Overview

The CDM-710G High-Speed Satellite Modem provides transmission of data using the same powerful DVB-S2[1] 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.

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

Typical Users
- Enterprise

Common Applications
- Broadband Interactive Services
- Disaster Recovery & Emergency Communications
- Enterprise
- G.703 Trunking
- High Speed Content Delivery
- IP Trunking

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 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%
- 50 Ω or 75 Ω impedance (70/140 MHz)
- 50 Ω impedance (L-Band)
- Unit management: RS-232 / RS-485, 2-Wire / 4-Wire or 10/100Base-T Ethernet
- SNMP, Telnet or HTTP
- Flash upgrade
- FAST options

The technologies and features of the CDM-710G are covered by U.S. patents 7117235 and 7213042.

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.

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 10/100Base-T Ethernet port. The management Ethernet port supports SNMP, Telnet and HTTP (web browser) operation.

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[1] ID Number 3424 for CDM-710G

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

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, 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.
FEC Frame	Normal (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 10/100Base.T 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 TXCarrier 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)

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 2-Wire/4-Wire RJ-45 Ethernet
TX & RX IF Connectors	BNC-female (70 / 140 MHz) Type-N female (L-Band)

Test Functions

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

Monitor Functions

Status Items – Available via Rear Panel	Fault log with fault type and time stamp Eb/No, Es/No, PER, BER (duplex or RX-only)

Data Interface Cards

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 50ºC (32 to 122ºF)
	Storage: -40 to 70ºC (-40 to 158ºF)
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	87 W maximum
Weight	15 lbs (6.8 kg)
Dimensions (1 RU) (height x width x depth)	1.75" x 19" x 18.65" (4.4 x 48 x 47.4 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
Type	Option