DMD50

Universal Satellite Modem

HIGHLIGHTS

- BPSK/QPSK/OQPSK/8PSK/16QAM Operation 2.4 Kbps to 52 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
- Fast Acquisition
- 50 to 90 MHz and 100 to 180 MHz IF, and 950 to 2050 MHz L-Band in 1 Hz Steps
- Standard Features Include: Reed-Solomon, Asynchronous Overhead, Automatic Uplink Power Control (AUPC), and CM701 Compatible Satellite Control Channel

OVERVIEW

The DMD50 Satellite Modem breaks new ground in flexibility, operation and cost. With standards including IDR, IBS and DVB, and covering data rates up to 52 Mbps, this 1RU duplex modem covers virtually all of 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 such as 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 for immediate distribution, then configure on-site by the installer, allowing huge savings in time and dollars with just-in-time feature installation.

The DMD50's impressive remote accessibility surpasses all others in the field. Remote control via the RLLP (Radyne Link LevelProtocol) or 10 Base-T SNMP Ethernet or Web Browser which includes 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 (M&C) functions on the big screen.

Supported by an extensive line of redundancy switches, converters, encoders and decoders, the DMD50 can be built into any satellite requirement. Compatibility with current modems, such as the DMD20, DMD2050, DMD2401 and DMD15, are maintained for seamless substitution and addition to your existing systems.

Hardware Options

- Turbo FEC
- Sequential FEC
- DC Input Power 48 VDC
- High-Stability Reference

Software Options

- Data Rate Upgrades
- L-Band Operation
- IDR, IBS
- 8PSK
- 16QAM
- Drop and Insert
- DVB-S

Interface Options:

- Ethernet (10/100)
- Gigabit Ethernet (10/100/1000)
- HSSI Interface
- HSSI/Ethernet
- HSSI/G703 Interface
- DVB ASI/SPI Interface
- G703/IDR/ESC

SPECIFICATIONS

Published specifications reflect the maximum DMD50 performance. Each DMD50 can be configured to customer requirements via hardware / software options applied at the factory or in the field.

COMTECH EF DATA

RADYNE

DMD50 Universal Satellite Modem

DMD50 Performance

Modulation/FEC	Code Rate	1 x 10^{-5}	1 x 10^{-6}	1 x 10^{-7}	1 x 10^{-8}	Data Rate Range
BPSK VIT	1/2	5.5 (5.1)	6.1 (5.7)	6.7 (6.2)	7.4 (6.8)	2.4 Kbps - 14.1 Mbps
QPSK VIT	1/2	5.5 (5.1)	6.1 (5.7)	6.7 (6.2)	7.4 (6.8)	4.8 Kbps - 28.3 Mbps
QPSK VIT	3/4	6.8 (6.3)	7.6 (7.0)	8.3 (7.7)	8.9 (8.4)	7.2 Kbps - 42.4 Mbps
QPSK VIT	7/8	7.9 (7.2)	8.6 (7.9)	9.3 (8.6)	10.2 (9.4)	8.4 Kbps - 49.5 Mbps
QPSK VIT RS	1/2	3.8 (3.4)	4.1 (3.6)	4.2 (3.8)	4.4 (4.0)	4.8 Kbps - 25.1 Mbps
QPSK VIT RS	3/4	5.4 (4.7)	5.6 (4.9)	5.8 (5.1)	6.0 (5.3)	7.2 Kbps - 37.7 Mbps
QPSK VIT RS	7/8	6.5 (6.0)	6.7 (6.4)	6.9 (6.7)	7.2 (7.1)	7.8 Kbps - 44.0 Mbps
QPSK SEQ	1/2	5.6 (5.1)	5.9 (5.4)	6.3 (5.8)	6.7 (6.2)	4.8 Kbps - 2.048 Mbps
QPSK SEQ	3/4	6.1 (5.6)	6.5 (6.1)	7.0 (6.5)	7.4 (6.9)	7.2 Kbps - 2.048 Mbps
QPSK SEQ	7/8	6.9 (6.4)	7.4 (6.9)	7.9 (7.4)	8.4 (7.9)	8.4 Kbps - 2.048 Mbps
QPSK TPC	1/2	2.7 (2.4)	2.9 (2.6)	3.1 (2.8)	3.3 (3.0)	4.8 Kbps - 20.0 Mbps
QPSK TPC	3/4	3.6 (3.2)	3.8 (3.4)	4.1 (3.7)	4.4 (4.0)	7.2 Kbps - 20.0Mbps
QPSK TPC	7/8	4.2 (3.9)	4.3 (4.0)	4.4 (4.1)	4.5 (4.2)	8.4 Kbps - 20.0 Mbps
8PSK TRE	2/3	8.2 (6.4)	9.0 (7.2)	9.8 (8.1)	10.4 (8.9)	9.6 Kbps - 52.0 Mbps
8PSK TRE R-S	2/3	6.3 (5.4)	6.5 (5.6)	6.7 (5.8)	6.9 (6.1)	8.9 Kbps - 52.0 Mbps
8PSK TPC	3/4	6.0 (5.6)	6.3 (5.8)	6.5 (6.0)	6.7 (6.3)	10.8 Kbps - 20.0 Mbps
8PSK TPC	7/8	6.9 (6.5)	7.0 (6.6)	7.1 (6.7)	7.2 (6.8)	12.6 Kbps - 20.0 Mbps
8PSK TPC	.750	7.1 (6.7)	7.2 (6.8)	7.3 (6.9)	7.4 (7.0)	20.0 Mbps - 52.0 Mbps
8PSK TPC	.875	7.3 (6.9)	7.4 (7.0)	7.5 (7.1)	7.6 (7.2)	20.0 Mbps - 52.0 Mbps
16QAM VIT	3/4	10.7 (9.9)	11.5 (10.7)	12.4 (11.6)	13.3 (12.5)	14.4 Kbps - 52.0 Mbps
16QAM VIT	7/8	11.9 (11.1)	12.7 (11.9)	13.5 (12.7)	14.3 (13.5)	16.8 Kbps - 52.0 Mbps
16QAM VIT R-S	3/4	8.9 (8.3)	9.1 (8.6)	9.3 (8.8)	9.5 (9.1)	13.3 Kbps - 52.0 Mbps
16QAM VIT R-S	7/8	10.3 (9.9)	10.5 (10.2)	10.8 (10.4)	11.0 (10.7)	15.5 Kbps - 52.0 Mbps
16QAM TPC	3/4	7.0 (6.7)	7.4 (7.1)	7.8 (7.5)	8.2 (7.9)	14.4 Kbps - 20.0 Mbps
16QAM TPC	7/8	8.0 (7.6)	8.1 (7.7)	8.2 (7.8)	8.3 (7.9)	16.84 Kbps - 20.0 Mbps
16QAM TPC	.750	7.5 (7.1)	7.7 (7.4)	7.9 (7.6)	8.3 (8.0)	20.0 Mbps - 52.0 Mbps
16QAM TPC	.875	8.3 (7.9)	8.4 (8.0)	8.5 (8.1)	8.6 (8.2)	20.0 Mbps - 52.0 Mbps

Modulator

Modulation:	BPSK, QPSK, and OQPSK (8PSK, 16QAM Optional)
IF Tuning Range:	50 to 90 and 100 to180 MHz in 1 Hz Steps
L-Band Tuning Range:	950 to 2050 MHz in 1 Hz Steps
Impedance:	IF: 75 Ohm (50 Ohm Optional) L-Band: 50 Ohm
Connector:	BNC: 75 Ohm SMA: 50 Ohm, L-Band
Return Loss:	IF: 14 dB Minimum L-Band: 10 dB Minimum
Output Power:	0 to -25 dBm
Output Stability:	IF: ±0.5 dB Over Frequency and Temperature L-Band: ±1.0 dB Over Frequency and Temperature
Output Spectrum:	Meets IESS 308/309/310/DVB-S Power Spectral Mask
Spurious:	-55 dBc In-Band (50 to 90 MHz, 100 to 180 MHz, 950 to 2050 MHz) -45 dBc Out-of-Band
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 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) Custom (N, K) Reed-Solomon
Data Clock Source:	Internal, External, Rx Recovered
Internal Stability:	1 x 10^{-8} Typical (Optional to 5 x 10^{-8}

Demodulator

Demodulation:	BPSK, QPSK, and OQPSK (8PSK, 16QAM Optional)
IF Tuning Range:	50 to 90 and 100 to 180 MHz in 1 Hz Steps
L-Band Tuning Range:	950 to 2050 MHz in 1 Hz Steps
Impedance:	IF: 75 Ohm (50 Ohm Optional) L-Band: 50 Ohm
Connector:	BNC: 75 Ohm SMA: 50 Ohm, L-Band
Return Loss	IF: 14 dB Minimum L-Band: 10 dB Minimum
Spectrum:	INTELSAT IESS 308/309/310/DVB-S Compliant
Input Level:	-55 to +10dBm
Total Input Power:	-5 dBm or +40 dBc (the lesser)
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) <20Mbps BPSK 21/44 QPSK/OQPSK 1/2, 3/4, 7/8 8PSK/16QAM 3/4, 7/8 Legacy Rates: 0.495, 0.793 >20Mbps 8PSK/16QAM TPC 0.750 TPC 0.875
Decoder Options:	Reed-Solomon INTELSAT (DVB-S Optional) Custom (N, K) Reed-Solomon
Descrambler:	CCITT V.35 or IBS (Others Optional)
Acquisition Range:	Programmable ±1 kHz to ±255 kHz
Sweep Delay Value:	100 msec to 6000 seconds in 100 msec Steps

Plesiochronous Buffer

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

Monitor and Control

Ethernet 10 BaseT/Remote RS-485/Terminal RS-232, Web Browser

DMD50 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
D&I Open Network Satellite Overhead 6.6%	
Time Slots:	TS1, 2, 3, 4, 5, 6, 8, 10, 12, 15, 16, 20, 24, 30, 31
EFFICIENT D&I Closed Network, Satellite Overhead 0.4%	
Time Slots:	1-31 Any Combination

Terrestrial Interfaces

DVB, ASI/SPI, HSSI, Ethernet 4 Port 10/100 Base-T, Gigabit Ethernet (10/100/1000), G703 T3/E3/STS1, HSSI/Ethernet 4 Port 10/100 Base-T, HSSI/G703 T1/E1/T2/E2

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 and 120 Ohm Balanced, HDB3
G.703 T2 (DSX2):	6.312 Mbps, 75 Ohm Unbalanced and 110 Ohm Balanced, B8ZS and B6ZS
G.703 E2:	8.448 Mbps, 75 Ohm BNC, Unbalanced, HDB3
G.703 E3:	34.368 Mbps, 75 ohms 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, 60 Watts Maximum 48 VDC (Optional)
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 19.5"D x 1.75"H (48.26 cm x 48.89 cm x 4.45 cm)
Weight:	8.0 Lbs (3.64 Kg)

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