

SatService Radiometer and Radiometer Services

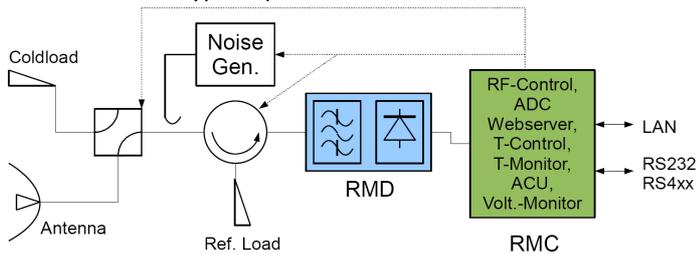
A lot of radiometers are installed worldwide to measure the atmospheric attenuation and water vapor content for satellite communication and scientific applications. They will be used for in-orbit acceptance testing (IOT) and anomaly investigations by satellite operators to verify the payload of communication satellites. As these radiometers installed in the 90's are becoming outdated, SatService developed a new **sat-nms** RMC radiometer controller to retrofit the old radiometers with new state-of-the-art electronics and software. This includes also a highly linear **sat-nms** RMD Radiometer Detector for the detection of the noise signal.



SatService GmbH has two own radiometers for operation at 14.7GHz. These two radiometers were manufactured in 1988 by the company Elektronikcentralen. SatService GmbH retrofitted and upgraded the radiometers with the **sat-nms** RMC radiometer controller, **sat-nms** RMD Radiometer Detector and an electrical motorization in elevation axis. These Radiometers could be rented.

SatService GmbH also has cryogenic cold loads working with liquid nitrogen operating at 14GHz, 20GHz and 30GHz for an accurate and precise calibration of radiometers. It is possible to rent this cold loads or the complete calibrations service from SatService GmbH.

The radiometer type implemented in the **sat-nms** RMC is noise balancing / noise injecting which provides high stability



and measuring accuracy as well as easy and flexible operation. In addition to that the software includes all other additional functions necessary for a radiometer, for example, control functionality for elevation of the radiometer antenna. This allows automatic tip curve calibration and automatic calibration with a cold load via **sat-nms** RMC. Also the complete high precision temperature control of

the feed box, including the microwave and IF receiving system, is performed via the radiometer controller.

The radiometer controller provides an Ethernet TCP/IP interface. All measurement results and the monitoring parameters are available via HTTP web interface and can be monitored and controlled from remote IOT software either via HTTP get functions or via RS232 interface. The controller includes a compact flash card of 2GB for data logging purposes and allows download of data via FTP. sales@satservicegmbh.de

Key Features rental Radiometers

- KU-Band Radiometer 14.7GHz
- High Accuracy
- Elevation Motorized
- Rigid Mechanical Construction
- Good Transportability

Applications

- IOT Measurements
- Atmospheric Attenuation Measurement
- Long-term Recording of propagation Conditions
- Water Vapor Content Measurement
- Uplink Power Control

Key Features Radiometer Services

- Deep Knowledge in radiometer theory
- Experience in Retrofit of Radiometers
- Accurate Cryogenic Cold Loads
- Experience in Cold Load Calibration

Contact Information

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Technical Specification

Radiometer Performance Specification

Centre Frequency	14.7GHz
Max RF Bandwidth	+/- 100MHz
IF Frequency	70MHz
IF Bandwidth	40MHz
Noise Figure	<7.5dB
Temperature Measurement Range	0 to 308K Sky Noise
Radiometer Type implemented	Noise Balancing, Noise Adding
Integration Time Constant	1s...60s
Switching Rate	256Hz
Measurement Resolution	Range/2048 = 0,15K
Measurement Accuracy	
- Absolut Sky Noise Temperature	5K at Elevation > 10°
- Differential Sky Noise Temperature	2K
Antenna Type	Cassegrain, 1m Reflector
Antenna Beam Width	1,6°
Polarization	Horizontal or Vertical
Elevation Adjustment	+/-90° with electrical Motor
Feed / Reflector Blower Control	Within Software
Temperature Regulation for Feed / Waveguide Box integrated	Within Software
Number of Temperature Measurement Points	24
Integrated CompactFlash for Data Logging	2GB, more than 2 years capacity

M&C Interface Specification

Ethernet Interface for MNC and User Interface	10-Base-T, Via HTTP GET Requests or Website
File Download from Internal CompactFlash	FTP

Electrical and Mechanical Specification, Environmental Conditions

Supply Voltage	230VAC / 50-60Hz / Max. 10A
Temperature Range	-20° to 35° C
Humidity	100%
Dimensions	115 x 135 x 130cm
Weight	200kg
Wind Velocity	25m/s
Rain Rate	200mm/hr

