

CDM-710G High-Speed Satellite Modem



INTRODUCTION

The CDM-710G High-Speed Satellite Modem provides transmission of data using the same powerful DVB-S2¹ techniques developed for video delivery in Digital Video Broadcast (DVB) applications. It operates over satellite links with programmable symbol / data rates up to 45 Msps.

The modulation types supported include DVB-S2 QPSK, 8-PSK, 16-APSK and 32-APSK. Constant Coding and Modulation (CCM) operation with a single input stream is provided. The unit is available in modulator only, demodulator only, and modem configurations.

The terrestrial data interfaces are field-removable to allow swap out of interface types. The data interfaces include the CDI-10-1 with G.703 E3/T3/STS-1, CDI-60 HSSI and CDI-70 Gigabit Ethernet.

DVB-S2 offers new opportunities for data transmission applications. With a broad range of modulation and coding formats, it permits the user to tailor a link for the available bandwidth and power to optimize link performance. Whether a link is point-to-point or point-to-multipoint there is a format available to suit each application. The CDM-710G is designed for generic (non-MPEG2 format) data applications.

APPLICATIONS

The CDM-710G's bandwidth and power-efficient operation is ideal for:

- Transmission of non-transport stream data
 - Referred to as Generic Data in DVB-S2
- Business enterprise data distribution
- Broadband Interactive and Internet services
- Any networking application relying on
 - Point-to-point transmission
 - Point-to-multipoint transmission
 - Arbitrary topology

With a Gigabit data interface and either a 70/140 MHz or L-Band IF, the CDM-710G is equipped with the configuration most frequently requested by users. This

¹ ID Number 3424 for CDM-710G

DVB and DVB-S2 logos are trademarks of the DVB Digital Video Broadcasting Project (1991 to 1996).

is ideal for data transmission formats that take advantage of the Ethernet packets for digital one-way, two-way and any network applications. The HSSI interface enables IP or other data formats via a serial interface, and telecom applications are supported with the G.703 interface.

FAST

Enhancing the CDM-710G's performance is easy. Additional features are added quickly on site, using FAST access codes purchased from Comtech EF Data. To enable these features, simply enter the code at the front panel. Other features are added with a simple module swap.

FEATURES

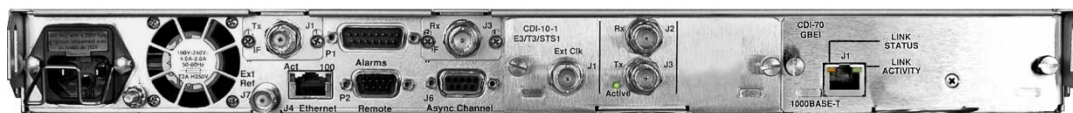
- 52 to 88 MHz or 104 to 176 MHz in 100 Hz Steps
- 950 to 1950 MHz Tx (L-Band Option)
- Generic data transmission (any non-MPEG2 data)
- DVB-S2 per EN 302 307
 - 1 to 45 Msps, QPSK and 8-PSK
 - 1 to 35 Msps, 16-APSK
 - 1 to 28 Msps, 32-APSK
 - Constant Coding and Modulation (CCM) operation
- Generic data transmission (DVB-S2)
 - CDI-10-1 G.703 E3/T3/STS-1 data rates
 - CDI-60 HSSI data interface up to 70 Mbps
 - CDI-70 Gigabit Ethernet over all data rates
- Spectral rolloff of 20, 25 or 35%
- 50Ω or 75Ω Impedance (70/140 MHz)
- 50Ω Impedance (L-Band)
- Unit Management: RS-232 / RS-485, 2 Wire / 4 Wire or 10/100 BaseT Ethernet
- SNMP, Telnet or HTTP
- Flash Upgrade
- FAST Options

The technologies and features of the CDM-710G are covered by US Patents 7117235 and 7213042.

UNIT MANAGEMENT

The operator may configure and monitor the modem from the front panel, or through the remote M&C port. Control and status is provided through the RS-232, RS-485 (2/4 wire) port or 10/100 BaseT Ethernet port. The management Ethernet port supports SNMP, Telnet and HTTP (web browser) operation.

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SYSTEM SPECIFICATIONS

| | |
|---|---|
| Symbol/Date Rate Range | Programmable in 1 sps increments |
| DVB-S2 (Please refer to the manual for additional details) | QPSK 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 to 45 Msps, 80.48 Mbps max 8-PSK 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 to 45 Msps, 120.5 Mbps max 16-APSK 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 to 35 Msps, 124.8 Mbps max 32-APSK 3/4, 4/5, 5/6, 8/9, 9/10 to 28 Msps, 124.6 Mbps max |
| FECFrame | Standard (64,800 bits) or Short (16,200 bits) |
| Pilots | On or Off |
| Alpha (Rolloff) | 20%, 25% or 35% |
| M&C / Remote Interface | RS-232 /485, or 10/100 BaseT on the base modem, SNMP, Telnet, HTTP |
| Reflash | Ethernet port base modem and Ethernet port of Gigabit Ethernet Interface |
| Frequency Stability | Internal, stability ± 1.5 ppm |
| External Reference (BNC Female) | None, 1, 2, 5, 10, or 20 MHz for IF and Data, internally phase locked |
| Form C | Modulator, demodulator and Unit fault |
| Spectral Inversion | Normal and Inverted |
| Configuration Retention | Non-volatile memory; Returns upon power up |
| Redundancy Support | 1:1 CRS-180 (70/140 MHz) & CRS-170A (L-Band) 1:N CRS-300 with CRS-280 /280L ((70/140 MHz / L-Band) |

MODULATOR

| | |
|--|---|
| 70 / 140 MHz | 52 to 88 and 104 to 176 MHz in 100 Hz steps |
| Impedance / Connector | 50 Ω or 75 Ω , BNC Female |
| Output Power | 0 to -20 dBm, 0.1 dB steps (70/140 MHz) |
| Power Accuracy | ± 0.5 dB of nominal at 25°C. Within ± 0.5 dB of 25°C value over frequency and temperature range |
| L-Band | 950-1950 MHz in 100 Hz steps, modulator |
| Impedance / Connector | 50 Ω , Type N Female |
| Output Power | -5 to -25 dBm, 0.1 dB steps |
| Power Accuracy | ± 0.5 dB of nominal at 25°C ± 0.5 dB from 25°C value at same frequency |
| Harmonics and Spurs | < 55 dBc/4kHz, modulated carrier. Excludes spectral mask area. |
| External Tx Carrier Off | TTL Low signal |
| Quadrature Phase Error and Amplitude Imbalance | Sideband 35 dB below unmodulated carrier |

DEMODULATOR

| | |
|-------------------------------|---|
| 70 / 140 MHz | 52 to 88 and 104 to 176 MHz in 100 Hz steps |
| Impedance / Connector | 50 Ω or 75 Ω , BNC Female |
| Input Power, Minimum | -58 + 10Log(Symbol Rate in Msps) dBm |
| AGC | 45 dB above minimum |
| L-Band | 950-1950 MHz in 100 Hz steps, demodulator |
| Impedance / Connector | 50 Ω , Type N Female |
| Input Power, Minimum | -58+ 10Log(Symbol Rate in Msps) dBm |
| AGC | 45 dB above minimum |
| Es/No and Error rate (DVB-S2) | Please refer to product manual. Within 0.3 to 1.0 dB of ideal, depending upon modulation and coding |

BASE UNIT CONNECTOR (Excluding Data Interface)

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|------------------------------|--|
| Alarm Connector (DB-15 Male) | Form C: Tx, Rx and unit faults External Tx Carrier Off IQ test point |
| Unit Management | DB-9 Male with RS-232 and RS 485 2W/4W RJ-45 Ethernet |
| Tx & Rx IF Connectors | BNC-female (70 / 140 MHz) Type-N female (L-Band) |

TEST FUNCTIONS

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| CW | Modulation disabled and CW signal is transmitted |
| SSB Carrier | Provides suppressed carrier and suppressed sideband |
| Loopback | Full Duplex only |

MONITOR FUNCTIONS

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| Status Items – Available via Rear Panel | Fault log with fault type and time stamp Eb/No, Es/No, PER, BER (Duplex or Rx-Only) |
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DATA INTERFACE CARDS

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|----------|---|
| CDI-10-1 | G.703 (single Tx/Rx port): E3 (34.368 Mbps), T3 (44.768 Mbps) or STS-1 (51.85 Mbps) |
| CDI-60 | HSSI Interface Card, 188 byte or DVB-S2 Generic to 70 Mbps |
| CDI-70 | Gigabit Ethernet up to 1632 byte frame size (does not support pro-MPEG COP3) |

ENVIRONMENTAL AND PHYSICAL

| | |
|----------------------------|---|
| Temperature | Operating: 0 to 50°C (32 to 122°F) Storage: -40 to 70°C (-40 to 158°F) |
| Humidity | 95% maximum, non-condensing |
| Power Supply Input | 100 to 240 AC 50/60 Hz |
| Power Consumption | 120 VAC at 60 Hz 88 W, 93 VA maximum 230 VAC at 50 Hz 88 W, 133 VA maximum 48 VDC 87W maximum |
| Weight | 15 lbs (6.8 kg) |
| Dimensional Envelope, 1 RU | 19W x 18.65D x 1.75H inches (48W x 47.4D x 4.4H cm) |
| Rack Slides | Optional accessory |
| AC Receptacles | Includes restraint for standard IEC-320 inlet |
| Agency Compliance | CE Mark and FCC part 15 |

OPTIONS

| | |
|----------|--|
| Type | Option |
| FAST | DVB-S2: QPSK, 8-PSK, 16-APSK, 32-APSK |
| Hardware | CDI-10-1 G.703 (single Tx/Rx port E3/T3/STS-1) |
| Hardware | CDI-60 HSSI Data Interface to 70 Mbps |
| Hardware | CDI-70 Gigabit Ethernet Interface all data rates |
| Hardware | 70 MHz or L-Band |
| Hardware | Tx-only, Rx-only or Duplex |
| Hardware | Rack Slides |

