



INTRODUCTION

The Comtech EF Data IP Modem (CiM) product line consists of IP (Internet Protocol) enabled satellite modems. With their innovative architecture and support for IP networking, they are capable of meeting almost any customer requirement for performance and functionality.

Offering a range of data rates from 19.2 to 5,000 kbps in 1 bit per second steps, the modem includes Viterbi forward error correction as standard. The Turbo Product Codec is available as an option.

With integrated IP support and an L-band interface, CiM-300L is targeted towards remote locations that require a low-cost, high-performance, single-channel terminal for Internet access, Intranet, e-Commerce etc.

Supporting data, video, and voice connectivity in an integrated IP environment, it can be used to:

- Connect remote ISPs to Internet
- Connect remote customers to ISPs
- Connect branch offices to the corporate network

KEY STANDARD FEATURES

- 10baseT/100baseTX Ethernet interface
- Static IP routing for unicast and multicast
- Powerful network management
 - SNMP with private MIB
 - Web
 - Telnet
- Remote software / firmware upgrade
- L-Band IF
- Data rates from 19.2 kbps to 5.0 Mbps
- Symmetric as well as asymmetric operation for maximum bandwidth efficiency
- FSK Communication to FSK-capable BUCs

FEATURE ENHANCEMENTS

Enhancing the CiM-300L's capability is easy. Additional features can be added quickly on site, using the FAST access code purchased from Comtech EF Data, or via software/firmware upgrade through FTP.

OPTIONAL FEATURES

- IGMP
- Data Encryption
- Quality of Service (QoS)

Data Encryption

- DES 56 data encryption
- Key management

The CiM-300L provides DES-56 data encryption to prevent unauthorized access to data over the satellite link. Users can change the factory-configured default keys on a link basis.

Quality of Service

- Traffic classification based on destination IP address
- Dynamic bandwidth allocation based on class configuration
- QoS statistics

The CiM-300L supports QoS management by destination IP address. It classifies incoming IP datagrams and allocates bandwidth to each flow based on the configured profile.



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SYSTEM SPECIFICATIONS (FULLY ENHANCED)

Data Interface	10baseT/100baseTX Ethernet (RJ-45 connector)
Digital Data Rate	19.2 kbps to 5.0 Mbps, in 1 bit/s steps
Symbol Rate	10.9 ksym/s to 2.5 Msym/s
WAN Encapsulation	HDLC
Modulation/Demodulation	BPSK 1/2 rate QPSK 1/2, 3/4, and 7/8 rates OQPSK 1/2, 3/4, and 7/8 rates (Viterbi) 8PSK 3/4 Turbo 8PSK 2/3 TCM
Forward Error Correction	Viterbi, K=7, 1/2, 3/4, and 7/8 rates Sequential 1/2, 3/4, and 7/8 rates Reed-Solomon Turbo 5/16, 21/44, 1/2, 3/4 (see BER tables)
Data Scrambling	IESS-308 (V.35), IESS-309/310, or None
External Reference Input	1, 5, 10, or 20 MHz (10 MHz only with BUC)
Agency Approvals	CE Mark

NETWORKING PROTOCOLS

Address Resolution Protocol (ARP)	Configurable Static ARP Entries
Internet Protocol (IPv4)	Internet Control Message Protocol (ICMP)
IPv4 Routing	Configurable static routes
User Datagram Protocol (UDP)	Transmission Control Protocol (TCP)
Simple Network Management Protocol (SNMP)	Telnet
Hyper Text Transfer Protocol (HTTP)	File Transfer Protocol (FTP)

OPERATIONS & MAINTENANCE

Configuration & Management	Console interface	SNMP with Private Modem Specific MIB	Telnet	Web Interface
Remote software / firmware upgrade via FTP	Local software / firmware upgrade via console port	Traffic statistics	Faults & alarms	Configuration backup & restore

SECURITY

Password Protection	Access List
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CONSOLE PORT

Interface	EIA-232 (RJ-12 connector)
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REMOTE PORT

Interface	EIA-232 or EIA-485 (2- or 4-wire)
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MODULATOR

Output Frequency	950 to 1750 MHz, in 100 Hz steps
Output Power	0 to -30 dBm, in 0.5 dB steps
Output Stability	± 0.5 dB
Output Spurious in 4 kHz Band (measured with modulated carrier)	< -50 dBc 55 to 2000 MHz
Output Phase Noise	< -63 dBc/Hz @ 100 Hz < -73 dBc/Hz @ 1 kHz < -83 dBc/Hz @ 10 kHz < -93 dBc/Hz @ 100 kHz
Output Impedance, Return Loss	50Ω, ≥ 15 dB
Output Connector	Type N, Female
Output Spectrum	IESS-308/309, EFD Closed
Internal Stability	± 0.02 ppm standard, required with BUC
Internal Stability (Optional)	± 1.0 ppm (Not for use with BUC)
Output Reference (center conductor of IF output connector)	On/Off, 10 MHz at Internal Stability at 0 ± 3 dBm
Outdoor Unit Voltage (center conductor of IF output connector)	On/Off
BUC FSK Communications	(See Optional ODU Power Supply) Control and constant EIRP with FSK enabled BUCs (Future)

DEMODULATOR

Input Frequency	950 to 1750 MHz in 100 Hz steps
Minimum Input Power (Desired Carrier)	+10 log (symbol rate) -135 dBm
AGC Range	50 dB above minimum input level
Composite to Desired Carrier	+40 dBc, composite is AWGN over ± 10 MHz
Maximum Composite Level	-5 dBm
Input Impedance, Return Loss	75Ω, > 10 dB
Input Connector	Type F, Female (Note: L2 version was Type N)
Carrier Acquisition Range	± 500 kHz in 1Hz steps
Acquisition Time	< 1 second at 64kbits/s 1/2 rate
Sweep Reacquisition	0 to 999 seconds, in 1 second steps
LNB Voltage	On or Off +13 and +18 VDC per DiSEqC 4.2 and 24 VDC at 500 mA, max. 10 MHz at internal reference stability at -3 ± 3 dBm
LNB Frequency Reference	

OPTIONS

IGMP	Data Encryption	Quality of Service (QoS)	8PSK	AUJPC	OQPSK	Turbo Codec	Variable Data Rate	Concatenated Reed-Solomon Codec	1 ppm Internal Stability (Not for use with BUC)	-48 VDC power supply (not available with ODU power supply)	ODU power supply 48 VDC at 150 Watt (L-Band Tx only)	ODU power supply 24 VDC at 100W, consult factory (L-band TX IF option only)	LNB types: internally referenced or externally
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ENVIRONMENTAL AND PHYSICAL

Prime Power, AC	90 to 264 VAC, 47 to 63 Hz
Size	1.75H x 19.0W x 19.18D inch (1 RU) (4.4H x 48 W x 48 D cm) < 12 lbs. (5 kg)
Weight	< 12 lbs. (5 kg)
Operating Temperature	0 to 50°C (32 to 122°F)
Storage Temperature	-40° to +70°C (-40° to +158°F)
Humidity	< 95%, non-condensing

BER PERFORMANCE Eb/N0 (dB)

VITERBI					SEQUENTIAL				
BPSK, QPSK & OQPSK					BPSK (1/2 Only), QPSK				
BER	1/2	3/4	7/8	8PSK 2/3	Data Rate	BER	1/2	3/4	7/8
10 ⁻⁶	5.3	6.4	7.6	---	100 kbps	10 ⁻⁶	4.5	5.5	6.6
10 ⁻⁶	6.0	7.2	8.3	8.7		10 ⁻⁸	5.4	6.4	7.8
10 ⁻⁷	6.6	7.9	8.9	9.5	1.544 Mbps	10 ⁻⁶	5.6	6.1	6.9
10 ⁻⁸	7.2	8.5	9.6	10.2		10 ⁻⁸	6.3	7.0	7.9

CONCATENATED REED-SOLOMON					TURBO CODING					
BPSK, QPSK & OQPSK					QPSK BPSK 8PSK					
BER	1/2	3/4	7/8	2/3	BER	1/2	3/4	21/44	5/16	3/4
10 ⁻⁶	4.1	5.6	6.7	6.1	10 ⁻⁶	3.0	3.9	2.8	---	7.0
10 ⁻⁶	4.2	5.8	6.9	6.4	10 ⁻⁷	3.2	4.1	3.1	---	7.3
10 ⁻⁷	4.4	6.0	7.1	6.6	10 ⁻⁸	3.5	4.3	3.3	---	7.6
10 ⁻⁸					10 ⁻⁹	3.8	4.8	3.7	4.0	8.0



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