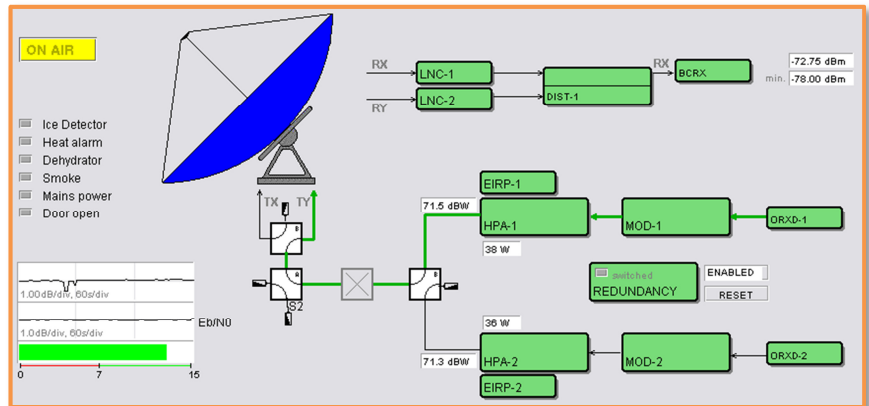


sat-nms MNC - Monitoring & Control System

The **sat-nms** MNC Monitoring & Control System from SatService GmbH is a comprehensive software-based system providing monitoring and control of any type of satellite ground station and associated baseband equipment. The system consists of two parts:

- **sat-nms** MNC Server System interfacing to the ground station equipment
- **sat-nms** MNC Client Software operating on any computer which has a TCP/IP connection to the server

The **sat-nms** MNC System can operate as stand-alone solution or fits into the overall **sat-nms** NMS Network Management System Solution provided by SatService. It has the advantage that several ground stations can be monitored & controlled both locally and from a central site.



Functionality of the sat-nms MNC System

The **sat-nms** MNC System monitors and controls the equipment of a satellite ground station. The monitoring is performed locally without any influence and connection of any operator client. The connected equipment is polled and monitored continuously. Typical alarm flags of the equipment, like summary alarm, lock alarm, etc., thresholds or limits of data quality are detected. The alarm message is stored in the internal **sat-nms** MNC Database at the **sat-nms** MNC Server and the operator is alerted via both a graphical and an audible alarm. The internal database can easily be scanned and searched via a user-friendly interface for analysis. The **sat-nms** MNC Operator has full control over all equipment, the different functions and can monitor and change any equipment parameters without service interruption. The **sat-nms** MNC Operator can store complete equipment configurations and can generate presets for easy retrieval of equipment configuration. Each device is represented in its own window and the concept of the Virtual Device Driver defines families of satellite ground station equipment with common user interfaces for operators with multi-vendor equipment in the field.

The client user interface is adaptable to the special operational requirements of the user:

Key Features

- Client-Server Software Architecture
- TCP/IP-based Design
- Full remote Administration and Support
- Client is independent from Operating System
- Unlimited Number of Clients possible
- Event/Alarm Log with Filter Utilities
- Task- and device-oriented User Interfaces
- Macro Recording Functionality
- Software configurable Interface Device Configuration
- CAD Like Screen Configuration Utility for user-configurable Operator Screen Contents
- Comparable Equipment of different Manufacturers has the same "Look and Feel" due to the virtual Device Driver Concept
- Support of SNMP Protocol

- The device-oriented user interface provides all parameters of the satellite ground station equipment and a deep insight into the equipment for system engineers
- The task-oriented user interface is a customized user interface, is fully configurable and reduces the user interface to the special requirements of the operators. Several task-oriented and or device-oriented user interfaces can be used in parallel.

Contact Information

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Technical Specification

Each **sat-nms** MNC System consists of an Industrial PC designed for 19" rack mounting (1RU) with an Ethernet interface and space for one serial interface cards with max. 8 RS232, 422 or RS485 interfaces. If the number of serial interfaces exceeds the internal capabilities, we support port serial port servers.

Supported Interfaces to Satcom Equipment

Serial Interface RS232 and/or RS422/RS485 on a D-SUB9 Patch Panel
 Network Interface (IP over Ethernet, TCP, SNMP, HTTP)
 Opto-Coupler Inputs and Outputs for Alarm/Status Contacts or Waveguide/Coaxial Switches via **sat-nms** IO-FEP
 Potential free Relay Output Contacts via **sat-nms** IO-FEP
 Ethernet Interface for overall Network Management and User Interface

Electrical and Mechanical Specification, Environmental Conditions

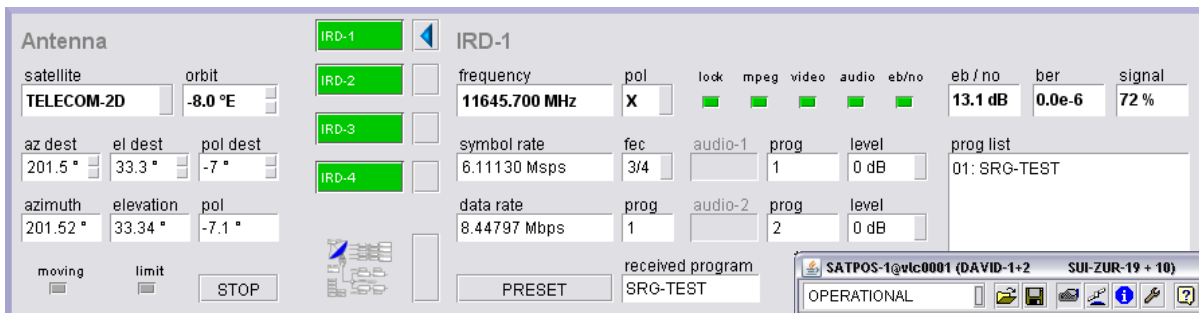
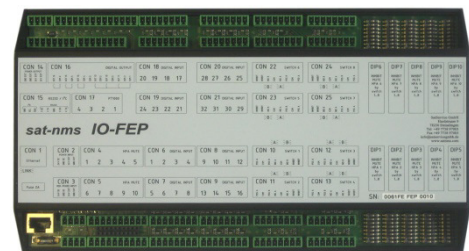
| | |
|-------------------|-----------------------------|
| Supply Voltage | 230V/50Hz, 110V/60Hz, 100VA |
| Temperature Range | 10° to 40° C |
| Humidity | Up to 90% non-condensing |
| Dimensions | 19", 2 RU x 480mm or 1RU |

Common M&C System Configurations

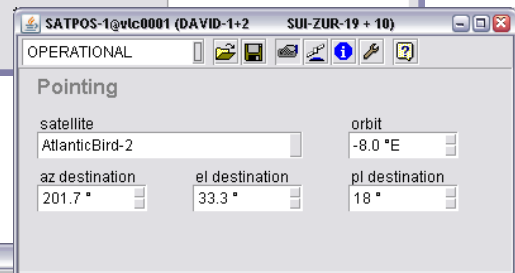
| | |
|----------|------------------------------------|
| MNC-0/0 | Only Network Interfaces |
| MNC-4/8 | 4x RS422/485, 8x RS232 and Network |
| MNC-0/24 | 24 x RS232 and Network |

sat-nms IO Frontend Processor

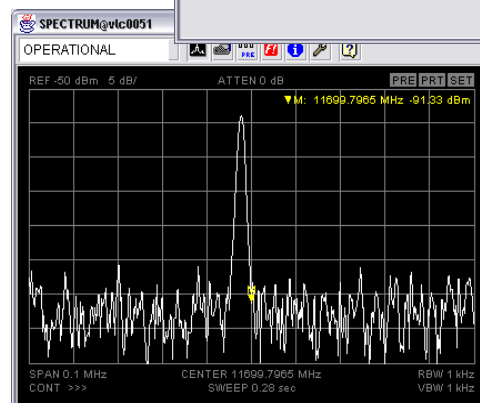
The **sat-nms** IO-FEP interfaces to any "low level" interface commonly used in satellite ground stations like equipment alarm contacts, waveguide- or coaxial-switches and other status signals. It provides opto-coupled in- and outputs and potential free relay output contacts and interfaces for PT1000 temperature sensors. As additional feature, the **sat-nms** IO-FEP can also perform the RF-inhibit of high power amplifiers.



Task-oriented User Interface for Receive-Only Station



Antenna Pointing Device



Spectrum Analyzer Device

Included software modules

- Antenna Pointing manages Satellite Lists
- 1:N Protection Switching
- Device Settings and Parameter Mirror
- Parameter Logging and Strip Chart Display
- Arithmetic and Comparison Operations
- EIRP Settings and Control Loop
- Uplink Power Control
- Site Diversity Switching

and many more functions are already built-in.