

# CDD-564EN, CDD-564LEN & CDD-562LEN IP Demodulators



## INTRODUCTION

The CDD-564EN CDD-564LEN and CDD-562LEN are integrated IP demodulators that receive 2 or 4 independent 70/140 MHz or L-Band channels (depending on model) and combine the output into a single 10/100Base-T Ethernet port for transmission onto the LAN. The demodulators and the integrated IP Module are housed in a 1RU chassis. The demodulators include optional data encryption, and are designed to operate with Comtech EF Data's IP-enabled products including modems and Performance Enhancement Proxies.

## FEATURES FOR EACH DEMODULATOR

- CDD-564EN: 50 to 90 or 100 to 180 MHz IF range
- CDD-564LEN: 950 to 1950 MHz each demodulator
- CDD-562LEN: 950 to 1950 MHz
- 16 kbps to 9.98 Mbps data rate
- Fast acquisition demodulator
- BPSK, QPSK demodulation (8-PSK/8-QAM, 16-QAM optional)
- 2<sup>nd</sup> 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
- 10/100Base-T 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-IP, CDM-IP 550, and CDM-IP 300L

## APPLICATIONS

- Disaster Recovery & Emergency Communications
- Enterprise
- Offshore & Maritime Communications
- Satellite News Gathering

## TYPICAL USERS

- Enterprise
- Broadcasters
- Internet Service Providers
- Satellite Service Providers
- Oil Field Service Providers
- Maritime
- Government & Military

## QUALITY OF SERVICE (QoS)

The CDD-564/LEN and CDD-562LEN transparently pass the QoS prioritization established at the transmit end by the CDM-570/L-IP Satellite Modem.

## 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/LEN 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/LEN and CDD-562LEN simplify hub installations by reducing rack space and costs by providing four independent demodulators in a 1RU chassis. A bank of CDD-564/LEN or CDD-562LEN 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/LEN or CDD-562LEN 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-IPEN modems, CDD-564/LEN and CDD-562LEN 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

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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.

### SYSTEM SPECIFICATIONS

Frequency Range	CDD-564EN: 50 to 90 or 100 to 180 MHz, CDD-564LEN & CDD-562LEN: 950 to 1950 MHz, 100 Hz frequency resolution
Inputs	CDD-564EN: 4 separate BNC Type CDD-564LEN: 4 separate Type N female CDD-562LEN: 2 separate Type N female
Input Impedance	CDD-564EN: 50 or 75 $\Omega$ user selectable, 17 dB minimum return loss CDD-564LEN & CDD-562LEN: 50 $\Omega$ , 17 dB minimum return loss
Traffic & Management Interface	10/100Base-T Ethernet, RJ-45
Command Line Interface (CLI)	RS-232, RJ-11
Factory Test Connector	DB-9 male
Frequency Reference	$\pm$ 0.06 ppm, 32 to 122°F (0 to 50°C) internal External – none
Symbol Rate Range	16 kspss to 3.0 Msps
Demodulation, FEC and Data Rate Range – Each demodulator independently configurable in 1 bps increments ( <i>See the User's Manual for details</i> )	
Rate 5/16 BPSK TPC	16 kbps to 0.937 Mbps
Rate 21/44 BPSK TPC	16 kbps to 1.430 Mbps
Rate 21/44 QPSK TPC	16 kbps to 2.860 Mbps
Rate 3/4 QPSK TPC	16 kbps to 4.500 Mbps
Rate 7/8 QPSK TPC	16 kbps to 5.250 Mbps
Rate 0.95 QPSK TPC	16 kbps to 5.666 Mbps
Rate 3/4 8-PSK/8-QAM TPC	16 kbps to 6.750 Mbps
Rate 7/8 8-PSK/8-QAM TPC	16 kbps to 7.875 Mbps
Rate 0.95 8-PSK/8-QAM TPC	16 kbps to 8.500 Mbps
Rate 3/4 16-QAM TPC	16 kbps to 9.000 Mbps
Rate 7/8 16-QAM TPC	16 kbps to 9.980 Mbps
Descrambling	Comtech or IESS-315

### DEMODULATOR

Input Power Range	CDD-564EN: -30 to -60 dBm CDD-564LEN & CDD-562LEN: -130 + 10 log(Symbol Rate) to -90 + 10 log(Symbol Rate)
Max Composite Level	+40 dBc, up to -10 dBm for CDD-564LEN & CDD-562LEN +35 dBc, up to -5 dBm for CDD-564EN
Acquisition Range	$\pm$ 1 to $\pm$ 32 kHz (1 kHz steps) < 625 kspss $\pm$ 1 to $\pm$ 200 kHz $\geq$ 625 kspss (CDD-564LEN & CDD-562LEN)
Monitor Functions	$E_b/N_0$ , Frequency Offset, BER, LNB current and voltage, Rx receive signal level

### LNB SUPPORT (CDD-564LEN)

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 $\pm$ 3dB via RX center conductor. Selectable ON or OFF per RX Input

### ENVIRONMENTAL AND PHYSICAL

Temperature: Operating Storage	32 to 122°F (0 to 50°C) -13 to 185°F (-25 to 85°C)
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 (height x width x depth)	1.75 x 19 x 16 in. ( 43.8 x 482.6 x 406 mm)
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/8-QAM Demodulation
FAST	16-QAM Demodulation
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 demodulation/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



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