CDD-564 & CDD-564L Quad IP Demodulators

INTRODUCTION

The CDD-564 and CDD-564L are the first integrated quad IP demodulators, capable of receiving 4 independent 70/140 MHz or L-Band channels respectively and combining the output into a single 10/100BaseT Ethernet port for transmission onto the LAN. The 4 demodulators and the integrated IP Module are housed in a 1RU chassis. CDD-564/L is designed to operate with Comtech EF Data's IP-enabled products including modems and Performance Enhancement Proxies.

FEATURES FOR EACH DEMODULATOR

- CDD-564: 50 to 90 or 100 to 180 MHz IF range
- CDD-564L: 950 to 1950 MHz each demodulator
- 16 kbps to 9.98 Mbps data rate
- Fast acquisition demodulator
- QPSK modulation (8-PSK, 16-QAM optional)
- 2nd Generation Turbo Product Coding (TPC) forward error correction
- LNB support: 10 MHz reference and LNB power

STANDARD FEATURES

- Static IP routing for unicast and multicast
- Management via SNMP, Web or Telnet
- IGMP v1 and v2
- Support for Point-to-Point, Point-to-Multi-Point and hybrid network topologies
- 10/100BaseT Ethernet data interface (RJ-45)
- Firmware upgrade via FTP
- FAST feature upgrades at the factory or in the field
- Front Panel LEDs for Unit Status, Stored Event and the status of each of the four receive channels
- Interoperable with the CDM-570/L with IP Module, CDM-IP 550, and CDM-IP 300L

QUALITY OF SERVICE (QoS)

The CDD-564/L transparently passes the QoS prioritization established at the transmit end by the CDM-570/L.

HEADER DECOMPRESSION OPTION

Header compression reduces the bandwidth required for Voice over Internet Protocol (VoIP) by as much as 60%. Example: A G.729 voice codec, operating at 8 kbps, requires 32 kbps bandwidth once encapsulated into an IP/UDP/RTP frame. With IP/UDP/RTP header compression, the same voice call needs only 10.8 kbps total WAN satellite bandwidth. Typical Web/HTTP traffic can be reduced by 10% via IP/TCP header compression. Each demodulator can be independently configured for header decompression.

PAYLOAD DECOMPRESSION OPTION

Payload compression can reduce the required satellite bandwidth by up to 40%. Each demodulator can be independently configured for payload decompression.

DATA DECRYPTION OPTION

The CDD-564/L supports 3xDES data decryption to prevent unauthorized access to data over the satellite link, and is configurable on a per demodulator basis.

NETWORK TOPOLOGIES

The CDD-564/L simplifies hub installations by reducing rack space and costs by providing four independent demodulators in a 1RU chassis. A bank of CDD-564/L demodulators is ideal for a STAR topology network consisting of a shared outbound carrier with multiple return carriers from the remote sites.

At remote sites, the CDD-564/L enables mesh connectivity between multiple sites. Operating in mesh topology with direct links between sites eliminates double-hop through the hub, thereby conserving bandwidth and reducing latency.

VIPERSAT MANAGEMENT SYSTEM INTEGRATION

A Vipersat powered network integrates this advanced demodulator with a powerful network management tool, the Vipersat Management System (VMS). In addition to the traditional Monitoring and Control of the CDM-570/L modems, CDD-564/L and CDD-562L demodulators, the VMS allows these devices to share bandwidth, and when needed, switch automatically to a dedicated SCPC channel.

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.

Modems

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CDD-564 & CDD-564L Quad IP Demodulators

CDD-564

CDD-564L

SYSTEM SPECIFICATIONS

Frequency Range	CDD-564: 50 to 90 or 100 to 180 MHz, CDD-564L: 950 to 1950 MHz, 100 Hz frequency resolution
Inputs	CDD-564: 4 separate BNC Type CDD-564L: 4 separate Type N female
Input Impedance	CDD-564: 50 or 75Ω user selectable, 17 dB minimum return loss CDD-564L: 50Ω, 17 dB minimum return loss
Traffic & Management Interface	10/100BaseT Ethernet, RJ-45
Command Line Interface (CLI)	RS-232, RJ-11
Factory Test Connector	DB-9 male
Frequency Reference	± 0.06 ppm, 32 to 122ºF (0 to 50ºC) internal External – none
Symbol Rate Range	16 ksps to 3.0 Msps

Data Rate Range – Each demodulator independently configurable in 1 bps increments *(See the CDD-564L Users Manual for details)*

Rate 3/4 QPSK TPC	16 kbps to 4.50 Mbps
Rate 7/8 QPSK TPC	16 kbps to 5.25 Mbps
Rate 0.95 QPSK TPC	16 kbps to 5.66 Mbps
Rate 3/4 8-PSK TPC	16 kbps to 6.75 Mbps
Rate 7/8 8-PSK TPC	16 kbps to 7.875 Mbps
Rate 0.95 8-PSK TPC	16 kbps to 8.50 Mbps
Rate 3/4 16-QAM TPC	16 kbps to 9.00 Mbps
Rate 7/8 16-QAM TPC	16 kbps to 9.98 Mbps
Descrambling	Comtech or IESS-315
FEC	QPSK/8-PSK – TPC Rate 3/4, 7/8, 0.95 16QAM – TPC Rate 3/4, 7/8

DEMODULATOR

Input Power Range	CDD-564: -30 to –60 dBm CDD-564L: -130 + 10 log(Symbol Rate) to -90 + 10 log(Symbol Rate)
Max Composite Level	+40 dBc, up to -10 dBm for CDD-564L +35 dBc, up to –5 dBm for CDD-564
Acquisition Range	± 1 to ± 32 kHz (1 kHz steps) < 625 ksps ± 1 to ± 200 kHz ≥ 625 ksps (CDD-564L only)
Monitor Functions	E_b/N_o, Frequency Offset, BER, LNB current and voltage, Rx receive signal level

LNB SUPPORT (CDD-564L)

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 ± 3dB via Rx center conductor. Selectable ON or OFF per Rx Input

ENVIRONMENTAL AND PHYSICAL

Temperature:	
Operating	32 to 122ºF (0 to 50ºC)
Storage	-13 to 185ºF (-25 to 85ºC)
Power Supply	100 to 240 volts AC, 50/60 Hz Optional 48 VDC Input (38 to 60)
Power Consumption	75 W typical (140 W max – powering 4 LNBs)
Physical Dimensions	1RU high, 16 inches deep (40.6 cm)
Weight	7 lbs (3.2 kg)
Agency Approvals	CE Mark FCC Part 15 Class B

NETWORK PROTOCOLS

RFC 768 – UDP	RFC 1812 – IPv4 Routers
RFC 791 – IP	RFC 2045 – MIME
RFC 792 – ICMP	RFC 2236 - IGMP v2
RFC 793 – TCP	RFC 2474 – Diff Serv
RFC 826 – ARP	RFC 2475 - ADS
RFC 856 – Telnet	RFC 2578 – SMI
RFC 862 – Ping	RFC 2616 – HTTP
RFC 894 – IP	RFC 2821 – SMTP
RFC 959 – FTP	RFC 3412 – SNMP
RFC 1112 – IP Multicast	RFC 3416 – SNMPv2
RFC 1213 – SNMP MIB II	RFC 3418 – SNMP MIB

AVAILABLE OPTIONS

How Enabled	Option
Standard	Variable Rate to 512 kbps
FAST	Variable Rate to 2.048 Mbps
FAST	Variable Rate to 5.0 Mbps
FAST	Variable Rate to 9.98 Mbps
FAST	8-PSK modulation
FAST	16-QAM modulation
FAST	Header Decompression
FAST	Payload Decompression
FAST	3xDES Data Decryption
Hardware	-48 VDC Prime Power Supply

VIPERSAT OPERATION MODE

Vipersat operation is enabled via a FAST feature code. Networks can easily start off in point-to-point or point-to-multipoint configurations. As the network grows and users wish to take advantage of the bandwidth on demand savings by implementing a Vipersat network, demodulators can easily be upgraded to Vipersat mode. Vipersat mode provides for the ability to operate in the following modulation/FEC rates:

STDMA	QPSK, Rate 3/4 Turbo FEC – all STDMA modes. Data Rate Range: 64 kbps – 4.5 Mbps
SCPC	All Turbo Product Code FEC rates as detailed herein

CDD-564/L BLOCK DIAGRAM