CDD-562L

Satellite Network Dual Demodulator Router

INTRODUCTION

Comtech Vipersat Networks' CDD-562L provides two separate L-band demodulators and an integrated router in a compact, cost-effective 1RU package.

The CDD-562L simplifies hub site installations by reducing rack space and cost with 2 independent demodulators in a single chassis. A bank of CDD-562L demodulators is ideal for a star network consisting of a single outbound carrier at the hub with multiple carriers returned from the remote sites.

The CDD-562L can be used at hub sites where multiple burst controllers are needed. Demodulator roles are defined via software, configurable as either a burst controller in STDMA mode, or as dedicated SCPC inbounds from remote locations.

At remotes sites the CDD-562L supports mesh connectivity between multiple sites. Operating in mesh topology with links directly between sites eliminates double-hops through the hub conserving bandwidth and reducing latency.

DEMODULATOR FEATURES

- 950 to 1950 MHz IF Range
- QPSK, 8PSK, 16QAM operation
- Data rate range from 16 kbps up to 10 Mbps depending on modulation and FEC used (FAST upgrade)
- Turbo Product Coding (TPC) Forward Error Correction
- Fast acquisition demodulator
- Simultaneous STDMA (burst) mode and *dSCPC* modes (configurable on a per demodulator basis)
- LNB Support: 10 MHz Reference and LNB Power
- N:M hub modem redundancy schemes

ROUTER FEATURES

- Fully Integrated Network Management using Vipersat Management System (VMS)
- Single Hop On Demand (SHOD) functions
- 10/100BaseT Ethernet LAN/WAN Interface
- Static IP routing for unicast or multicast
- Header Compression
- Payload Compression
- 3xDES Encryption

NETWORK AND BANDWIDTH MANAGEMENT

A Vipersat powered network integrates this advanced demodulator/router with our powerful network management tool, the Vipersat Management System (VMS). The VMS provides for traditional monitor and control of the CDM-570/570L modems and CDD-562L/564/564L demodulators, but more than just an M&C package, the VMS allows these devices to share bandwidth, and when needed, switch automatically to a dedicated SCPC channel.

DYNAMIC SCPC (dSCPC)

VMS provides for dynamic bandwidth allocation while in SCPC mode, automatically altering the bandwidth based on traffic conditions. This effectively enables the network to better handle connection oriented applications and reduce network congestion jitter and latency. The VMS also allows for dynamic point-to-point mesh connections to be established between remotes.

Inbound from remotes can be switched: manually or automatically, application or load triggered, or scheduled, from shared STDMA (burst) mode, to a dedicated SCPC connection. VMS automatically assigns a free demodulator at the hub to a desired remote inbound, completely eliminating manual intervention.

Once the session is complete, the remote is automatically reverted back to its home state.

The result is an economical and flexible network with bandwidth shared and directed where it is needed for any mix of IP voice, video or data traffic.

SINGLE HOP ON DEMAND

The CDD-562L is ideal for mesh applications such as Single Hop On Demand (SHOD). With the CDD-562L, SHOD (meshed) circuits are easily and economically established between remotes. SHOD provides significant and dynamic connectivity between latency connections without suffering the high costs associated with multiple carriers and/or 1-to-1 multi-receiver links.

TURBO PRODUCT CODING

The CDD-562L incorporates Turbo Product Codec (TPC) error correction, delivering significant performance improvement when compared to Viterbi with concatenated Reed-Solomon. TPC simultaneously offers increased coding gain, lower decoding delay, and significant bandwidth savings.

HEADER COMPRESSION

Header compression reduces the required Voice over Internet Protocol (VoIP) bandwidth by as much as 60%. Example: a G.729 voice codec operating at 8 kbps will occupy 32 kbps once encapsulated into IP framing on a LAN. Using IP/UDP/RTP Header Compression, the same traffic only needs 10.8 kbps total WAN satellite bandwidth to cross the link.

PAYLOAD COMPRESSION

Compressing payload condenses the size of data frames and reduces the satellite bandwidth required to transmit across the link. Configurable on a per route basis, Payload Compression provides traffic optimization and bandwidth reduction up to 40%.

DATA ENCRYPTION

The CDD-562L provides 3xDES data encryption to prevent unauthorized access to data over the satellite link. Encryption is configurable on a per route basis.

QUALITY OF SERVICE (QoS)

The CDD-562L transparently passes through QoS prioritization established at the transmit end by the CDM-570/570L.

TECHNICAL SPECIFICATIONS

CDD-562L

SYSTEM PECIFICATIONS

Frequency Range	950 to 1950 MHz, 100 Hz frequency resolution
IF Input Impedance and Connectors	2 separate 50Ω (female Type N connectors), 17 dB return loss minimum

DATA RATE AND MODULATION/FEC CONFIGURATIONS (based on Turbo Products Code FEC)

	SCPC Operation	STDMA Operation
Rata Rate Range		
Rate 3/4 QPSK/OQPSK	16 kbps to 4.5 Mbps	64 kbps to 4.5 Mbps
Rate 7/8 QPSK/OQPSK	16 kbps to 5.0 Mbps (5.25 Mbps w/HRO*)	
Rate 0.95 QPSK/OQPSK	16 kbps to 5.0 Mbps (5.67 Mbps w/HRO*)	
Rate 3/4 8-PSK	16 kbps to 5.0 Mbps (6.75 Mbps w/HRO*)	
Rate 7/8 8-PSK	16 kbps to 5.0 Mbps (7.875 Mbps w/HRO*)	
Rate 0.95 8-PSK	16 kbps to 5.0 Mbps (8.50 Mbps w/HRO*)	
Rate 3/4 16QAM	16 kbps to 5.0 Mbps (9.0 Mbps w/HRO*)	
Rate 7/8 16QAM	16 kbps to 5.0 Mbps (9.98 Mbps w/HRO*)	
Refer to the CDD-562L Users Manual for a complete listing of the performance of all FEC, code rate, and modulation types. * HRO – High Rate Option enabled by FAST upgrade		

B.E.R. PERFORMANCE

Met with two adjacent carriers 7 dB higher, Guaranteed Eb/No, in dB (typical values in parenthesis)			
Turbo Product Codec Rate	3/4	7/8	0.95
QPSK/OQPSK			
10^{-6}	3.8 (3.3)	4.3 (4.0)	6.4 (6.0)
10^{-8}	4.4 (4.0)	4.5 (4.2)	6.9 (6.5)
8PSK			
10^{-6}	6.2 (5.7)	7.0 (6.6)	9.3 (8.9)
10^{-8}	6.8 (6.3)	7.2 (6.8)	10.3 (9.9)
16QAM			
10^{-6}	7.4 (7.0)	8.1 (7.7)	N/A
10^{-8}	8.2 (7.7)	8.3 (7.9)	N/A
Refer to the CDD-562L Users Manual for a complete listing of the performance of all FEC, code rate, and modulation types.			

DEMODULATOR

Input Power Range	(-130 +10Log Symbol Rate) dBm min (-90 +10Log Symbol Rate) dBm max
Maximum Composite Level	+40 dBc, up to -10 dBm
Acquisition Range	
Normal	±1 to ±32 KHz (1 KHz steps)
Wide	±1 to ±200 KHz, symbol rates ≥625ksps

POWER SUPPLY

Power Input	
AC (standard)	100 to 240 volts AC, 50/60 Hz
DC (optional)	-48 VDC (-38 to -60 V range)
Power Consumption	
No BUC Power Supply	75 watts typical
With BUC Power Supply	120 watts, powering 2 LNBs

ENVIRONMENTAL AND PHYSICAL

Temperature	
Operation	0°C to +50°C (+32°F to +122°F)
Storage	-25°C to +85°C (-13°F to +185°F)
Dimensions, 1RU High	1.75" H x 17" W x 16" D 45mm H x 432mm W x 406mm D
Weight	7 lbs (3.2 kg)

LOW-NOISE BLOCK CONVERTER (LNB) SUPPORT

LNB Voltage	+13 volts, +18 volts and +24 volts DC or OFF at 500 mA max per Rx Input
10 MHz Reference Power Level	-3 dBm ± 3 dB via Rx center conductor. Selectable ON or OFF per Rx Input

REGULATORY

Agency Approvals	CE Mark FCC Part 15, Class B

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