



DMD2401 LBST

L-Band Satellite Modem and ODU Driver



HIGHLIGHTS

- ▶ The Most Versatile L-Band Modem Manufactured Today
- ▶ Save Thousands \$\$\$ Over Conventional 70/140 MHz Systems
- ▶ Modem With Power and High-Stability Reference (10 MHz) to Outdoor RF Units
- ▶ L-Band Operation (950 to 1750 MHz)
- ▶ Tx Port Supplies Power For 10 Watt BUC - Works With Up To 60 Watt BUC
- ▶ Rx Port Supplies LNB Power
- ▶ BPSK and QPSK Operation (8PSK Optional)
- ▶ Turbo Product Code - 0.495 and 0.793 Rates Available (Optional)
- ▶ 4.8 Kbps to 5.0 Mbps in 1 bps Steps
- ▶ 1/2, 3/4 and 7/8 Rate Viterbi and Sequential (Optional)
- ▶ Fully Compliant with IESS 308/309/310
- ▶ Optional OM-73 Interoperability
- ▶ Ethernet Terrestrial Interface (Optional)

OVERVIEW

The Radyne DMD2401 LBST Modem is a fully-integrated, high-performance system designed to support Ku- or C-band satellite single-channel-per-carrier (SCPC) links or as a VSAT remote site modem in a TDMA hub system. It provides reliable, cost-effective data communications in applications requiring continuous transmission and reception. The DMD2401 LBST multiplexes the Tx IF, DC voltage and

10 MHz reference frequency onto the Tx and Rx IFL coax cables. This architecture allows the DMD2401LBST to interface with Ku- or C-Band block up converters (BUC) and low noise blocks (LNBs). By directly connecting to the L-Band input of a BUC and the output of an LNB, normal, expensive transmit and receive converter equipment is eliminated.

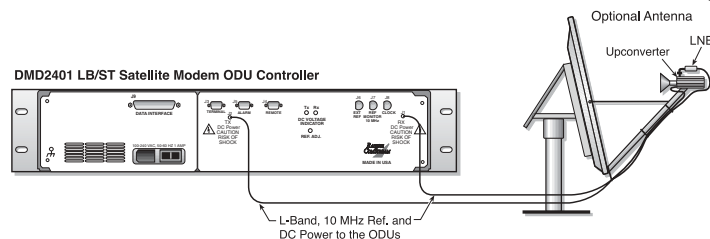
The DMD2401 LBST offers fully programmable options and parameters. Operating parameters, such as variable data rates, FEC code rate, modulation type and IF frequencies can be readily controlled and monitored via the front panel or RS-485/-232 serial control channel located on the rear panel.

Available options for the DMD2401 LBST, such as Turbo Product code or Reed-Solomon, are available for applications requiring bit error rates of 1×10^{-10} . IBS and IDR options are also available, which comply to IESS 308/309/310. These options include features such as Drop and Insert, Asynchronous Channel, Engineering Channel (ESC), and Automatic Uplink Power Control (AUPC) which allows the user to monitor and control the distant end. These options are supported by the synchronous data interface RS-232/-449/V.35 or G.703 Balanced or Unbalanced T1 and E1 data rates.

COMPLEMENTARY PRODUCTS

Radyne offers a full line of satellite products to complement the DMD2401 LBST. These products include:

- DMD20 Universal Satellite Modem
- DMD2401 VSAT/SCPC Satellite Modem
- DD2401 Satellite Demodulator
- DMD15 Universal IBS/IDR Satellite Modem
- CM601 Satellite Modem
- CM701 PSK Digital Satellite Modem



DMD2401 LBST Satellite Modem/ODU Controller

SPECIFICATIONS

TRANSMIT AND RECEIVE DATA RATES

DMD2401LBST:	BPSK - 4.8 to 1250 Kbps, Rate 1/2
	QPSK/OQPSK - 9.6 to 2500 Kbps, Rate 1/2
	QPSK/OQPSK - 9.6 to 3750 Kbps, Rate 3/4
	QPSK/OQPSK - 9.6 to 4375 Kbps, Rate 7/8
	8PSK - 64 to 5000 Kbps, Rate 2/3 (Optional)
Data Rate Setting:	Selectable in 1 bps Steps

MODULATOR/TX SPECIFICATIONS

Frequency:	950 to 1750 MHz in 1 Hz Steps	
Reference Frequency		
Stability:	10 MHz	
Reference Stability:	1x10 ⁻⁹	
Frequency Resolution:	100 Hz	
Output Level:	-5 to -30 dBm	
Phase Noise:	100 Hz	-63 dBc
	1000 Hz	-73 dBc
	10 KHz	-83 dBc
	100 KHz	-93 dBc

Spurious and Harmonics:	-50 dBc
Impedance:	50 Ohms
Return Loss:	8 dB Mini UHF, 14 dB SMA
Output Voltage:	24 V, 48 V Optional
Output Current	4 A / 3 A
10 MHz Reference	
Levels:	3 dBm, ±3 dB
Connector:	Mini UHF-F, SMA-F Optional

DEMODULATOR / RX SPECIFICATIONS

Frequency:	950 to 1750 MHz in 1 Hz Steps	
Frequency Resolution:	100 Hz	
Carrier Acquisition:	±1 to ±100 kHz in 1 kHz	
Input Carrier Range:	-65 to -40 dBm (Symbol Rate < 64 kHz)	
	-50 to -30 dBm (Symbol Rate > 640 kHz)	
Aggregate Power:	Minimum of -10 dBm or 35 dBc	
Impedance:	50 Ohm	
Return Loss:	8 dB Mini UHF / 14 dB SMA Minimum	
Output Voltage	24 V, 15 V Optional	
Output Current	0.5 A	
10 MHz Reference		
Levels:	3 dBm, ±3 dB	
Connector:	Mini UHF-F, SMA-F Optional	

Typical E_p/N₀ (Viterbi)	<u>Rate 1/2</u>	<u>Rate 3/4</u>	<u>Rate 7/8</u>
@ BER=10 ⁻⁵	5.1	6.2	7.5
@ BER=10 ⁻⁷	6.2	7.7	8.6

Typical E_p/N₀ @ 64 Kbps Sequential (Optional)	<u>Rate 1/2</u>	<u>Rate 3/4</u>	<u>Rate 7/8</u>
@ BER=10 ⁻⁵	4.0	5.0	6.1
@ BER=10 ⁻⁷	4.9	5.9	7.4

Typical E_p/N₀ (Trellis 2/3, 8PSK)	<u>Rate 2/3</u>
@ BER=10 ⁻⁵	7.2
@ BER=10 ⁻⁷	8.9

Typical E_b/N₀ (Turbo Product Code)	<u>0.495</u>	<u>0.793</u>
@ BER=10 ⁻⁵	<3.0	3.5
@ BER=10 ⁻⁷	<3.0	3.8

Note: E_p/N₀ typical values include effect of using differential encoding and V.35 scrambler.

Descrambler:	Intelsat V.35, Mode Selectable
Data Buffering:	8 Bits to 262,144 Bits, in 8-Bit Steps

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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FRONT PANEL LED INDICATORS

Unit:	Power
Demodulator:	Signal Lock
Modulator:	Transmit On Alarm
	Major Alarm
	Major Alarm Event
	Minor Alarm
	Minor Alarm Remote
	Test Mode
	Test Mode

MONITOR AND CONTROL

All operating parameters can be monitored and controlled via the front panel display/keypad or the RS-485 or RS-232 serial control channel in either terminal or command modes. The following modem parameters may be controlled and/or monitored:

Transmit and Receive Frequencies
Transmit and Receive Offsets
Modulator Power Level
Modulator On/Off
Modulator/Demodulator Modulation (BPSK, QPSK, OQPSK or Optional 8PSK)
Modulator/Demodulator Data Rates (1 bps Steps)
Modulator/Demodulator Code Rates (1/2, 3/4, 7/8, Optional 0.495 and 0.793 TPC, and 2/3 8PSK)
Modulator/Demodulator Differential Decoders (On/Off)
Modulator/Demodulator Scrambler (On/Off)

TERRESTRIAL INTERFACES

T1 (DSX1):	1.544 Mbps, 100 Ohm B8ZS and AMI
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
Universal Interface:	Optionally Available
Ethernet:	10 Base-T RJ-45 Optionally Available

OPTIONS

Turbo Product Codec	
Concatenated Codec:	A Reed-Solomon codec is available
Asynchronous Channel:	Asynchronous overhead channel for remote control and order-wire applications
IDR:	Per IESS 308
IBS:	Per IESS 309
8PSK:	Per IESS 310
Drop and Insert:	Optional
Terrestrial Data:	1.544 Mbps or 2.048 Mbps, G.732/733
Line Coding:	B8ZS and AMI 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 to 240 VAC, 50 to 60 Hz, 1.0 A (IEC 3-Pin Power Connector With Switch)
Operating Temperature:	0 to 50°C, 95% Humidity, Noncondensing
Storage Temperature:	-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)

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