

# Airborne Telemetry

## CDM2000-001 Compact Data Manager Airborne Data Acquisition Products

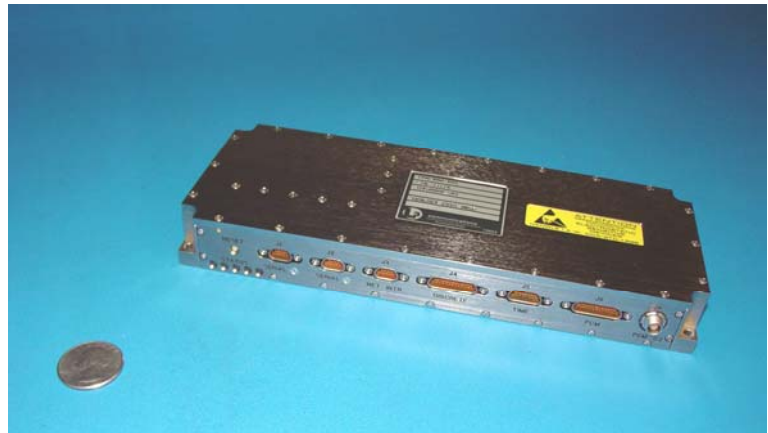
### FEATURES

- PCM – Ethernet Conversion
- Gigabit Ethernet operation
- Fully Programmable
- Supports System Programming through Vista TEC
- Rugged Design for Flight Environments
- Networked Front End for Legacy PCM Encoders
- Supports Standard IRIG PCM codes and timing inputs
- iNET Compatible



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### CDM2000-001

#### General Description

The CDM2000-001 Compact Data Manager (CDM), is a miniature, network-enabled unit that has application in both commercial and flight environments for setup and control of airborne data acquisition systems.

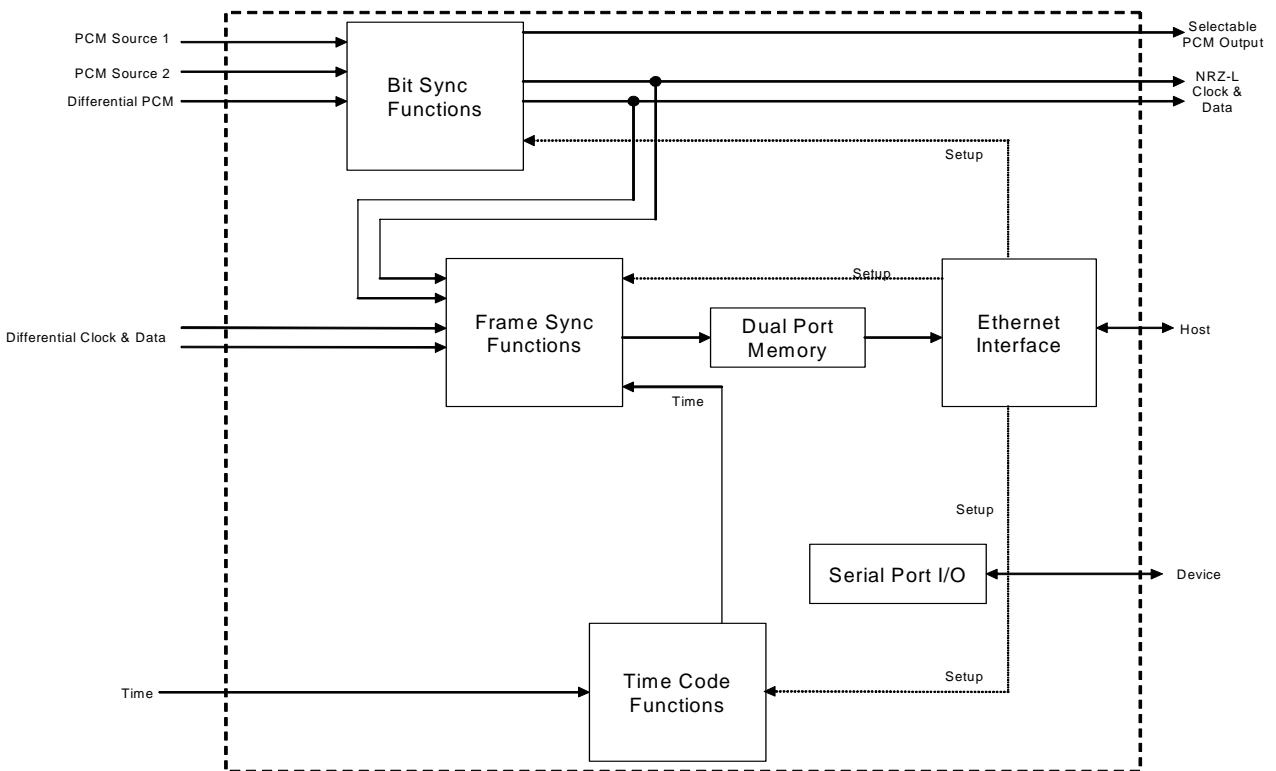
The CDM provides control and data interfaces between the flight test engineer and the rest of a Data Acquisition System (DAS). These interfaces include RS-422 and RS-232 serial interfaces to control other DAS components, a fully programmable PCM input interface to receive data from the DAS, and a 10/100/1000 Ethernet output interface to provide frame data products to the Host and other computers over a network link.

In addition to the units primary application as a compact setup and control system for use with supported data acquisition systems, the CDM may also be conveniently used a stand-alone PCM to Ethernet output converter for use with legacy PCM encoder systems.

The CDM's network capability provides the following flexibility:

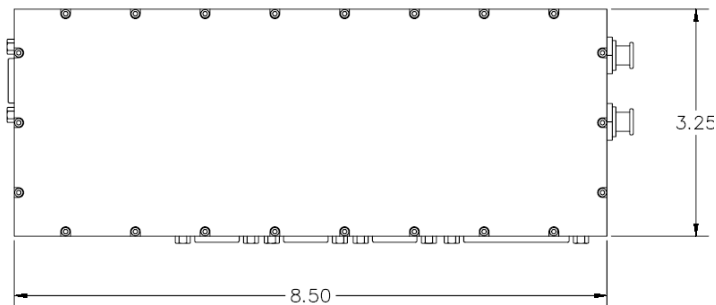
- Eliminates the need for a dedicated bit synchronizer and decommutator in the Ground Support Computer.
- Eliminates the need for drivers or special installation procedures
- Allows the unit to act as a data server, broadcasting frame data for any number of users to collect and process
- With wireless networking, allows the GSC to be placed in any convenient location without being physically connected to the CDM

## CDM2000-001 BLOCK DIAGRAM



## Physical Description

The general outline drawing of the unit is shown below. The unit supplies a number of connectors and indicators for power, I/O, control and status.



The CDM is based upon a multi-board approach that segregates the general unit control functions from the application specific input or output, resulting in a low profile solution. The CDM employs an embedded AMCC PowerPC processor running Linux, and a separate PCI based module that performs the required I/O function; which in the CDM application would be Bit Synchronization, Frame Synchronization and Serial-Parallel Conversion. I/O connectors are located directly on the module for connection to input and output devices.

## Programming

The CDM2000 is fully supported by the Vista TEC setup software package, which allows the user to identify the parameters that are to be extracted from the available data packets and build the final composite PCM format.

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## ENVIRONMENTAL REQUIREMENTS

### Technical Description

The CDM is a standalone unit that can support any number of flight or general-purpose control and data acquisition requirements. The unit provides the following physical interfaces:

1. 10/100/1000 Network Interface:
  - Used as the host control interface
  - Provide status
  - Provide packets containing frame data
2. Two (2) serial ports, used for interfacing to DAS equipment.
3. Time Code Interface.
4. PCM Input Processing: Multiple inputs including
  - Single ended,
  - Differential PCM
  - Differential clock and data

### Physical Environment

#### Temperature

Continuous Operation: -35° C to +75° C  
Non-Operation: -40° C to +85° C

#### Relative Humidity

Continuous Operation: 5% to 95%,  
with no condensation.

#### Altitude

Continuous Operation: -1,000 ft to +30,000 ft  
pressure altitude.

#### Sand and Dust

The enclosure is sealed (not hermetically) to prevent the intrusion of foreign particles and liquids as permissible.

### Explosive Atmosphere

Operation of the equipment should not cause ignition of an ambient explosive gas mixture, reference MIL-STD-810F, Change Notice 1, Method 511, Procedure I.

### Acoustic Noise

The unit is operational at a sustained sound pressure level of 146 dB between the frequency range of 22 to 11,300 Hertz. Reference MIL-STD-810F, Method 515.1, Procedure I.

### Vibration

The following vibration environments should not adversely affect equipment operation.

Military Standard	MIL-STD-810F
Method	Method 514.5
Category	Category 9 - Helicopter
Procedure	Procedure I
Equipment Location	General
Source Frequency	30 Hertz
Test Duration	10 Minutes per axis

### Shock

The shock environments described below should not adversely affect equipment operation:

Military Standard	MIL-STD-810F
Method	Method 516.5
Procedure	Procedure I - Functional shock
Shock Spectrum	Half Sine
Peak Shock Level	30 G's

Shock Duration	9 milliseconds
Shock Exposure	3 shocks in each of 6 orthogonal axis for a total of 18 shocks.

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## ENVIRONMENTAL REQUIREMENTS

(Continued)

### Electromagnetic interference (EMI)

The CDM is designed using MIL-STD-461E as a guide. These guidelines are referenced to ensure that electromagnetic interference control is considered and incorporated into the design of the CDM2000-001. MIL-STD-461E supersedes MIL-STD-461D and MIL-STD-462D, and contains a detailed description of both EMI requirements and the testing procedures. The specific, applicable, tests are listed in Table 2-1, below.

Requirement	Description
CE 101	Conducted Emissions, Power Leads, 30 Hz to 10 kHz
CE 102	Conducted Emissions, Power Leads, 10 kHz to 10 MHz
CS 101	Conducted Susceptibility, Power leads, 30 Hz to 150 kHz.
CS 114	Conducted Susceptibility, Bulk Cable Injection, 10 kHz to 200 MHz, Curve 5
CS 115	Conducted Susceptibility, Bulk Cable Injection, Impulse Excitation
CS 116	Conducted Susceptibility, Damped Sinusoidal Transients, Cables and Power Leads, 10 kHz to 100 MHz
RE 101	Radiated Emissions, Magnetic Field, 30 Hz to 100 kHz
RE 102	Radiated Emissions, Electric Field 10 kHz to 18 GHz
RS 101	Radiated Susceptibility, Magnetic Field, 30 Hz to 100 kHz
RS 103	Radiated Susceptibility, Electric Field, 2 MHz to 40 GHz, 100 V/m Peak

### Power

#### Power Environment

The CDM Power Supply conforms to MIL-STD-704E. The CDM provides two separate power connectors that allow for use in commercial or flight environments.

- Commercial: A power supply converter module is supplied with the unit for use in laboratory environments where 115/230VAC is available.
- Flight: Aircraft rated 28VDC power may be provided on a 9 Pin subminiature connector for mounting and use on aircraft.

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