



LRD-200B Low-Rate Demodulator

Digital Signal Processing of L-Band EOS satellite reception



Orbital's LRD-200B low rate demodulator is a versatile digital receiver used in the reception of standard weather satellite formats. This high-quality Quorum Communications Digital Signal Processing (DSP) demodulator provides repeatable performance, long-term operation without component drift, and flexible multi-mode operation for current and future satellite formats.



Features

- 1U Rack Enclosure
- QPSK/BPSK/PSK demodulation up to 3.5 MSPS
- QPSK/BPSK BER performance within .05 dB of theoretical, typical
- Hardware Viterbi decoding
- 126 - 154 MHz RF input or 70 MHz IF input
- Selectable RF inputs and IF bandwidths for multimode flexibility
- -90 dBm to -20 dBm input range
- USB, RS-422, LVDS, TTL and 50 ohm TTL clock and NRZ data outputs
- Ethernet and USB control for setup, tuning, mode selection, and status
- 2 line, 20 character LCD display for status and signal level readout

Configuration

All Mode Polar Weather Receiver (rate 3/4 viterbi)

- NOAA HRPT
- Feng Yun 1 CHRPT
- METOP AHRPT
- Meteosat PDUS
- Feng Yun 3 HRPT

Applications

- Demodulation of standard L-Band weather and EOS satellite signal formats:
 - NOAA
 - FY1
 - METOP
 - Meteosat
 - FY3

RF

Input Frequency.....	126 to 154 MHz
Frequency Tuning Step Size	25 KHz
Input Dynamic Range	-90 to -20 dBm nominal
Input Impedance	50 ohms
Image Rejection.....	>60 dB
IF Frequency.....	70 MHz
IF Bandwidth (SAW Filter)	3 MHz, 6 MHz
Signal Strength (RSSI) Output.....	0 to 3 VDC, 30mV/dB nominal, -50 dBm = 2.50 volts

Demodulator (DSP)

Demodulator Modes	QPSK, BPSK, PSK
Demodulator Implementation Loss	0.5 dB @ 10E - 6 BER typical
Demodulator Type	Digital Costas Loop
Baseband Filters.....	Root Raised Cosine (RRC), typical $\alpha = 0.4$

Data

Supported Data Encoding	NRZ-L, NRZ-S, NRZ-M, Biphas-L
Supported Symbol Rates	0.1 to 3.5 MSPS
Convolutional Decoding.....	Viterbi rate 1/2 and 3/4

Interface

RF / IF Inputs.....	Female Type N
Control Interface	Ethernet / USB
Control Interface Connector.....	Ethernet / RJ45
USB	USB Type B
Data / Clock Interface.....	RS-422, LVDS, TTL and 50 ohm TTL
Data / Clock Interface Connector.....	50 ohm TTL - SMA female
RS-422 Outputs / LVDS	15p Female Subminiature D

Electrical, Mechanical, and Environmental

Input Voltage Frequency.....	100-240 VAC, .5A max, 50/60Hz
Input Power Connector	NEMA Socket
Power Consumption.....	120VAC x 0.197amp = 23.6watts
Operating Temperature.....	0-50° C (32 to 122° F), non-condensing
Size	19" rack standard, 1U, ~25cm (10") deep
Support	Fixed rear side rails
Weight.....	4.1 kg (9 lbs)