

## sat-nms LBRX - L-Band Beacon Receiver

The **sat-nms** LBRX L-Band Beacon Receiver manufactured by SatService GmbH is a measurement tool that measures the RF input level and provides this information as output signal for control systems. The **sat-nms** LBRX is our DIN rail box version of the **sat-nms** LBRX. A 19" rack-mount version is also available. 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. Other applications can pilot measurement and control loops like uplink power control.



The **sat-nms** LBRX receives a satellite beacon signal that is down-converted to L-Band by a PLL stabilized Low Noise Converter (LNB) at its L-Band interface input. The **sat-nms** LBRX does not demodulate any satellite signals because the satellite signals are not always CW signals but even more often modulated

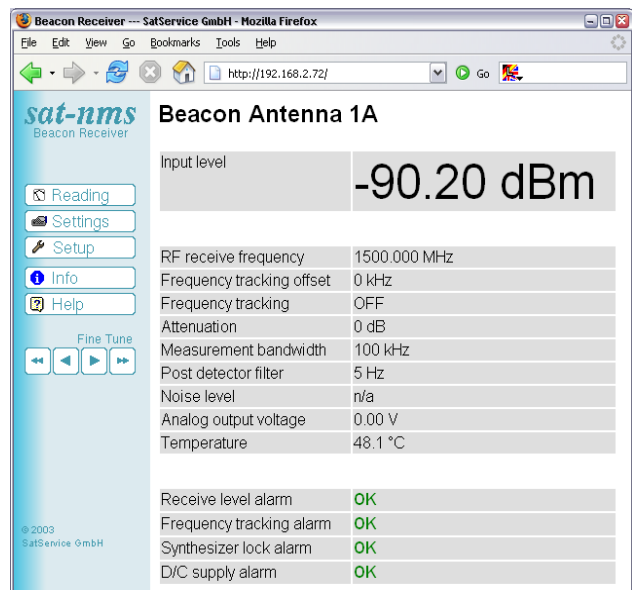
in FM or QPSK. Due to this fact, the best implementation is a non-coherent receiver that measures the input level in a user selectable defined bandwidth and provides this digitized level information via local and remote interfaces. The signal level information is provided via four different interface types: an http web interface via internal web server, UDP datagram's, RS232 interface and the dB linear analog output voltage. The **sat-nms** LBRX Beacon Receiver is controlled remotely by a monitoring and control application via the TCP/IP interface. Communication with the beacon receiver is made with http requests or over a serial Monitoring and Control protocol.

### Key Features

- Full L-Band tuning range 950 to 2150MHz with 1KHz step size
- Modulation independent level measurement
- No unpredictable lock on PM/PSK side carriers
- Compact, small DIN rail compatible box also allows integration into antenna controller
- TCP/IP-based design
- HTTP web browser interface
- Unlimited number of clients possible
- 14/18V 0/22kHz interface to switches and switch matrixes
- Full remote administration & support capability
- Relay contact output for level alarm
- Each beacon receiver is electronically calibrated for level and temperature linearity and therefore provides excellent level accuracy even in outdoor environments

### Applications

- Antenna tracking and control systems
- Pilot measurement
- Uplink power control
- The **sat-nms** LBRX can operate as a stand-alone solution or fits into the overall **sat-nms** NMS Network Management System provided by SatService



The screenshot shows a web browser window displaying the 'sat-nms Beacon Receiver' interface. The main display shows 'Beacon Antenna 1A' with an 'Input level' of -90.20 dBm. Below this, a table lists various parameters:

RF receive frequency	1500.000 MHz
Frequency tracking offset	0 kHz
Frequency tracking	OFF
Attenuation	0 dB
Measurement bandwidth	100 kHz
Post detector filter	5 Hz
Noise level	n/a
Analog output voltage	0.00 V
Temperature	48.1 °C

At the bottom, there are status indicators for various alarms, all showing 'OK':

Receive level alarm	OK
Frequency tracking alarm	OK
Synthesizer lock alarm	OK
D/C supply alarm	OK

### Contact Information

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Technical Specification

**RF Specification**

Input Frequency Range	950 to 2150 MHz
Frequency Step Size	1KHz
L-Band Input Connector	SMA female 50Ohm
LNC Voltage	OFF/14/18V
L-Band Test Output Connector	SMA female 50Ohm
Frequency Accuracy	1*E-6
Input Level Measurement Range	-30dBm to -80dBm
Large Signal Behavior	no impact at -25dBm total input power
Damage Level	+10dBm
Measurement Bandwidths	6, 12, 30 and 100 KHz
Minimum C/N <sub>0</sub> (6KHz BW / 0dB attenuation)	45dBHz
Analog Output Voltage	0V to 10V
Analog Voltage Slope programmable	-5 V/dB to 5 V/dB
0V Point adjustable by Software	
Output Connector for analog Output Voltage	SMA female
Linearity Failure	+/-1dB in any 10dB
Switchable Input Attenuator to adapt the dynamic Range and Input Signal Level	0, 10, 20, 30dB
Video Bandwidth selectable by Micro Controller	0.1 Hz, 0.2Hz, 0.5Hz, 1Hz, 5Hz
C/N Measurement Functionality	Measured in Intervals relative to N Reference Frequency

**MNC Interface Specification**

Ethernet Interface for MNC and User Interface	10-Base-T, via HTTP GET Requests
RS232 MNC Interface	D-SUB 9 female
Summary Fault Indication	Relay Contact D-SUB 9 male
Level Alarm Indication	Relay Contact D-SUB 9 male

**Electrical and Mechanical Specification, Environmental Conditions**

Supply Voltage	22V-28V unregulated DC (min. 24V for f> 2050 MHz) / 0.35A without LNB
Temperature Range	5° to 50° C
Humidity	Up to 90% non-condensing
DIN Rail Module	270x105x50mm
Weight	1kg



sat-nms LBRX Rear Panel



sat-nms LBRX Front Panel

**sat-nms Beacon Receiver**

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Fine Tune: << < > >>

Operational Settings	
RF receive frequency	1500.000 MHz
Polarization	H
Attenuation	0 dB
Measurement bandwidth	100 kHz
Post detector filter	5 Hz
Spectrum compensation	OFF
Alarm threshold	-999.99 dBm
Signal search enable	OFF [SEARCH NOW]
Signal search delay	15 sec
Frequency tracking	OFF
Frequency tracking interval	30 sec
Frequency tracking width	150 kHz

**sat-nms Beacon Receiver**

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Fine Tune: << < > >>

Installation Settings	
LNB voltage	18V
22kHz Tone	ON
High band LO frequency	0.000 MHz
Low band LO frequency	0.000 MHz
Band edge	0.000 MHz
Analog output scale	0.5000 V/dB
Analog output offset	-75.00 dB
UDP destination address	192.168.2.33
Communication address	A
Relay 2 function	LEVEL
Note	Beacon Antenna 1A