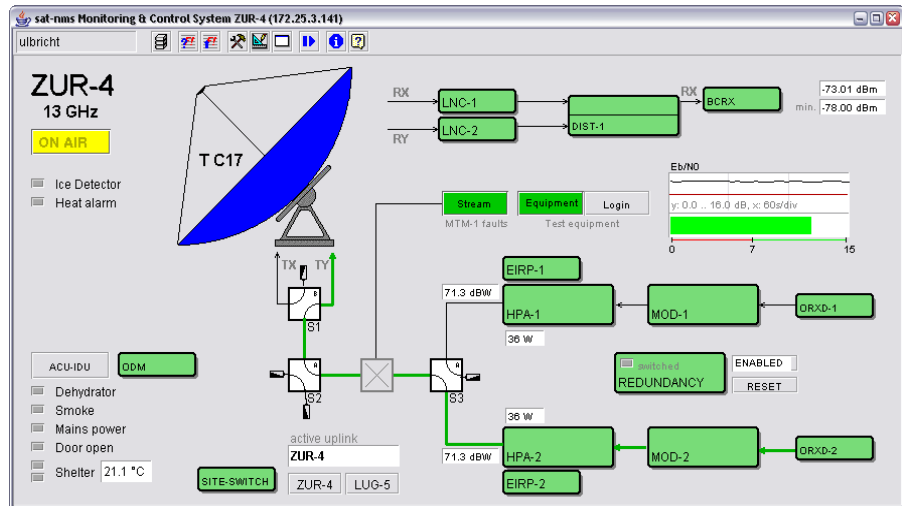


sat-nms Monitoring & Control System

The **sat-nms** 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:

- M&C Server System interfacing to the ground station equipment
- M&C Client Software operating on any computer which has a TCP/IP connection to the server

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



Functionality of the M&C System

The M&C 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 M&C database at the M&C server and the operator is alerted via both: a graphical and an audible alarm. The internal database can easily be scanned and searched with a user-friendly interface for analysis. The M&C operator has full control over all equipment and their functions and can monitor and change any equipment parameters without service interruption. The M&C operator can store complete equipment configurations and generate Presets for easy retrieval of equipment configuration. Each device is represented by 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 operating system independently
- 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 in 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 parallel.

Contact Information

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Technical Specification

Each M&C System consists of an Industrial PC designed for 19" rack mounting (2RU) which has an Ethernet interface and space for up to three serial interface cards with max. 24 RS232 or RS485 interfaces. This gives a wide capability of the number of interfaces of an M&C system. If the number of serial interfaces exceeds the internal capabilities, we also support port terminal 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

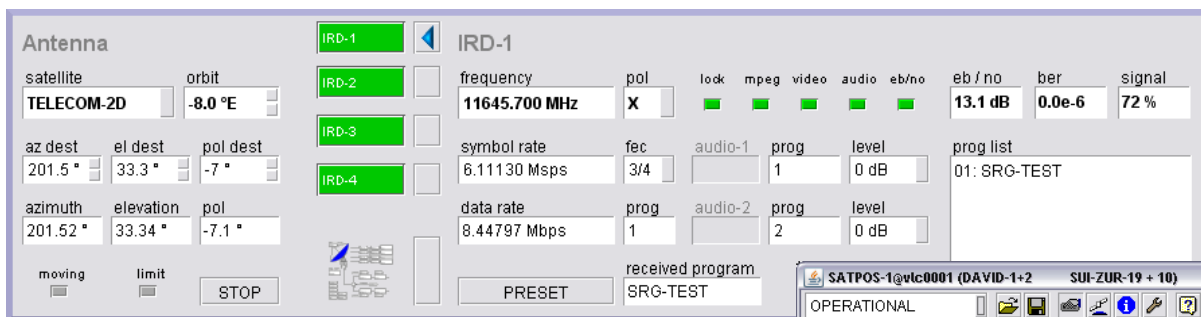
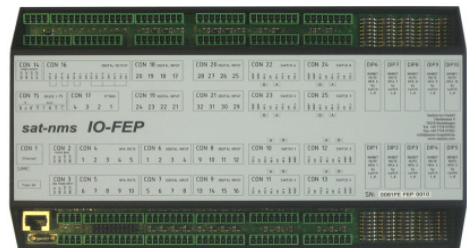
Supply voltage	230V/50Hz, 110V/60Hz, 100VA
Temperature range	10° to 40° C
Humidity	Up to 90% non condensing
Dimensions	19", 2 RU x 480mm or 1RU

Common M&C system configurations

MNC-0/0	only Network interfaces
MNC-4/8	4x RS422/485 and 8x RS232 and Network
MNC-0/24	24 x RS232 and Network

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 IO-FEP can also perform the RF-inhibit of high power amplifiers.

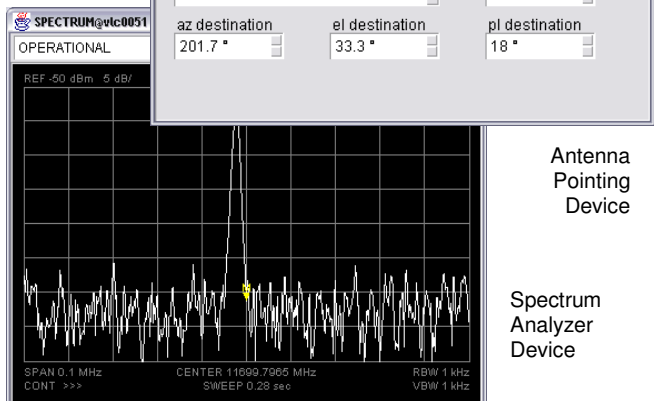


Task oriented User interface for Receive-Only Station

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 much more functions are already built-in.



Antenna Pointing Device

Spectrum Analyzer Device