



### Overview

The DMD1050 L-Band Satellite Modem board offers a complete modem on a compact PCB daughter board. The compact size saves space and offers system engineers greater flexibility integrating the modem board into the host system. With standards including MIL-STD-188-165A, IESS-308, -309, -310, -314/315 and DVB, and covering data rates up to 20 Mbps, the DMD1050 covers virtually all your satellite IP, telecom, video and Internet applications.

The extensive list of integrated hardware and software options give you the ability to integrate the modem on many platforms and provide an upgrade path for future networks. Options may be purchased with the product or easily upgraded in the field through the web browser or terminal port.

The DMD1050 has an impressive remote accessibility line-up. Remote control via serial RS-232, 10-BaseT SNMP Ethernet or web browser interfaces allow for monitor and control of all the modem's features.

Compatibility with current modems, such as the DMD20, DMD50, DMD2050, and SLM-5650A are maintained for seamless substitution and addition to your existing systems.

The DMD1050 modem board integrates supporting hardware for BUC and LNB. Interconnects allow the user to supply external voltages and 10 MHz Reference for BUC and LNB.

### Typical Users

- Government & Military

### Common Applications

- Communications at-the-Pause
- Communications on-the-Move
- Flyaway Communications
- Integrated Satellite Terminal Communications

### Features

- MIL-STD-188-165A compliant
- Compact size 1.1" x 7" x 9.125"
- 950 to 2050 MHz L-Band TX/RX
- Built in MIL-188-114A and Ethernet data interfaces
- BPSK/QPSK/OQPSK/8PSK/16-QAM modulation
- 2.4 kbps to 20 Mbps, 1 bps steps
- FEC – Viterbi, Reed-Solomon, Sequential, Trellis, Turbo Product Code
- Optional 10 MHz high-stability reference
- Input connectors for BUC and LNB voltages
- Excellent spurious performance
- Fully compliant with IESS-308/309/310/314/315
- Optional DVB to EN301-210 and EN300-421
- Standard features include: Reed-Solomon, Asynchronous Overhead and Automatic Uplink Power Control
- M&C options include SNMP, Web browser & RS-232 terminal ports

### Software Options

- Data Rate upgrades
- Turbo FEC
- IDR, IBS framing
- 8PSK
- 16-QAM
- DVB-S

## Specifications

Published specifications reflect the maximum DMD1050 performance. Each DMD1050 can be configured to customer requirements via hardware / software options applied at the factory or in the field.

### DMD1050 BER Performance

Modulation/FEC	Code Rate	$1 \times 10^{-5}$	$1 \times 10^{-6}$	$1 \times 10^{-7}$	$1 \times 10^{-8}$	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 – 5.0 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	6.8 (6.3)	7.6 (7.0)	8.3 (7.7)	8.9 (8.4)	7.2 kbps – 15.0 Mbps
QPSK VIT	7/8	7.9 (7.2)	8.6 (7.9)	9.3 (8.6)	10.2 (9.4)	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)	5.6 (4.9)	5.8 (5.1)	6.0 (5.3)	7.2 kbps – 13.33 Mbps
QPSK VIT R-S	7/8	6.5 (6.0)	6.7 (6.4)	6.9 (6.7)	7.2 (7.1)	7.8 kbps – 15.55 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
BPSK TPC	5/16	2.5 (2.3)	2.7 (2.5)	2.9 (2.7)	3.1 (2.9)	2.4 kbps – 3.12 Mbps
BPSK TPC	21/44	2.7 (2.4)	2.9 (2.6)	3.1 (2.8)	3.3 (3.0)	2.4 kbps – 4.77 Mbps
QPSK TPC	21/44	2.7 (2.4)	2.9 (2.6)	3.1 (2.8)	3.3 (3.0)	4.8 kbps – 9.54 Mbps
QPSK TPC	3/4	3.6 (3.2)	3.8 (3.4)	4.1 (3.7)	4.4 (4.0)	7.2 kbps – 15.0 Mbps
QPSK TPC	7/8	4.2 (3.9)	4.3 (4.0)	4.4 (4.1)	4.5 (4.2)	8.4 kbps – 17.5 Mbps
8PSK TRE	2/3	7.8 (6.4)	8.7 (7.2)	9.5 (8.1)	10.2 (8.9)	9.6 kbps – 20.0 Mbps
8PSK TRE R-S	2/3	5.8 (5.4)	6.2 (5.6)	6.5 (5.8)	6.7 (6.1)	8.9 kbps – 18.3 Mbps
8PSK TPC	3/4	6.0 (5.6)	6.2 (5.8)	6.4 (6.0)	6.8 (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
16-QAM VIT	3/4	10.7 (9.9)	11.5 (10.7)	12.4 (11.6)	13.3 (12.5)	14.4 kbps – 20.0 Mbps
16-QAM VIT	7/8	11.9 (11.1)	12.7 (11.9)	13.5 (12.7)	14.3 (13.5)	16.8 kbps – 20.0 Mbps
16-QAM VIT R-S	3/4	8.9 (8.3)	9.1 (8.6)	9.3 (8.8)	9.5 (9.1)	13.3 kbps – 20.0 Mbps
16-QAM VIT R-S	7/8	10.3 (9.9)	10.5 (10.2)	10.8 (10.4)	11.0 (10.7)	15.5 kbps – 20.0 Mbps
16-QAM 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
16-QAM 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

### Modulator

Modulation	BPSK, QPSK, and OQPSK (8PSK, 16-QAM optional)
L-Band Tuning Range	950 to 2050 MHz in 1 Hz steps
Impedance	50 Ohm
Connector	SMA (50 ohm) or F-Type (75 ohm) female
Return Loss	10 dB minimum
Output Power	0 to -25 dBm
Output Accuracy	±1.0 dB Over frequency and temperature
Output Spectrum	Selectable, Meets MIL-188-165A and Intelsat IESS-308-309-310 compliant (DVB-S optional)
Spurious	-55 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) Per IESS-315 BPSK 5/16, 21/44 QPSK/OQPSK 21/44, 3/4, 7/8 8PSK/16-QAM 3/4, 7/8
Outer Encoder Options	Reed-Solomon Intelsat (DVB-S optional) Custom (N, K) Reed-Solomon (optional)
Data Clock Source	Internal, External, RX recovered
Internal Stability	± 1 x 10 <sup>-6</sup> standard, ± 5x10 <sup>-6</sup> optional
BUC DC Current	4 Amps maximum (externally supplied)
BUC Internal Reference	10 MHz, 3 dBm ± 3 dB

### Demodulator

Demodulation	BPSK, QPSK, and OQPSK (8PSK, 16-QAM optional)
L-Band Tuning Range	950 to 2050 MHz in 1 Hz steps
Impedance	50 or 75 Ohm
Connector	SMA (50 ohm) or F-Type (75 ohm) female
Return Loss	10 dB minimum
Spectrum	Selectable, meets MIL-188-165A and Intelsat IESS-308/309/310 compliant (DVB-S optional)
Input Level	-55 to +10 dBm
Total Input Power	+20 dBm or +40 dBc (the lesser)
FEC	Viterbi, K = 7 at 1/2, 3/4 and 7/8 Rate Sequential 1/2, 3/4, 7/8 (optional) Trellis 2/3 Turbo Product Code (optional) Per IESS-315 BPSK 5/16, 21/44 Custom (N, K) Reed-Solomon QPSK/OQPSK 21/44, 3/4, 7/8 8PSK/16-QAM 3/4, 7/8
Decoder Options	Reed-Solomon Intelsat (DVB-S optional)
Descrambler	CCITT V.35 or IBS (others optional)
Acquisition Range	Programmable ± 1 kHz to ± 255 kHz
Sweep Delay Value	100 msec to 9000 msec. in 100 msec steps
LNB DC Current	750 mA maximum (externally supplied)
LNB Internal Reference	10 MHz, 3 dBm ± 3 dB

### 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)

### Terrestrial Interfaces

MIL STD 188-114A	Differential, all rates, clock/data, DCE
Ethernet 10/100Base-T	2 Port Ethernet switch/bridge

### Monitor & Control

Remote RS-485/Terminal RS-232/Ethernet 10Base-T, (SNMP & Web browser)



Front View



Rear View



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