System Integration & **sat-nms** Product Family

For Satellite Ground Stations
SatService Gesellschaft für Kommunikationssysteme mbH was founded in 1996 and is a privately owned, independent company. The company is located in Steisslingen near Konstanz at the Lake of Constance in South Germany. Customers all over Europe have chosen 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 longlasting experience in the satellite business since 1983 implementing complex turnkey satellite ground stations. To 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
System Integration
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

SRG SSR idée suisse, Zürich
Norddeutscher Rundfunk, Hamburg
RTL, Cologne
ESA, European Space Agency
APS Astra Platform Services, Munich
Elemedia, Italy
Indra, Spain
NRK, Norway
SES Astra, Luxembourg
Technicolor, Netherlands
Rohde & Schwarz, Netherlands
Media Broadcast, Germany
T-Systems, Germany
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. 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 check our website www.satnms.com or send us your request for a 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
sat-nms product family

- **Antenna Control System** sat-nms ACU | 12
- **M&C Frontend Processor** sat-nms IO-FEP | 8
- **Network Management System** sat-nms NMS | 9
- **Broadband Fiber Optical-Links** sat-nms LTX/RX | 10
- **L-Band Switch-Matrix** sat-nms LSM | 11
Do you need a universal and adaptable M&C system which grows with your applications in your satellite ground station infrastructure? The sat-nms MNC System is your choice for a reliable and user-friendly system which includes all the necessary tools in one package. The M&C software not only monitors and controls all the satellite ground station equipment but also provides an abundance of logical devices which allow 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 to the live system
- Virtual device driver concept
- Create device drivers without software skills
- 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-FEP | 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-FEP 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-FEP 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-logfile
- Stand-alone usage without M&C
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
- EIRP & C/N automatic measurements
- Monitors several spectrum analyzers
- Software controlled RF switches
- Transmission scheduling
- Simple satellite link setup
- Transponder resource control
This is one of SatService GmbH’s most exciting product, 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.
The sat-nms 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. Through 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 and SNMP) and RS232 Interface
- Frontpanel keyboard and big graphic display
- In service exchange/expansion of cards
- Redundant power supplies
Whether it is a small antenna or a big 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 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 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) and potentiometer to cover all applications from outperforming accuracy to low-cost applications

The sat-nms ACU-ODM is the core module of our Antenna Control System, a state-of-the-art automatic positioning and tracking system which 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.
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.

Our sat-nms ACU-IDU is much more sophisticated than the competing systems and compared to the web browser interface of the ACU-ODM module and provides a wealth 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 M&C system

The sat-nms L-band 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 950 to 2050MHz, 1kHz step size
- 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
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. Besides 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, 2 times 1:8 or 1:16 distribution
- Integrated redundant power supplies

The sat-nms LRXD14 has an ultra-compact design for applications with reduced available space (e.g. SNG). Besides 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

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

- **sat-nms LD12** | L-Band Splitter
- **sat-nms LC10** | L-Band coupler
- **sat-nms IMC** | 50/75Ω converter
**sat-nms MANT 18/24 | Motorized Antenna**

Does your application require a stable and rugged antenna with easy to handle electronics? Then the sat-nms MANT antenna is exactly what you need. This high-performance antenna provides very rugged mechanical construction which is incomparable to other simple motorized antennas. With the sat-nms ACU-ODM antenna controller 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 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 a 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- or Ku-Band Power Sensor**

The sat-nms Power Sensor is a measurement-tool that allows the measurement of RF power output of C- and Ku-Band Signals and monitor information via Ethernet and web browser.

**Key Features**

- Electronically calibration to ensure accurate measurements
- Ethernet TCP/IP and http interface for remote controlling
- Compact design