

# CM-1 – CobraNet™ Module 1



## Overview

The CM-1 provides a CobraNet™ compliant interface in the form of a compact, low-power module. Simultaneously providing 32 channels each of distributed digital audio input and output, the CM-1 is designed to be easily integrated into professional audio products such as signal processors, mixers, amplifiers and self-powered loudspeakers.

## Features

**100BASE-TX Ethernet Interface** - 100Mbps, full-duplex Ethernet interface, fully compliant with the IEEE 802.3 standard.

**Secondary 100BASE-TX Ethernet Interface** – provides a backup Ethernet interface that can be connected to a redundant network for fault tolerance.

**Quad Synchronous Serial Output Ports** – capable of supplying up to 32 total audio channels at a 48kHz sample rate with 16, 20 or 24 bit resolution.

**Quad Synchronous Serial Input Ports** – capable of receiving up to 32 audio channels at a 48kHz sample rate with 16, 20 or 24 bit resolution.

**Studio Grade, Low-Jitter Clock Source** – with programmable rate and less than 1ns of jitter.

**High Speed Host Port Interface** – interfaces to an optional external control processor.

**SNMP Agent** – provides Ethernet-based control, monitoring and management.

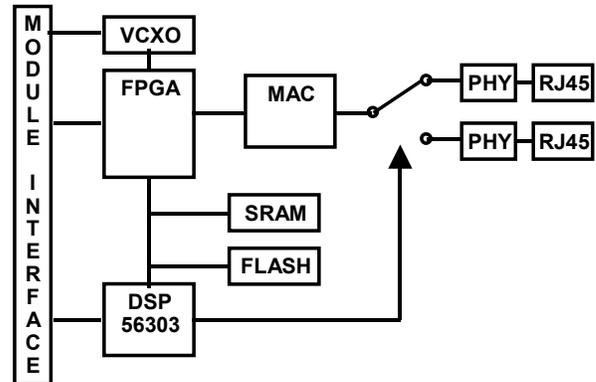
**TFTP Support** – supports software updates over the network.

**Low Latency** – guaranteed constant 5.33ms in through out.

**Optional Remote Power Through RJ-45 Connection** – for powering via the Cat-5 Ethernet connection.

**Asynchronous Serial I/O Port** – used to bridge serial control data over Ethernet.

**Status LEDs** – show Link, Activity, Fault and CobraNet™ Conductor status for each Ethernet jack.



Module Block Diagram

## Synchronous Serial (Audio) Ports

Signal	Direction	Description
SCLK	In/Out	Serial bit clock
DOUT[3-0]	Out	Output serial audio data
DIN[3-0]	In	Input serial audio data
FS1	In/Out	Sample clock
FS512IN	In	External 512FS clock input for systems containing multiple CobraNet™ interfaces
FS512OUT	Out	Master 512FS clock output
REFCLK	In	Auxiliary reference clock input for synchronizing network to an external clock source

## Asynchronous Serial

Signal	Direction	Description
RXD	In	Serial data receive
TXD	Out	Serial data transmit
SCLK	In/Out	Serial data clock/transmit enable

## Miscellaneous

Signal	Direction	Description
Reset#	In	System reset (active low)
WatchDog	Out	Watch dog output: Toggles to indicate proper operation
Mute#	Out	Asserts (active low) during initialization and when fault detected or connection to network is lost
AuxRJ4 - 8	In/Out	Aux RJ-45 pins

## Electrical Specifications

### Host Port

Signal	Direction	Description
Data[7-0]	In/Out	Host port data
Addr[2-0]	In	Host port address
R/W#	In	Host port transfer direction
HREQ#	Out	Host port DMA request
HACK#	Out	Host port interrupt request
HDS#	In	Host port select

## Electrical Specification (cont.)

### Power

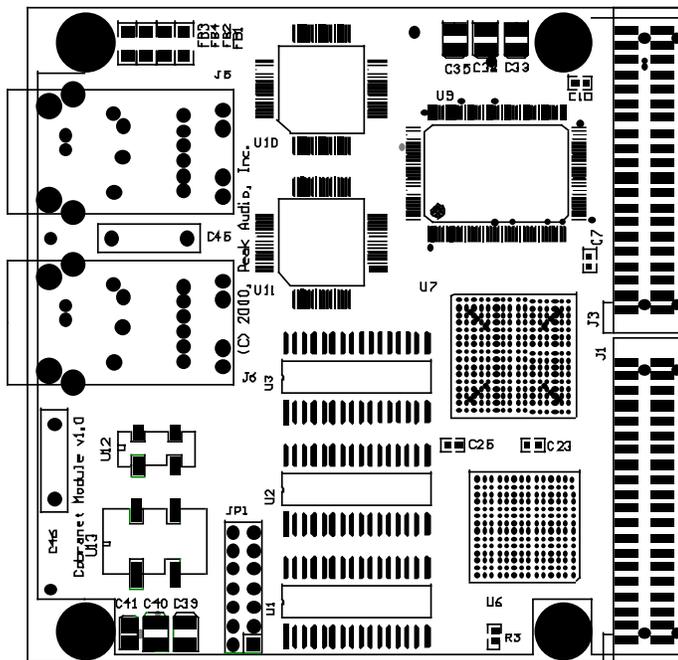
VCC_+3	System +3.3V, +/- 0.25 volts, 1.2A
VCC_+5	System +5.0V, +/- 0.25 volts, 0.1A
GND	System ground

## Ethernet Electrical Specifications

**Ethernet Primary Connector** – RJ-45 jack. Standard Ethernet pinout. Transformer isolated, complies with IEEE 802.3 standard.

**Ethernet Secondary Connector** – RJ-45 jack. Standard Ethernet pinout. Transformer isolated, complies with IEEE 802.3 standard.

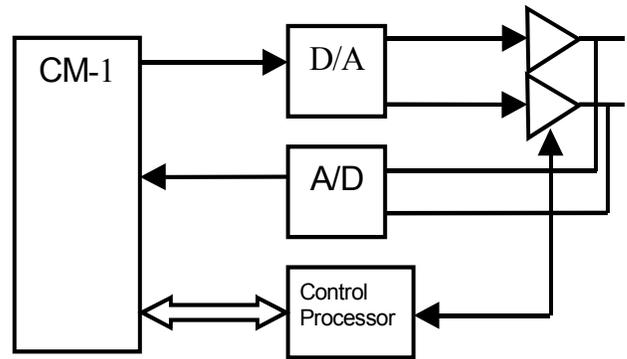
Ethernet uses 2 of the 4 twisted wire pairs available on a Cat-5 cable. The unused pairs are available at the module interface connector for DC power (if supplied).



Actual Size

## Physical Specifications

The module consists of square circuit board, 3.5 inches on a side. Two Ethernet connectors and a bracket are included for chassis mounting. Four mounting holes are provided. By choosing from a number of connector options, the module may be mounted in a variety of ways. This allows for maximum flexibility in space-limited systems. The possible configurations include *components up*, *components down*, *end to end*, *right angle* and *ribbon cable* connected. In the *components up and down* configuration, the module is mounted as a mezzanine card, parallel to the host PCB. The *components up* or *down* options allow for a tradeoff of connector space for assembly height. The *end to end* configuration is useful for very height-limited systems. *Right angle* is used for card cages or multi-module systems. A *ribbon cable* option is available for systems that require maximum flexibility.



Simplified Monitored Power Amplifier Example

## Applications

The CobraNet™ CM-1 module is designed to be easily integrated into a wide variety of professional audio products. Above is an example of a CM-1 used in a stereo amplifier. In this example, the CM-1 provides a digital audio interface to the network, a means for remotely monitoring the amplifier outputs, and transmission and reception of amplifier control and status information. Other applications include:

- Signal Processors
- Standalone A/D and D/A Converters
- AES-3 Digital Interfaces
- Mixing Consoles
- Audio Snakes
- Paging Stations
- Large Facility Audio Distribution
- Self-Powered Loudspeakers

## CobraNet™

Peak Audio began CobraNet™ development in 1995 in response to an industry need for a high quality digital audio distribution network. Since then, it has become the accepted standard for multi-vendor networked audio. CobraNet™ leverages the rapid developments in the computer networking industry to provide an increasingly cost effective solution for audio professionals worldwide.

## Contact

For further information on CobraNet™ products and licensing contact

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