



# RCF6001

## C- or Ku-Band Satellite Terminal



### HIGHLIGHTS

- ▶ Complete C- or Ku-Band Satellite Terminal System
- ▶ Optional Antennas and Cabling
- ▶ Modem with Power and High-Stability Reference (10 MHz) to Outdoor RF Units
- ▶ BPSK and QPSK Operation (8PSK Optional)
- ▶ 9.6 to 4375 Kbps Operation
- ▶ Viterbi or Sequential Coding

### OVERVIEW

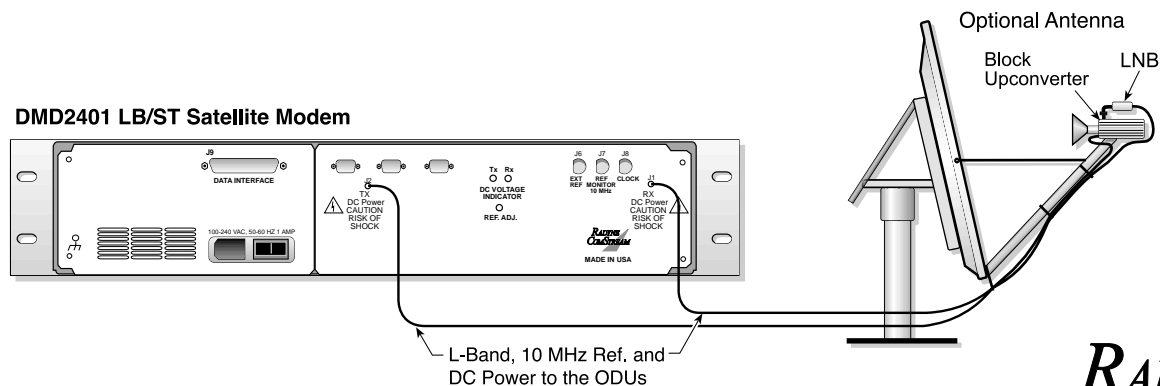
The RCF6001 is a C- or Ku-Band Satellite Terminal that consists of a Radyne ComStream DMD2401 LB/ST Satellite Modem, Block Upconverter (BUC) and Low Noise Block (LNB). The system is available in a variety of frequencies and power levels. Cabling and antennas can also be supplied for a single source solution.

The frequency agile DMD2401 LB/ST is the heart of the RCF6001 system. The DMD2401 LB/ST modem supplies an L-Band output frequency of 950-1525 MHz.

The modem also supplies power and a high stability 10 MHz reference signal through the center conductor of the transmit and receive cables. This design eliminates the use of an outdoor power supply and diplexer. The LB/ST controls all parameters of the outdoor units remotely or via the front panel of the modem. The modulator and demodulator operate independently using BPSK and QPSK modulation in either SCPC or VSAT modes.

The Block Upconverter (BUC) comes in a variety of frequencies and power levels. The BUC is based on a simple block conversion with an L-Band input and a C- or Ku-Band output. A single LO does the conversion from L-Band to the desired output frequency. The output power levels that are available for C-Band BUCs are 5, 10, 20 and 40 watts. The available power levels for the Ku-Band BUCs are 2, 4, 8, 16 and 25 watts.

The Low Noise Block (LNB) comes in a variety of frequencies and power levels. The Low Noise Block does a single LO conversion from C- or Ku-Band to an L-Band output. Typical gain of an LNB is 60 dB.



Typical RCF6001 Configuration



# RCF6001 Satellite Terminal

## SPECIFICATIONS

### Transmit and Receive Data Rates

DMD2401 LB/ST	BPSK - 4.8 to 1250 kbps, Rate 1/2
	QPSK - 9.6 to 2500 kbps, Rate 1/2
	QPSK - 9.6 to 3750 kbps, Rate 3/4
	QPSK - 9.6 to 4375 kbps, Rate 7/8
	8PSK - 128 kbps to 5000 kbps, Rate 2/3 (optional)
Data Rate Setting:	Selectable in 1 bps steps

### Modulator/Tx Specifications

Frequency	950-1525 MHz, 950-1750 MHz Optional
Reference Frequency Signal	10 MHz
Reference Stability	1x10 <sup>-9</sup>
Frequency Resolution	100 Hz
Output Level	-5 to -30 dBm
Phase Noise	100 Hz -60 dBc
	1000 Hz -70 dBc
	10 KHz -80 dBc
	100 KHz -90 dBc
Spurious and Harmonics	-50 dBc
Impedance	50 ohms
Return Loss	14 dB
Output Voltage	24 V / 48 optional
Output Current	5 A / 3A optional
10 MHz Reference levels	3 dBm, ± 3 dB
Connector	SMA (F)
FEC:	1/2, 3/4, 7/8 Viterbi
	1/2, 3/4, 7/8 Sequential
Scrambler:	INTELSAT V.35

### Demodulator/Rcv Specifications

Frequency	950-1525 MHz, 950-1750 MHz Optional
Frequency Resolution	100 Hz
Carrier Acquisition	± 1 to ± 255 kHz
Input Carrier Range	-65 to -40 dBm
	(Symbol Rate <64 kHz)
	-50 to -30 dBm
	(Symbol Rate >640 kHz)
Aggregate Power	Min. of -10 dBm or 35 dBc
Impedance	50-ohm
Return Loss	8 dB Min.
Output Voltage	24 V / 15 V optional
Output Current	0.5 A / 1A
10 MHz Reference levels	3 dBm, ± 3 dB
Connector	SMA (F)
Typical E <sub>b</sub> /N <sub>0</sub> (Viterbi)	<u>Rate 1/2</u> <u>Rate 3/4</u> <u>Rate 7/8</u>
@ BER=10 <sup>-5</sup>	5.1   6.2   7.5
@ BER=10 <sup>-7</sup>	6.2   7.7   8.6
Typical E <sub>b</sub> /N <sub>0</sub> @ 64 kbps	
Sequential (optional)	<u>Rate 1/2</u> <u>Rate 3/4</u> <u>Rate 7/8</u>
@ BER=10 <sup>-5</sup>	4.0   5.0   6.1
@ BER=10 <sup>-7</sup>	4.9   5.9   7.4
Descrambler	Intelsat V.35, mode selectable
Data Buffering	8 bits to 262,144 bits, in 8-bit steps
<b>Terrestrial Interfaces</b>	
T1 (DSX1)	1.544 Mbps, 100 ohm and B8ZS
E1 (G.703)	2.048 Mbps, 75 and 120 ohm, HDB3
ITU V.35	All Rates, Differential, Clock/Data, DCE
RS-422/449	All Rates, Differential, Clock/Data, DCE

### Alarms

Summary Alarms	Two separate form-C contacts available at the rear panel. Each provides a summary alarm of fault conditions.
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### Options

Concatenated Codec	A Reed-Solomon codec is available.
Asynchronous Channel	Asynchronous overhead channel for remote control and order-wire applications.
Viterbi and Sequential Coding	
IDR:	Per IESS 308
IBS:	Per IESS 309
8PSK:	Per ESS 310
Drop and Insert	
Terrestrial Data	1.544 Mbps or 2.048 Mbps, G.732/733
Line Coding	B8ZS for T1 and HDB3 for E1
Framing	D4, ESF for T1 and PCM30 (Channel Associated Signaling) or PCM31 (Signaling disabled) for E1
Time Slot Selection	n x 64 contiguous or arbitrary blocks for Drop and Insert
Data Rates	64, 128, 192, 256, 320, 384, 512, 640, 768, 960, 1024, 1280, 1536, 1920 kbps

### Environmental

Prime Power	100-240 Vac, 50-60 Hz (IEC 3-pin Power Connector with Switch)
Outdoor Unit Power	150 Watts, 200 Watts optional, 100 - 240 Vac, Autoranging
Operating Temp.	0 to 50° C, 95% humidity, noncondensing
Storage Temp.	-20 to 70° C, 99% humidity, noncondensing

### Physical

Chassis size	23 x 19 x 3.5 inches (58.42 x 48.26 x 8.89 cm)
Weight	16 pounds (7.2 Kg)
Shipping Weight	20 pounds (9.0 Kg)

## C-BAND BLOCK UPCONVERTER SPECIFICATIONS

### Electrical Performance Parameters

Output frequency range	5.85 - 6.425 GHz
Input frequency range	950 - 1525 MHz
Input level range	-5 to -55 dBm (-20 for P1dB)
Reference signal frequency	10 MHz
Reference signal level	-3 to +10 dBm
Power levels	Available up to 40 watts

## KU-BAND BLOCK UPCONVERTER SPECIFICATIONS

### Electrical Performance Parameters

Output frequency range	14.0 - 14.5 GHz
	13.75 - 14.25 GHz (option)
Input frequency range	950 - 1450 MHz
Input level range	-5 to -55 dBm (-20 for P1dB)
Reference signal frequency	10 MHz
Reference signal level	-3 to +10 dBm
Power levels	Available up to 25 watts

### (The following specifications apply to both C- and Ku-Band Bucs)

Intermodulation IM3	> -30 dBc
	(Two tone signal with 5 MHz distance and a summary output power of 6 dB below rated power, 6 dB back off)
Gain stability	± 0.5 dB/day at constant temperature
Gain variation (flatness) (over freq. and temp.)	± 2 dB over 500 MHz
Group delay	< 10 ns over any 80 MHz band
Carriers transmit interrupt	> 50 dB
Local oscillator phase noise	< 2.8° RMS double sideband
Spurious	< -20 dBm (in-band)
Noise figure	< 20 dB
DC input	48 Vdc for 8 and 10 Watt units
	24 Vdc for 2, 4, and 5 Watt units

## LOW NOISE BLOCK (LNB)

The LNBs are available in a wide variety of input and output frequencies. Contact Radyne ComStream for additional information.

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