

sat-nms L-Band Beacon Receiver LBRX

The **sat-nms** L-band Beacon Receiver manufactured by SatService GmbH is a measurement tool which measures the RF input level and provides this information as output signal for control systems. The LBRX is DIN rail box version of the **sat-nms** Beacon Receiver. 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 be pilot measurement and control loops like uplink power control.



The beacon RX receives a satellite beacon signal which is down-converted to L-Band by a PLL stabilized Low Noise Converter (LNC) at its L-band interface input. The beacon RX does not demodulate any satellite signals because the satellite signals are sometimes CW signals but even more often modulated in FM or QPSK/8PSK form. Due to this fact, the best

implementation is a non-coherent receiver which measures the input level in a user selectable defined bandwidth and provides this as a dB-linear and calibrated analog output voltage and digital information via remote interface.

The output level is provided by four different and parallel available interface types: a http web interface via internal web server, distribution of measured level or c/n value as UDP datagram's, a RS232 interface and the analog voltage output with level alarm indication. The **sat-nms** beacon receiver is controlled remotely by a monitoring and control application through the TCP/IP interface. Communication with the beacon receiver is made with http requests or over a serial M&C protocol. The beacon receiver implements the http both, for the user interface and for the M&C interface.

Key Features

- Full L-band tuning range 950 to 2050MHz 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 and 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 LBRX can operate as a stand-alone solution or fits into the overall sat-nms Network Management System provided by SatService

| | |
|---------------------------|--------------|
| Input level | -90.20 dBm |
| 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 |
| 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 2050 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 |
| Input Noise Figure | < 10dB |
| Frequency accuracy | 1*E-6 |
| Input Level measurement range | -40 dBm to -80 dBm |
| Measurement bandwidths | 6, 12, 30 and 100 KHz |
| Minimum C/N ₀ (6KHz) | 45 dBHz |
| 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, 0,5Hz, 1Hz, 5Hz |
| Large signal behavior | no impact at -35dBm total input power |
| C/N measurement functionality | measured in intervals at reference frequency |

M&C Interface Specification

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|---|----------------------------------|
| Ethernet interface for M&C and user interface | 10-Base-T, Via http GET requests |
| RS232 M&C 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 (25V for 2050 MHz) / 0,35A without LNB |
| Temperature range | 5° to 50° C |
| Humidity | up to 90% non condensing |
| DIN rail module | 270x105x50mm |
| Weight | 1kg |



L-band Beacon Receiver Rear Panel



L-band Beacon Receiver Front Panel

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 |
| C/N measurement mode | OFF |
| Noise measurement frequency | 1500.000 MHz |
| Noise measurement interval | 5 sec |

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 |