SatService GmbH

A company specialized in satellite communications

System Integration & *sat-nms* Product Family for Satellite Ground Stations

SatService
A Calian Company

SatService Gesellschaft für Kommunikationssysteme mbH was founded in 1996 and is a privately owned, independent company. The company is based in Steisslingen near Constance at the Lake of Constance in South Germany. Customers all over Europe have choosen SatService as a dependable source of cost-efficient, reliable and customer-oriented satellite ground station solutions and products for today's advanced telecommunication network infrastructure.

SATSERVICE - ADVANTAGES & STRENGTHS

Our employees have a long-lasting experience in satellite business since 1983 implementing complex turnkey satellite ground stations. For your benefit we provide services in:

- System Design
- Development
- System Integration
- International Project Management

SatService is in the position to deliver not only sub-systems but also complete satellite ground stations and VSAT networks according to your specific requirements. Long-lasting and trustful contacts to all major manufacturers of sub-systems, necessary for satellite ground stations and VSAT networks, protect the end user and his time schedules.
In addition to the pure system integration business SatService also has its own SATCOM product development capability, for user-oriented RF and microwave hardware and software.

If you need a wider range of solutions, flexibility, the highest quality equipment and expert technical service, you should choose SatService. Our mission is to deliver high-quality products and services to help you meeting your communication needs.

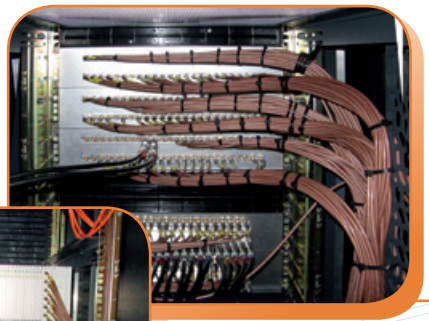
In other words - Quality MADE IN GERMANY

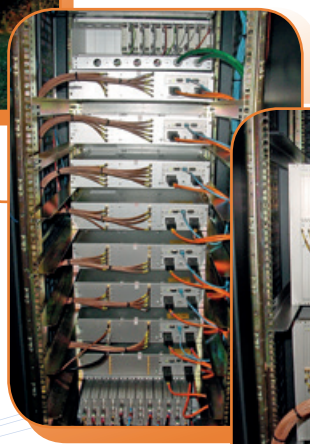
SATSERVICE IS A TURNKEY SYSTEM INTEGRATOR FOR:

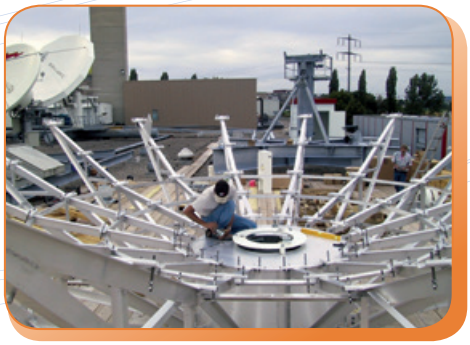
- Satellite Ground Stations for TV, Radio and Data Transmission of any Size
- SCPC-VSAT and small VSAT Networks
- Monitoring & Control as well as Network Management Systems
- Satellite Ground Station- and VSAT-specific Software
- Consulting, System Design, System Development and System Integration
- Service Center for Repair of Satellite Ground Station related Equipment

Special Solutions

As a flexible company with a broad range of know-how, we are happy to provide you with customized solutions. Whether it is an unusual upgrade of your waveguide system for a new frequency band, a special IOT measurement set-up or an RF adapter simulating your satellite link for compatibility testing of your satellites, SatService has the solution you need.







Reference Customers

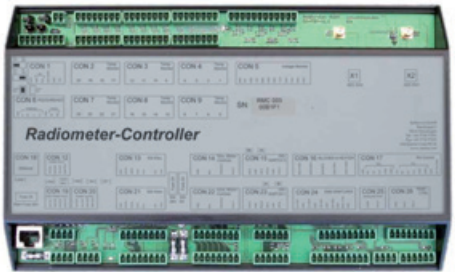
Airbus Group
ARD Group
Deutsche Telekom, Germany
Digital Media Centre, former Chellomedia
ESA - European Space Agency
Indra Sistemas S.A., Spain
Intelsat
Korea Aerospace Research Institute
Media Broadcast Satellite GmbH, Usingen, Germany
MX1, former SES Platform Services, Munich, Germany
NOS, The Netherlands
NRK - Norsk Rikskringkasting AS, Norway
Red Bee Media B.V., former Ericsson, The Netherlands
Rohde & Schwarz
RTL / CBC, Cologne, Germany
SES Group
SRG SSR, Zürich, Switzerland

sat-nms Product Family

SatService delivers reliable state-of-the-art satellite ground station products. We always seek to exceed the expectations of our customers, as they are the sole driver for our company. All quality objectives are achieved through the expertise of our engineers, attention to detail and our commitment to continuous improvement. Our customers consistently enjoy the experience, reliability and quality that are synonymous with the ***sat-nms*** brand. All products include an elegant and useful combination of RF and microwave hardware along with user-friendly application software. All products benefit from the experience of our engineers in efficient system integration. ***sat-nms*** products are developed from hands-on experience in practical applications. All products are in stock so that we can deliver on short notice and assist you in case of problems. If you need more detailed information, please have a look at our website www.satnms.com or send us your request for quotation. We are continually expanding the ***sat-nms*** product family. Your customer's suggestions and requests are always welcome.

Key Features

- Reliable and Stable Design
- Quality 'Made in Germany'
- Ethernet (TCP/IP, HTTP and SNMP)
- RS232-Interface
- Integrated Web Server
- Firmware Update via FTP



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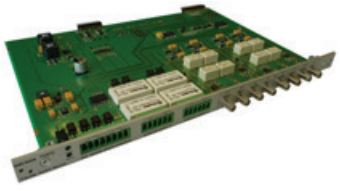

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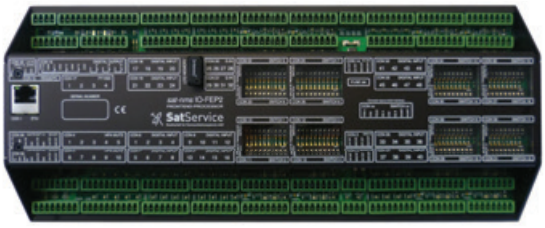
sat-nms product family



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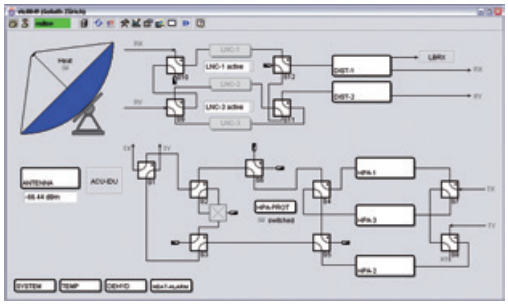
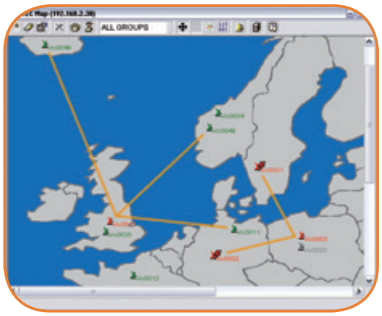


Monitoring & Control System ***sat-nms*** MNC | 8



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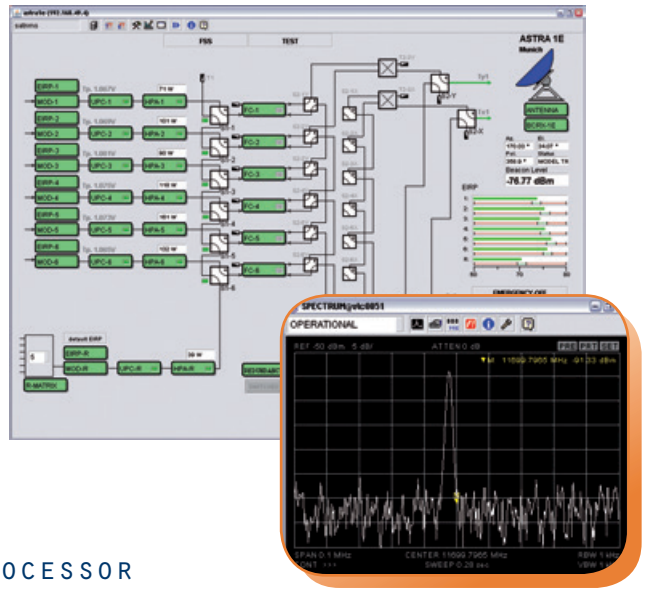
sat-nms MNC | UNIVERSAL MONITORING & CONTROL SYSTEM

Do you need a universal and adaptable M&C System growing with your applications in your satellite ground station infrastructure? The ***sat-nms*** MNC System is your choice for a reliable and user-friendly system including all the necessary tools in one package. The ***sat-nms*** MNC Software not only monitors and controls all the satellite ground station equipment but also provides an abundance of logical devices allowing the comfortable automation of higher-level applications and tasks.

KEY FEATURES

- Device- and task-oriented User Screens
- User-friendly Operator Interface
- Easy-to-use Graphical User Interface Editor
- Seamless Updates without Downtime for the Live System
- Virtual Device Driver Concept
- Creation of Device Drivers without Software Skills possible
- Protects Investments with simple Adaptability
- Logical Devices provide Additional Features
- Redundancy Switching & Uplink Power Control
- SNMP Capability to Equipment and higher-level NMS

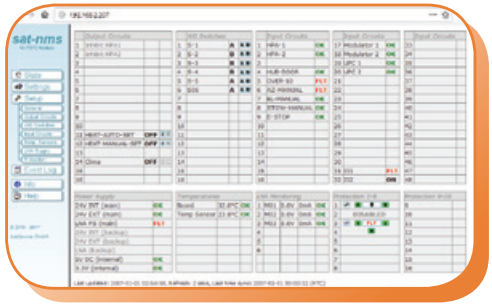


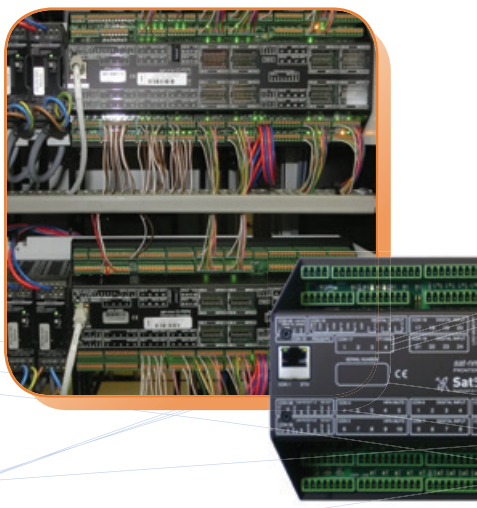
sat-nms IO-FEP2 | M&C FRONT-END PROCESSOR

What makes system integration of a monitoring and control solution inefficient? The system engineering, cabling and integration of all the small low-level interfaces in a satellite ground station, like alarm and status inputs, waveguide and coaxial switches and RF-inhibit of traveling wave tube or solid state amplifiers. The ***sat-nms*** IO-FEP2 is your sophisticated interface between the low-level contacts of a satellite ground station and its M&C-System. All this information and functionality is provided via a web-based user interface and via SNMP. As an additional feature, the ***sat-nms*** IO-FEP2 can help you to initiate the RF-Inhibit of your high-power amplifiers during the switching time of your waveguide switches controlled by the module.

KEY FEATURES

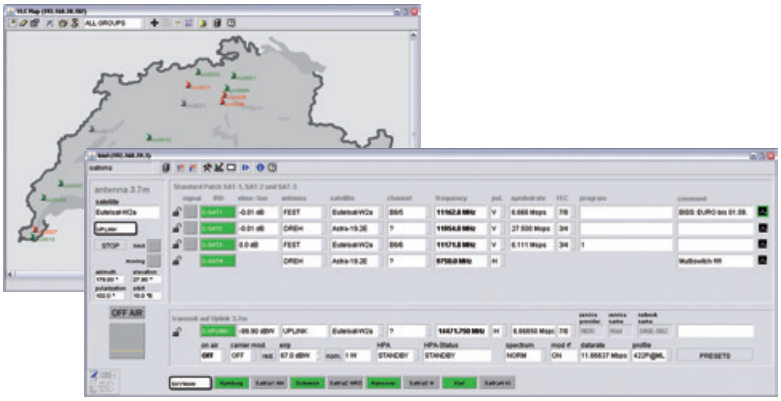
- 1:1 Redundancy Switching
- Alarm and Event Log File
- Stand-alone Usage without M&C





sat-nms NMS | NETWORK MANAGEMENT SYSTEM

The Network Management System is a comprehensive and powerful software solution that enables you to see the status of your complete network of local or remote stations and controls all integrated equipment and devices from a central site. This allows monitoring and controlling of unmanned sites, as it is simply too expensive to send engineers to remote locations for routine operations. The NMS operator has full control over all equipment and its functions and can monitor and change any equipment parameters as well as configuration of nodes without service interruption.

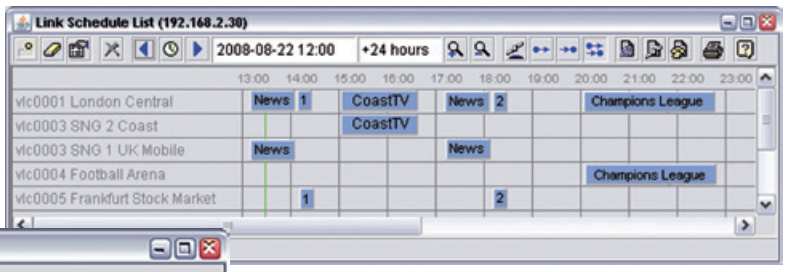


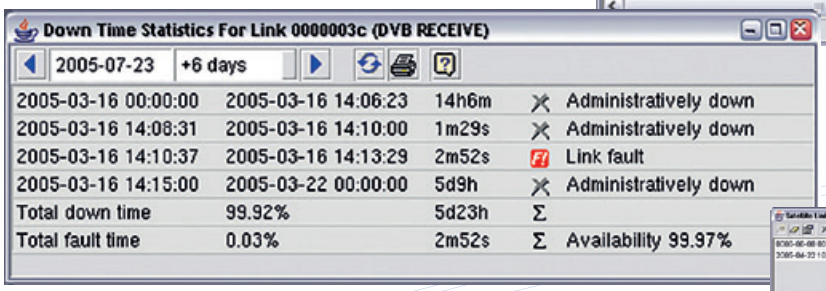
KEY FEATURES

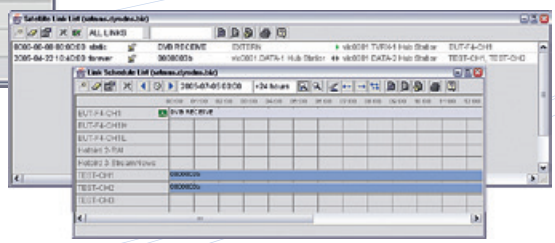
- Graphical Presentation of Network Configuration
- Central Alarm and Event Management
- Interface to higher-level NMS via SNMP
- Traffic-, Link-Management and Bandwidth on Demand
- *sat-nms* SCC Satellite Control Channel

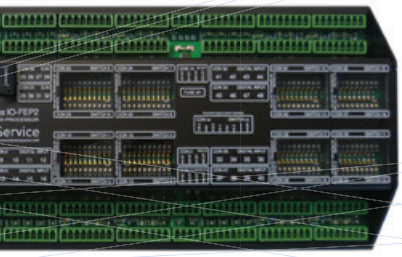
sat-nms LM | LINK MANAGEMENT MODULE

- Transmission Scheduling
- Simple Satellite Link Setup
- Transponder Resource Control



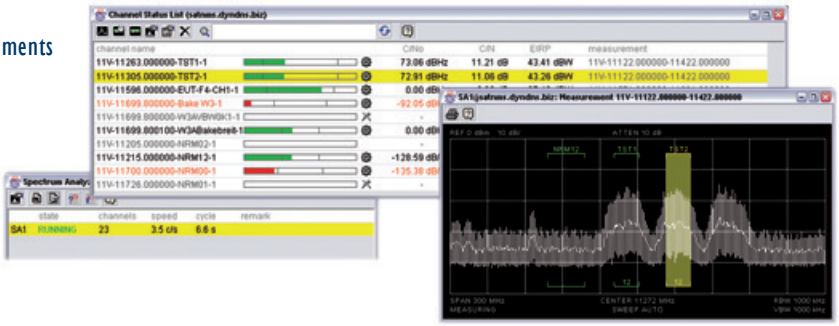






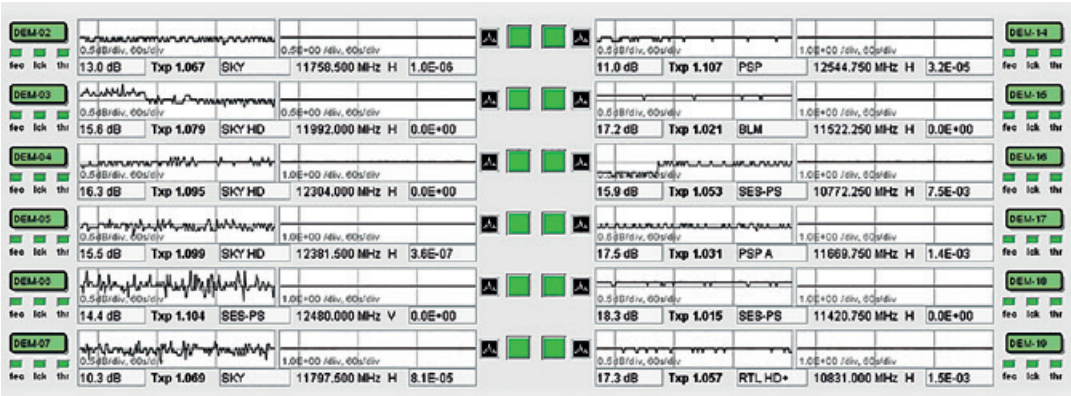
sat-nms CSM | COMMUNICATION SYSTEM MONITORING

- Automatic EIRP & C/N automatic Measurements
- Supports multiple Spectrum Analyzers
- Software-controlled RF Switches



sat-nms QMON | DVB-S/S2 QUALITY MONITORING SYSTEM

The ***sat-nms*** QMON System continuously monitors the transmission performance of transponders. It measures and records signal to noise ratio (SNR), channel bit error rate (CBER) before error correction, bit error rate (BER) and demodulator lock alarm.
Using three ***sat-nms*** QMON Systems at different geographic locations within the footprint of the satellite gives precise information about uplink availability as no longer rain attenuation at a single location will distort availability results.



KEY FEATURES

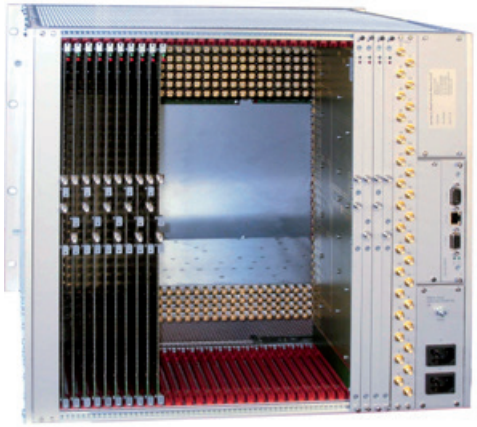
- Monitoring of up to 24 Satellite Transponders
- CBER, BER, SNR, Level Information & Lock Alarm
- Generate Criteria for Site Diversity Switching
- Generates Reports for monthly Uplink Availability
- Recording of Measurements
- ***sat-nms*** QMON communicate among each other via IP Network

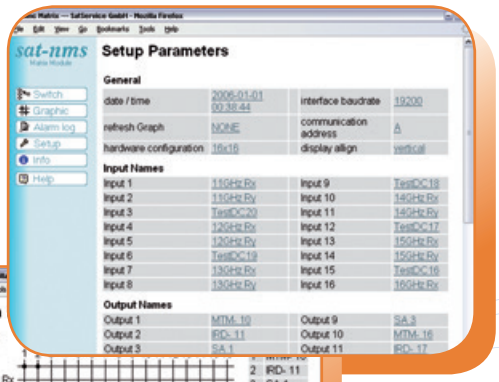
sat-nms LSM | L-band Switch Matrix

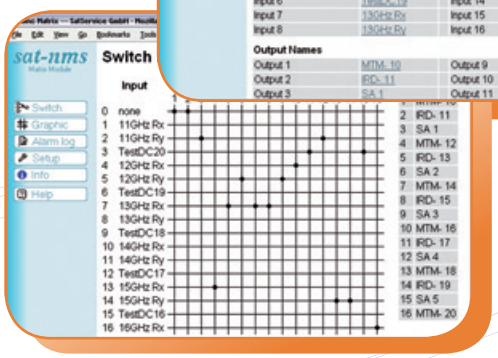
The ***sat-nms*** LSM L-Band Switch Matrix is the routing switch solution between your L-Band sources and destinations. It distributes all input-signals to any output port without blocking. Due to its modular design this unit is available from a simple 8:1 switch up to a huge 256 x 256 matrix.

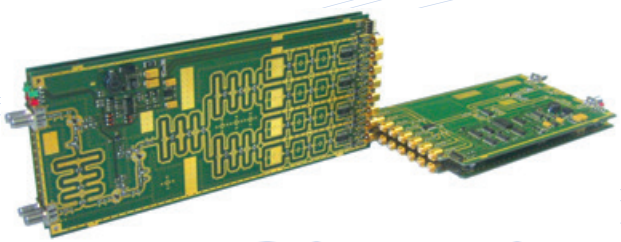
Key Features

- High port-to-port Isolation
- Mixed coaxial and optical Inputs possible
- Ethernet (TCP/IP, HTTP, SNMP) and RS232 Interface
- Front-panel Keyboard and large graphic Display
- In-service Exchange / Expansion by hotplugable cards
- Redundant Power Supplies
- LNB Supply Voltage via ***sat-nms*** LDCI



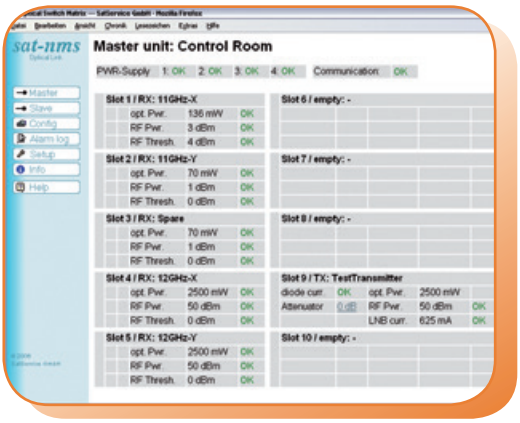






sat-nms LFTX/RX | Broadband Fiber Optical Link

This is one of SatService GmbH`s most exciting products, a compact range of fiber optic interfacility links. Launched in 2007, this product has been widely distributed to numerous broadcasters and SATCOM service providers. Its compact design includes an abundance of features and test capabilities to your benefit.
These interfacility links transmit and receive an entire L-Band polarization over single-mode fibers from a satellite antenna to reception equipment over a long distance while preserving signal quality.



Key Features

- Up to 10 optical Links per 2RU 19“ Frame
- In-service Exchange of Cards
- Mixed RX and TX Cards per Frame possible
- Ethernet (TCP/IP, HTTP, SNMP) and RS232 Interface
- L-Band and 10MHz over a Single Fiber for BUCs
- Gain Adjustment, local and remote
- Redundant Power Supplies
- Integrated DC LNC Power Supply
- Integrated 2 times 4:1 Redundancy Switching as Option
- Integrated 5 times 1:1 Redundancy Switching as Option
- Integrated 1:4 Divider per Channel as Option

sat-nms LFTX-S and LFRX-S | Single Fiber Optical Transmitter/Receiver

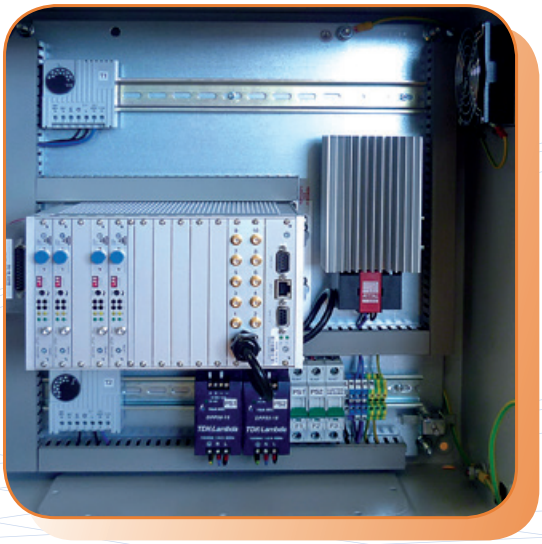
As alternative to the standard ***sat-nms*** LFTX/RX, SatService offers the single box solution ***sat-nms*** LFTX-S and ***sat-nms*** LFRX-S. Using the same hardware inside as in the standard units combinations of both worlds are possible. By using these modules you are now in the position to interconnect smaller satellite ground terminals or VSATs where only one or two transmission links are needed.

sat-nms LFODU | Fiber Optic Outdoor Cabinet

SatService provides the ***sat-nms*** LFODU Fiber Optic Outdoor Cabinet with the same functionality and the same fiber optic modules as the indoor 19" chassis. Both types of modules normally sliding into the corresponding 19" 2RU rack-mount chassis can be fitted into the miniframe integrated in this weatherproofed, thermal-controlled outdoor cabinet.

Three versions of the ***sat-nms*** LFODU Outdoor Cabinet are available:

- ***sat-nms*** LFODU-10: with 10 optical modules
- ***sat-nms*** LFODU-20: with 20 optical modules
- ***sat-nms*** LFODU-30: with 30 optical modules

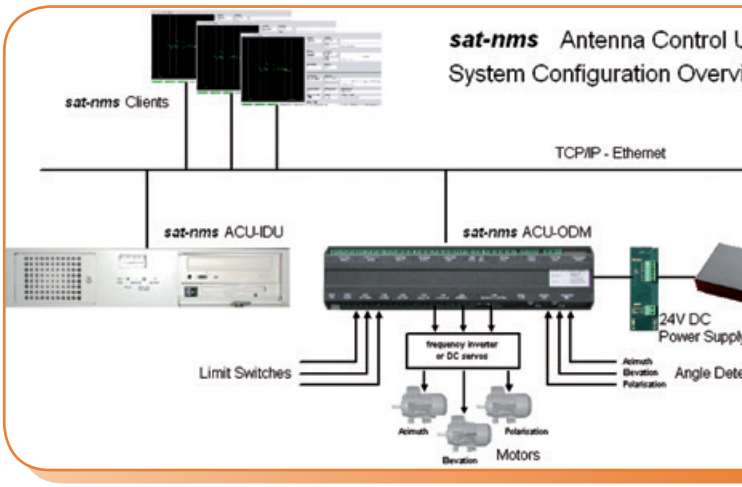


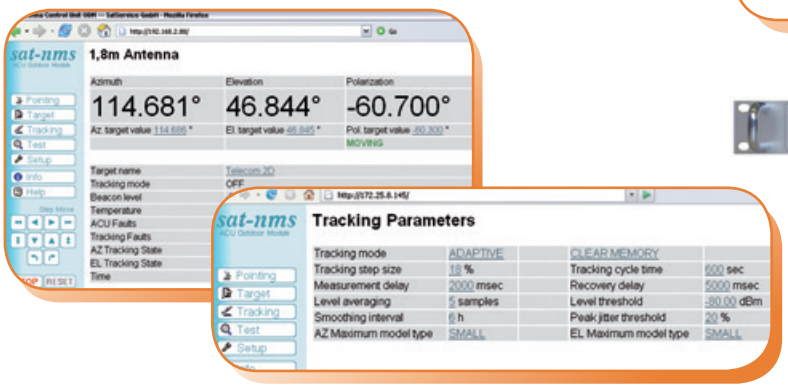
sat-nms ACU | ANTENNA CONTROL SYSTEM

Whether it is a small antenna or a huge dish of an Intelsat Std A satellite ground station, the ***sat-nms*** ACU is your stable and reliable choice for an Antenna Control System. SatService produces state-of-the-art satellite antenna control units including complete outdoor cabinets and tracking receivers. Its modular architecture and standard interfaces simplify new or retrofit integration. The ***sat-nms*** ACU Antenna Control System is an economic alternative to the systems provided by antenna manufacturers. SatService GmbH provides upgrade kits for all commercially available antenna types and can also perform on-site system integration.

KEY FEATURES

- SatService's Adaptive-Step-Tracking with self-learning Orbit Model Tracking-Algorithm
- Unsurpassed adaptive, predictive Tracking Performance
- Together with ***sat-nms*** LBRX a complete Step-Track-System in one Cabinet at the Antenna
- Different Angular Detector Interfaces, Resolver, SSI (optical) a Potentiometer to cover all Applications from outperforming Accuracy to low-cost Applications





sat-nms ACU-ODM | ANTENNA CONTROLLER

The ***sat-nms*** ACU-ODM is the core module of our Antenna Control System, a state-of-the-art automatic positioning and tracking system that incorporates advanced control modes and an enhanced web-based menu-driven user interface to provide accurate antenna positioning or tracking with minimum operator effort. It controls motors, monitors angle detectors, positions the antenna in all 3 axes and includes a precise adaptive step-track tracking algorithm.

sat-nms ACU-ODU | OUTDOOR CABINET

For easy replacement of your present antenna control system as well as for new systems, we have developed the ***sat-nms*** ACU-ODU. A complete, compact cabinet that contains everything you need for antenna tracking and even includes the ***sat-nms*** LBRX Beacon Receiver. It only needs an Ethernet interface for operation.

sat-nms LBRX | BEACON RECEIVER

The ***sat-nms*** LBRX Beacon Receiver is designed to measure and track satellite beacon signals and provide this information as an output signal for control systems. The main application of this receiver is in antenna tracking systems, where the receiver provides the tracking signal level to the antenna step-track controller. A further application is uplink power control.

KEY FEATURES

- Full L-Band Tuning Range 950MHz to 2150MHz, 1kHz Step Size
- C-, X-, Ku- and Ka-Band versions available
- Signal input switch with up to 8 L-Band Inputs
- Modulation independent Level Measurement
- No unpredictable Lock on PM/PSK Side Carriers
- Compact DIN rail box also allows Integration into Antenna Cabinet
- TCP/IP-based Design with HTTP Web Browser Interface

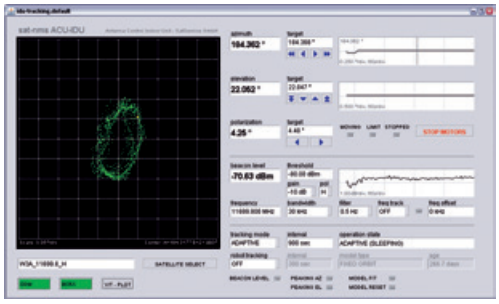
sat-nms ACU-RMU | RACK MOUNT UNIT ANTENNA CONTROLLER

In addition to the ***sat-nms*** ACU-ODU Outdoor Unit, SatService offers the ***sat-nms*** ACU-RMU. It is a complete and compact 6RU 19" rack-mount chassis antenna controller. Installed directly into a 19" rack inside an air-conditioned equipment room this unit is perfect for Teleports with harsh environments. The system is based on the ***sat-nms*** ACU-ODM Outdoor Module and includes three AC motor-driver units. All interfaces to the satellite ground station antenna are accessible via connectors at the rear panel of the 19" chassis, so that it is easy to be integrated.

sat-nms ACDS | COUNTER TORQUE DRIVE SYSTEMS

The SatService counter torque drive system consists of the matching drive system hardware, AC servo motors and feedback control software – all developed by SatService. Certainly, SatService can also deliver such electronic drive systems for new antennas as well.
Counter torque is a special mechanical configuration using the tension between two motors in each antenna axis and is used for large and precise pointing parabolic antennas. In order to maintain a perfect antenna pointing, the backlash will be eliminated by a specific torque difference between the two driving motors. This torque difference will be kept permanently from the drive system, this means the two motors will move against each other even if the antenna is in position.

sat-nms ACU-IDU | INDOOR UNIT



Our ***sat-nms*** ACU-IDU is much more sophisticated than competing systems and compared to the web browser ***sat-nms*** ACU-ODM Outdoor Module. It provides an abundance of additional features such as:

- Event / Alarm Log
- Graphical Presentation of Antenna Tracking Performance as y(t) diagram
- Model Tracking with Kepler two line and Intelsat 11 Element Data
- Can be upgraded to a complete ***sat-nms*** MNC System

sat-nms ACU | ACU REPLACEMENT UNITS

The ***sat-nms*** ACU19V2 is a connector compatible replacement of the Vertex Model 7200. The system is based on the ***sat-nms*** ACU-ODM Outdoor Module and provides fully compatible rear panel connectors in the 19" 1RU chassis correspondent to the Model 7200.

The ***sat-nms*** ACU-ACS3000 is an upgrade kit for antennas with Andrew ACS3000 Tracking Systems. It will be installed directly into the Andrew Motor Drive Cabinet.

The ***sat-nms*** ACU-RMU-NEC is a direct replacement of the older NEC ACUs. It is a complete and compact 6RU 19" rack-mount chassis antenna controller. All interfaces to the satellite ground station antenna are accessible via connectors matching the NEC ACU-Connectors at the rear panel of the 19" chassis, so that it is easy to be integrated.

sat-nms MANTN2 18/24 | MOTORIZED ANTENNA

Does your application require a stable and rugged antenna with easy to handle electronics? Then the ***sat-nms*** MANTN2 antenna is exactly what you need. This high-performance antenna provides very rugged mechanical construction that is incomparable to other simple motorized antennas. With the ***sat-nms*** ACU-ODM Antenna Control - Outdoor Module and its web-based, user-friendly operator interface you reach a new orbit position with just one mouse click.

KEY FEATURES

- Pre-assembled Complete Package
- Simple Installation
- True electro-mechanical Polarization Adjustment
- Wide Travel Range in all 3 Axes
- ***sat-nms*** MANTL: L-Band Receive only Circular Polarized
- ***sat-nms*** ACU19 Antenna-Tracking-System with integrated DC-Motor Drivers in 1RU 19" Chassis

sat-nms RMC | RADIOMETER CONTROLLER

A lot of radiometers are installed worldwide to measure the atmospheric attenuation for satellite communication and scientific applications. As these radiometers become outdated, SatService has developed a new radiometer controller to retrofit the old radiometers with new state-of-the-art electronics and software. This includes the highly linear ***sat-nms*** RMD Radiometer Detector.
If you have any requirements in the field of ground-based microwave radiometers, do not hesitate to send us your requirements.

sat-nms PS | C-, X- OR KU-BAND POWER SENSOR

KEY FEATURES

- Measures the RF Power Output of C-, X- or Ku-Band Signals
- Electronical Calibration to ensure accurate Measurements
- Ethernet TCP/IP and HTTP Interface for Remote Controlling
- Compact Design

sat-nms LRXD44 | L-Band Distributor

The *sat-nms* LRXD Family has been designed to distribute L-Band Signals without loss. The *sat-nms* LRXD in its compact 1RU 19" enclosure provides up to 16 outputs per input. Additionally to signal-dividing, the *sat-nms* LRXD provides the DC supply voltage for the connected LNC(s). The LNC power supply is redundant and includes current monitoring.

Key features

- Amplitude Flatness over the entire L-Band Frequency Range
- Output Ports 50Ω SMA female or 75Ω F-Type female
- Integrated switchable LNC Power Supply with current Monitoring
- 3 different Models: 1:8, 1:16, 2 times 1:8, or 4 times 1:4 Distribution
- Integrated Redundant Power Supplies

The *sat-nms* LRXD14 has an ultra-compact design for applications with reduced available space (e.g. SNG). In addition to the 0dB 1:4 L-Band signal distribution, the LRXD14 provides the following features:

- Output Ports can be defined at time of order as 50Ω SMA female or 75Ω F-Type female, in any combination
- Input 50Ω SMA female or 75Ω F-Type female
- An external supplied 10MHz Reference is multiplexed on the L-Band Interface to the LNC
- 14/18V and 22kHz Tone switching initiated by Contact Closure Interface
- Controls LNB's Polarization and Frequency Range
- Ultra Compact Enclosure
- Up to 14 Units fit into 19" 3RU

sat-nms LC *sat-nms* LD and *sat-nms* IMC | L-Band Distributor

SatService also provides a set of special small L-Band modules that simplify ground station integration. Here are three examples:

sat-nms LD10
L-Band Splitter

sat-nms LC10
L-Band Coupler

sat-nms IMC
50/75Ω Converter

sat-nms IMCLL-5
Low Loss Impedance Converter 50/75Ohm

sat-nms SMU | SIGNAL MANAGEMENT UNIT

The *sat-nms* SMU is the unit you always were looking for in your satellite ground station or satellite head-end environment. It enables you to perform all kind of signal management in a simple to use and very flexible unit. Due to the choice of different card modules you are able to build your own *sat-nms* SMU best matching the requirements of your application. Each card module is designed to fulfil a specific function and the combination of different card modules gives you the possibility to solve your signal handling problems.

KEY FEATURES

- LNA/LNB Redundancy Switching
- Automatic Signal Backup Switching
- LNB DC Insertion and Current Monitoring
- IF & L-Band Level and Threshold Monitoring
- Adjustable Gain / Output Level

sat-nms MPC | MULTIPURPOSE CHASSIS

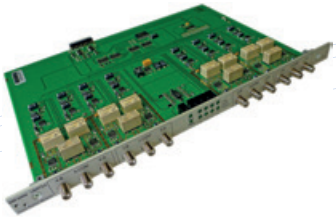
The *sat-nms* MPC is the basic chassis for all applications. A maximum of 5 modules fit into this chassis. The chassis provides the remote M&C interface via web browser, SNMP, HTTP GET functions and RS232 interface.

sat-nms TMPS | TRANSFER MULTIPURPOSE SWITCH

The *sat-nms* TMPS Module includes two IF & L-Band coaxial transfer switches, DC inserter, IF & L-Band input level, threshold monitoring, as well as two interfaces for external waveguide switches. In this case, the software also performs automatic redundancy switching, for example, for LNB systems.

sat-nms UMPS | UNIVERSAL MULTIPURPOSE SWITCH

The module *sat-nms* UMPS includes 4 SPDT coaxial switches providing at its 2 input ports DC insertion and IF input level monitoring. The software allows manual and level threshold based automatic switching, for example, for signal backup switching.



sat-nms LDCI | LINE AMPLIFIER DC INSERTER

The module *sat-nms* LDCI includes 4 adjustable line amplifiers, LNB DC insertion (ON/OFF), IF & L-Band input level as well as threshold monitoring.

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