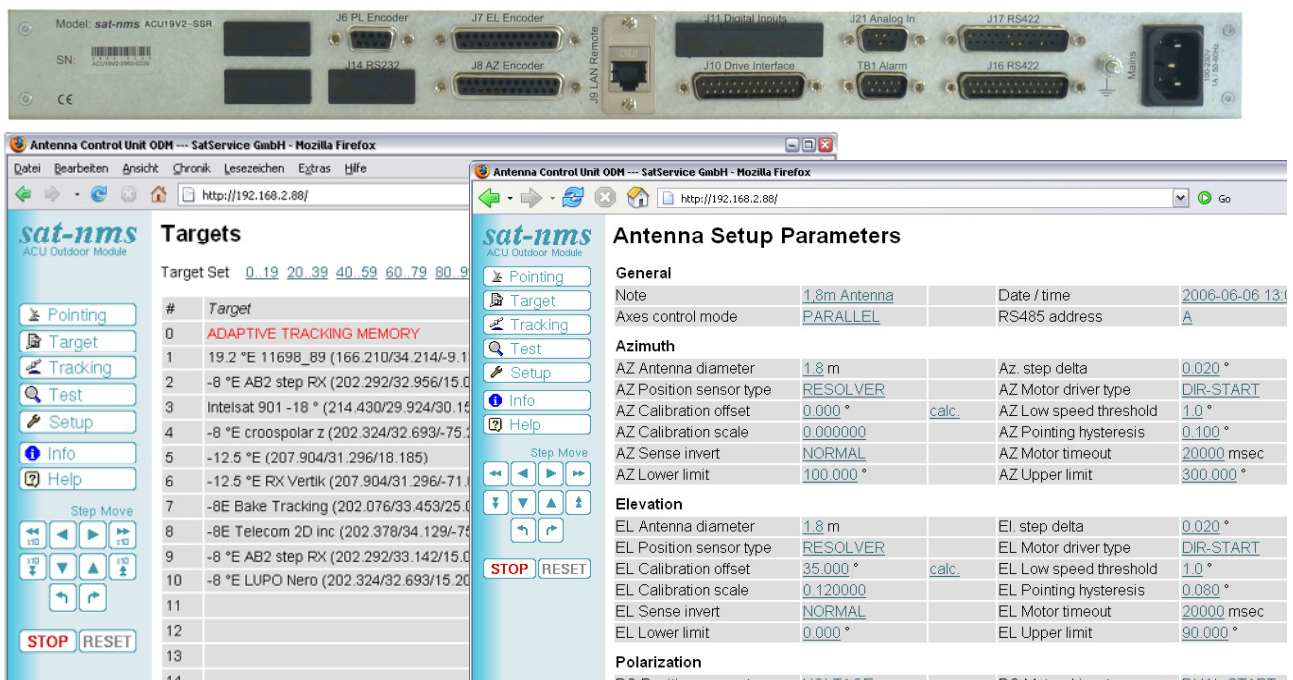
sat-nms MNC Interface	10-Base-T, via HTTP GET Requests, RS232 and SNMP
Operator Access	With Web Browser
To sat-nms MNC and sat-nms ACU-IDU	Ethernet RJ45 or RS232
3 Angular Detectors	Resolver, SSI or A/D Input via D-Sub Connectors
Drive Interface for Limit Switches, Interlock, Motors-off Switches and 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 sat-nms MNC Interface	D-SUB9

Electrical and Mechanical Specification, Environmental Conditions

Supply Voltage	110 to 230V /50 to 60Hz 2A
Power Consumption	50 W
Temperature Range	-10° to 50°C
Humidity	Up to 90% non-condensing
Dimensions	19",1RU, 450x45x380 mm (WxHxD)
Weight	4.5 kg



The image shows the physical hardware and its software interface. The hardware is a rack-mountable unit with various connectors labeled: J6 PL Encoder, J7 EL Encoder, J11 Digital Inputs, J21 Analog In, J17 RS422, J14 RS232, J8 AZ Encoder, J9 LAN Remote, J10 Drive Interface, TB1 Alarm, J16 RS422, and a Main Power connector. The software interface is a web browser displaying the 'Antenna Control Unit ODM' interface. It features a 'Targets' table with columns for '#', 'Target', and 'Target Set'. The 'Targets' table lists various satellite and antenna configurations. A 'Step Move' control panel is visible, including 'STOP' and 'RESET' buttons. The 'Antenna Setup Parameters' section is also shown, detailing settings for General, Azimuth, Elevation, and Polarization.