CDD-564A, CDD-564AL & CDD-562AL IP Demodulators

Overview

The CDD-564A, CDD-564AL and CDD-562AL are our next generation integrated IP demodulators providing industry leading performance in a 1 RU package at a competitive price. They are designed to receive up to four independent 70/140 MHz or L-Band channels (depending on model) and combine the receive data into a single 10/100Base-T Ethernet port for transmission onto the LAN. The demodulators are designed to operate with Comtech EF Data's CDM-570/L-IP and CDM-570A/L-IP IP-enabled modems.

Typical Users

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

Features

- Independent demodulators
  - CDD-564A: Four 70/140 MHz demodulators
  - CDD-564AL: Four L-band demodulators
  - CDD-562AL: Two L-band demodulators
  - CDD-564A: 50 to 90 or 100 to 180 MHz
  - CDD-562AL & CDD-564AL: 950 to 2250 MHz
  - 16 kbps to 10.239 Mbps data rate
  - BPSK, QPSK, 8PSK/8-QAM, 16-QAM demodulation
  - VersaFEC® low latency LDPC forward error correction (Constant Coding & Modulation Mode)
  - 2nd Generation Turbo Product Coding (TPC) forward error correction
  - 5%, 10%, 15%, 20%, 25% and 35% Filter Rolloff
- Static IP routing for unicast and multicast
- Management via SNMP, Web or Telnet
- IGMP v1 and v2
- 10/100Base-T- Ethernet data interface (RJ-45)
- 10/100Base-T- Ethernet management interface (RJ-45)
- Firmware upgrade via FTP
- Front panel LEDs for unit status, stored event indication and the status of each receive channel
- LNB support: 10 MHz reference and LNB power
- Compatible with the CDM-570/L-IP (TPC) and CDM-570A/L-IP (TPC or VersaFEC)

Common Applications

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

Network Topologies

The CDD-562AL and CDD-564A/L are intended for use as hub receivers for Hub Spoke networks consisting of a shared outbound carrier with multiple return carriers from remote sites. The CDD-562AL and CDD-564A/L simplify hub deployment by reducing rack space and costs by providing two and four independent demodulators respectively in a 1RU chassis. At remote sites, the CDD-562AL or CDD-564A/L is used to enable single hop mesh connectivity between remote sites. Operating in mesh topology with direct connectivity between sites eliminates double-hop through the hub, thereby conserving bandwidth and reducing latency.

Quality Of Service (QoS)

The CDD-564A/L and CDD-562AL transparently pass the QoS prioritization established at the transmit end by the CDM-570/A/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.

VersaFEC Forward Error Correction

VersaFEC is a patent-pending system of high-performance low latency LDPC codes designed to provide maximum coding gain while minimizing latency. CDD-564A/L and CDD-562AL support VersaFEC's Constant Coding & Modulation (CCM) mode of operation.

Vipersat Management System Integration

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

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.

Specifications

Data Rate Range	16 kbps to 10.239 Mbps (VersaFEC)
	16 kbps to 9.98 Mbps (TPC)
Maximum Symbol Rate	3.0 Msps
Traffic Interface	10/100Base-T Ethernet (RJ-45)
M&C Interface	10/100Base-T Ethernet (RJ-45)
Command Line Interface (CLI)	RS-232, RJ-11
Descrambling	Comtech or IESS-315

Demodulation, FEC and Data Rate Range – Each demodulator independently configurable in 1 bps increments *(See the User's Manual for details)*

VersaFEC	
BPSK 0.488	16 kbps to 1.462 Mbps
QPSK 0.533	16 kbps to 3.200 Mbps
QPSK 0.631	16 kbps to 3.785 Mbps
QPSK 0.706	16 kbps to 4.233 Mbps
QPSK 0.803	16 kbps to 4.818 Mbps
8-QAM 0.576 (ECCM)	16 kbps to 5.179 Mbps
8-QAM 0.642	16 kbps to 5.782 Mbps
8-QAM 0.711	16 kbps to 6.401 Mbps
8-QAM 0.780	16 kbps to 7.021 Mbps
16-QAM 0.644 (ECCM)	16 kbps to 7.726 Mbps
16-QAM 0.731	16 kbps to 8.776 Mbps
16-QAM 0.780	16 kbps to 9.361 Mbps
16-QAM 0.829	16 kbps to 9.946 Mbps
16-QAM 0.853	16.4 kbps to 10.239 Mbps
TPC	
BPSK 5/16	16 kbps to 0.937 Mbps
BPSK 21/44	16 kbps to 1.430 Mbps
QPSK/OQPSK 21/44	16 kbps to 2.860 Mbps
QPSK/OQPSK 3/4	16 kbps to 4.500 Mbps
QPSK/OQPSK 7/8	16 kbps to 5.250 Mbps
QPSK/OQPSK 0.95	16 kbps to 5.666 Mbps
8PSK/8-QAM 3/4	16 kbps to 6.750 Mbps
8PSK/8-QAM 7/8	16 kbps to 7.875 Mbps
8PSK/8-QAM 0.95	16 kbps to 8.500 Mbps
16-QAM 3/4	16 kbps to 9.000 Mbps
16-QAM 7/8	16.8 kbps to 9.980 Mbps

Demodulator

Frequency Range	CDD-564A: 50 to 90 or 100 to 180 MHz, CDD-564AL & CDD-562AL: 950 to 2250 MHz, 100 Hz frequency resolution
Inputs	CDD-564A: 4 separate BNC female CDD-564AL: 4 separate Type N female CDD-562AL: 2 separate Type N female
Input Impedance	CDD-564A: 50 or 75 Ω user selectable, 17 dB minimum return loss CDD-564AL & CDD-562AL: 50 Ω, 17 dB minimum return loss
Input Power Range	CDD-564A: -30 to –60 dBm CDD-562AL & CDD-564AL: -130 + 10 log(symbol rate) dBm to -90 + 10 log(symbol rate) dBm
Max Composite Level	CDD-562AL & CDD-564AL : +40 dBc, up to -10 dBm CDD-564A: +35 dBc, up to –5 dBm
Acquisition Range	$\pm$ 1 to $\pm$ 32 kHz (1 kHz steps) < 625 ksps $\pm$ 1 to $\pm$ 200 kHz ≥ 625 ksps (CDD-562AL & CDD-564AL)

Frequency Reference	CDD-564AL & CDD-562AL: Internal $\pm$0.06 ppm, 32 to 122ºF (0 to 50ºC) CDD564A: Internal $\pm$1 ppm, 32 to 122ºF (0 to 50ºC) External – none
Monitor Functions	E_b/N_o, Frequency offset, BER, LNB current and voltage, RX receive signal level

LNB Support (CDD-562AL & CDD-564AL)

LNB Voltage	+13 VDC, +18 VDC or OFF at 500 mA max. per RX input
10 MHz Reference Power Level	0 dBm $\pm$ 5 dB via RX center conductor. Selectable ON or OFF per RX input

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

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 VersaFEC and TPC rates as detailed herein

Available Options

How Enabled	Option
Standard	Data rate to 512 kbps
FAST	Data rate to 1.1 Mbps
FAST	Data rate to 2.5 Mbps
FAST	Data rate to 5.0 Mbps
FAST	Data rate to 10.239 Mbps
FAST	8PSK/8-QAM demodulation
FAST	16-QAM demodulation
FAST	VersaFEC (CCM Only)
FAST	TPC Codec for Rate 5/16, 21/44, 3/4 and 7/8 (Rate 5/16, 21/44, 3/4 and 7/8 can be supported with or without the TPC board) Not required if TPC board is present.
FAST	5%, 10%, 15%, 20% and 25% filter rolloff
FAST	Header decompression
FAST	Payload decompression
Hardware	Turbo Product Code (TPC) Board (Required for Rate 0.95. Rate 5/16, 21/44, 3/4 and 7/8 can be supported with or without the TPC board)
Hardware	-48 VDC Prime power supply

Environmental & Physical

Temperature:	
Operating	32 to 122°F (0 to 50°C)
Storage	-13 to 185°F (-25 to 85°C)
Power Supply	100 to 240 volts AC, 50/60 Hz optional 48 VDC Input
Power Consumption	55 W typical (106 W max. – powering 4 LNBs)
Dimensions (height x width x depth)	1.75" x 19" x 17.3" (44 x 483 x 439 mm)
CE Mark	EN 301 489-1 (ERM) EN55022 (Emissions) EN55024 (Immunity) EN 61000-3-2 EN 61000-3-3 EN60950 (Safety)
FCC	FCC Part 15, Subpart B
Weight	7 lbs (3.2 kg)

Rear Panels

CDD-562AL

CDD-564A

CDD-564AL