



# DMD20 LBST

## L-Band Satellite Modem and ODU Driver



### HIGHLIGHTS

- ▶ Integrated 10 MHz High-Stability Reference
- ▶ Programmable 13, 15, 18, or 20 VDC for LNB
- ▶ Optional 24 or 48 VDC for up to 10 W BUC.
- ▶ 950 to 2050 MHz L-Band Tx/Rx Operation
- ▶ BPSK/QPSK/OQPSK/8PSK/16 QAM Operation
- ▶ 2.4 Kbps to 20 Mbps, 1 bps Steps
- ▶ FEC - Viterbi, Reed-Solomon, Sequential, Trellis, Turbo Product Code
- ▶ Configuration, Monitor and Control Features Fully User-Programmable
- ▶ Excellent Spurious Performance
- ▶ Fully Compliant with IESS 308/309/310/314/315
- ▶ Optional DVB to EN301-210 and EN300-421
- ▶ Industry-Standard Universal Interface Module
- ▶ Standard Features Include: Reed-Solomon, Asynchronous Overhead, and Automatic Uplink Power Control

### OVERVIEW

Radyne ComStream's new DMD20 LBST Satellite Modem breaks new ground in flexibility, operation and cost. With standards including IDR, IBS and DVB, and covering data rates up to 20Mbps, this 1RU duplex modem covers virtually all your Satellite IP, Telecom, Video and Internet applications. Switch between spur-free 70/140 MHz operation to L-Band without any configuration changes. It's all in the same box!

The extensive list of software options allows for budgeting the modem for today's needs while covering tomorrow's plans. These options can be purchased and then activated in seconds via the front panel. Additional hardware options like Turbo, Interface Expansion, High Stability and DC operation complete the modem's dynamic feature coverage.

Stock this modem at its minimum configuration (and cost) locally at your warehouse for immediate distribution. Then configure on-site by the installer, allowing huge savings in time and dollars with just-in-time feature installation.

The DMD20 LBST's impressive remote accessibility surpasses all others in the field. Remote control via Radyne ComStream's trusted RLLP (Radyne Link Level Protocol) or 10baseT SNMP Ethernet include control of all the modem's features plus software maintenance. Additionally, the two-line backlit LCD can be supplemented with terminal software running on a PC or laptop. The modem now presents its entire monitor and control functions on the big screen.

Supported by Radyne ComStream's extensive line of redundancy switches, converters, encoders and decoders, the DMD20 LBST can be built into any satellite requirement. Compatibility with current modems, such as Radyne ComStream's DMD2401 and DMD15, are maintained for seamless substitution and addition to your existing systems.

### Hardware Options Include: Software Options Include:

- |                           |                      |
|---------------------------|----------------------|
| • Turbo                   | • Data Rate Upgrades |
| • G.703 Interface         | • 8PSK               |
| • G.703/IDR/ESC Interface | • 16QAM              |
| • Ethernet                | • Drop and Insert    |
| • 10/100 Base T           |                      |
| • DVB ASI/SPI Interface   |                      |
| • HSSI Interface          |                      |
| • Sequential Coding       |                      |
| • DC Power                |                      |



# DMD20 LBST L-Band Satellite Modem and ODU Driver

## SPECIFICATIONS

Published specifications reflect the maximum DMD20 LBST performance. Each DMD20 LBST can be configured to customer requirements via software and hardware options applied at the factory or in the field. Final cost is dependent upon the options selected.

### DMD20LBST BER Performance Guaranteed (Typical) at BERs shown

Modulation/ FEC	Code Rate	1 x 10 <sup>-5</sup>	1 x 10 <sup>-6</sup>	1 x 10 <sup>-7</sup>	1 x 10 <sup>-8</sup>	Data Rate Range
BPSK VIT	1/2	5.2 (5.1)	5.9 (5.7)	6.5 (6.1)	7.1 (6.8)	2.4 Kbps - 10.0 Mbps
QPSK VIT	1/2	5.5 (5.1)	6.1 (5.7)	6.7 (6.2)	7.4 (6.8)	4.8 Kbps - 10.0 Mbps
QPSK VIT	3/4	6.6 (6.3)	7.4 (7.0)	8.1 (7.7)	8.8 (8.4)	7.2 Kbps - 15.0 Mbps
QPSK VIT	7/8	7.7 (7.5)	8.4 (8.2)	9.1 (8.8)	10.0 (10.5)	8.4 Kbps - 17.5 Mbps
QPSK VIT R-S	1/2	3.8 (3.4)	4.1 (3.6)	4.2 (3.8)	4.4 (4.0)	4.8 Kbps - 8.88 Mbps
QPSK VIT R-S	3/4	5.4 (4.7)	5.5 (4.9)	5.7 (5.1)	5.8 (5.3)	7.2 Kbps - 13.33 Mbps
QPSK VIT R-S	7/8	6.1 (5.7)	6.4 (6.0)	6.7 (6.3)	7.0 (6.6)	7.8 Kbps - 15.55 Mbps
QPSK SEQ	1/2	5.4 (5.1)	5.7 (5.4)	6.1 (5.8)	6.5 (6.2)	4.8 Kbps - 2.048 Mbps
QPSK SEQ	3/4	5.9 (5.6)	6.3 (6.1)	6.8 (6.5)	7.2 (6.9)	7.2 Kbps - 2.048 Mbps
QPSK SEQ	7/8	6.7 (6.4)	7.2 (6.9)	7.7 (7.4)	8.2 (7.9)	8.4 Kbps - 2.048 Mbps
QPSK TPC	1/2	2.5 (2.4)	2.7 (2.6)	2.9 (2.8)	3.1 (3.0)	4.8 Kbps - 9.54 Mbps
QPSK TPC	3/4	3.4 (3.2)	3.6 (3.4)	3.9 (3.7)	4.2 (4.0)	7.2 Kbps - 15.0 Mbps
QPSK TPC	7/8	4.0 (3.9)	4.1 (4.0)	4.2 (4.1)	4.3 (4.2)	8.4 Kbps - 17.5 Mbps
8PSK	2/3	7.6 (6.4)	8.5 (7.2)	9.3 (8.1)	10.0 (8.9)	9.6 Kbps - 20.0 Mbps
8PSK R-S	2/3	5.6 (5.4)	6.0 (5.6)	6.3 (5.8)	6.5 (6.1)	8.9 Kbps - 18.3 Mbps
8PSK TPC	3/4	5.8 (5.6)	6.0 (5.8)	6.2 (6.0)	6.6 (6.4)	10.8 Kbps - 20.0 Mbps
8PSK TPC	7/8	6.7 (6.5)	6.8 (6.6)	6.9 (6.7)	7.0 (6.8)	12.6 Kbps - 20.0 Mbps
16QAM	3/4	10.5 (9.9)	11.3 (10.7)	12.2 (11.6)	13.1 (12.5)	14.4 Kbps - 20.0 Mbps
16QAM	7/8	11.7 (11.1)	12.5 (11.9)	13.3 (12.7)	14.1 (13.5)	16.8 Kbps - 20.0 Mbps
16QAM R-S	3/4	8.7 (8.3)	8.9 (8.6)	9.1 (8.8)	9.3 (9.1)	13.3 Kbps - 20.0 Mbps
16QAM R-S	7/8	10.1 (9.9)	10.3 (10.2)	10.6 (10.4)	10.8 (10.7)	15.5 Kbps - 20.0 Mbps
16QAM TPC	3/4	6.8 (6.7)	7.2 (7.1)	7.6 (7.5)	8.0 (7.9)	14.4 Kbps - 20.0 Mbps
16QAM TPC	7/8	7.8 (7.7)	7.9 (7.7)	8.0 (7.8)	8.1 (7.9)	16.84 Kbps - 20.0 Mbps

### Modulator

Modulation:	BPSK, QPSK, and OQPSK (8PSK, 16QAM optional)
L-Band Tuning Range:	950 to 2050 MHz in 1 Hz Steps
Impedance:	50 Ohm
Connector:	Female Type N
Return Loss:	10 dB Minimum
Output Power:	0 to -25 dBm
Output Accuracy:	±1.0 dB Over Frequency and Temperature
Output Spectrum:	Meets IESS 308/309/310 Power Spectral Mask
Spurious:	-60 dBc In-Band -45 dBc Out-of-Band
Harmonics:	-45 dBc
On/Off Power Ratio:	>60 dB
Scrambler:	CCITT V.35 or IBS (Others Optional)
FEC:	Viterbi, K=7 at 1/2, 3/4 and 7/8 Trellis 2/3 Turbo Product Code (Optional) BPSK 21/44 Custom (N,K) Reed-Solomon QPSK/OQPSK 1/2, 3/4, 7/8 8PSK/16QAM 3/4, 7/8 Legacy Turbo Rates: 0.495, 0.793
Outer Encoder Options:	Reed-Solomon INTELSAT (DVB optional)
Data Clock Source:	Internal, External, Rx Recovered
Internal Stability:	5 x 10 <sup>-8</sup>
BUC DC Voltage:	BUC 24 V @ 4 A Maximum (48 V optional)
BUC Reference:	10 MHz, 3 dBm ± 3 dB

### Demodulator

Demodulation:	BPSK, QPSK, and OQPSK (8PSK, 16QAM optional)
L-Band Tuning Range:	950 to 2050 MHz in 1 Hz Steps
Impedance:	50 Ohm
Connector:	Type N Female
Return Loss:	10 dB Minimum
Spectrum:	INTELSAT IESS 308/309/310 compliant
Input Level:	10 x log (Symbol Rate) - 100, ±12dBm
Total Input Power:	-10 dBm or +40 dBc (the lesser) @ 256 Kbps

FEC:	Viterbi, K=7 at 1/2, 3/4 and 7/8 Rate, Rate Sequential 1/2, 3/4, 7/8 (Optional) Trellis 2/3 Turbo Product Code (Optional) BPSK 21/44 Custom (N,K) Reed-Solomon QPSK/OQPSK 1/2, 3/4, 7/8 8PSK/16QAM 3/4, 7/8 Legacy Turbo Rates: 0.495, 0.793
Decoder Options:	Reed-Solomon INTELSAT (DVB optional)
Descrambler:	CCITT V.35 or IBS (others optional)
Acquisition Range:	Programmable ±1 kHz to ±255 kHz
Sweep Delay Value:	100 msec to 6000 sec. in 100 msec Steps
LNB Reference:	10 MHz, 3 dBm ± 3 dB
LNB DC Voltage:	13, 15, 18, 20 VDC (750 mA maximum), programmable

### Plesiochronous Buffer

Size:	0 ms to 64 msec
Centering:	Automatic on Underflow or Overflow
Centering Modes:	IBS: Integral Number of Frames IDR: Integral Number of Multi Frames
Clock:	Transmit, External, Rx Recovered or SCT (Internal)

### Monitor and Control

Remote RS-485 / Terminal RS-232 / Ethernet 10baseT  
DMD15 / DMD2401 Protocol Compatible

### DMD20 LBST Drop and Insert (Optional)

Terrestrial Data:	1.544 Mbps or 2.048 Mbps, G.732/733
Line Coding:	AMI or B8ZS for T1 and HDB3 for E1
Framing:	D4, ESF and PCM30 (PCM 30C) or PCM31 (PCM 31C) for E1
Time Slot Selection:	n x 64 contiguous or arbitrary blocks for Drop or Insert.
Time Slots:	TS1, 2, 3, 4, 5, 6, 8, 10, 12, 15, 16, 20, 24, 30, 31
Data Rates:	64, 128, 192, 256, 320, 384, 512, 640, 768, 960, 1024, 1280, 1536, 1920 kbps

### Terrestrial Interfaces

DVB ASI/SPI, HSSI, Ethernet 4 Port 10/100 Base T

### IDR/ESC Interface (Optional)

G.703 T1 (DSX1):	1.544 Mbps, 100 Ohm Balanced, AMI and B8ZS
G.703 E1:	2.048 Mbps, 75 Ohm Unbalanced & 120 Ohm Balanced, HDB3
G.703 T2 (DSX2):	6.312 Mbps, 75 Ohm Unbalanced & 110 Ohm Balanced, B8ZS and B6ZS
G.703 E2:	8.448 Mbps, 75 Ohm BNC, Unbalanced, HDB3

### IBS/Synchronous Interface (Standard)

RS-422/-530:	All Rates, Differential, Clock/Data, DCE
ITU V.35:	All Rates, Differential, Clock/Data, DCE
RS-232:	(DCE up to 200 Kbps)

### Environmental

Prime Power:	100 to 240 VAC, 50 to 60 Hz, 250 Watts Maximum w/10W BUC
Operating Temperature:	0 to 50° C, 95% Humidity, Non-Condensing
Storage Temperature:	-20 to 70° C, 99% Humidity, Non-Condensing

### Physical

Size:	19"W x 19.25"D x 1.75"H (48.26 x 48.89 x 4.45 cm)
Weight:	8.5 pounds (3.83 kg)

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