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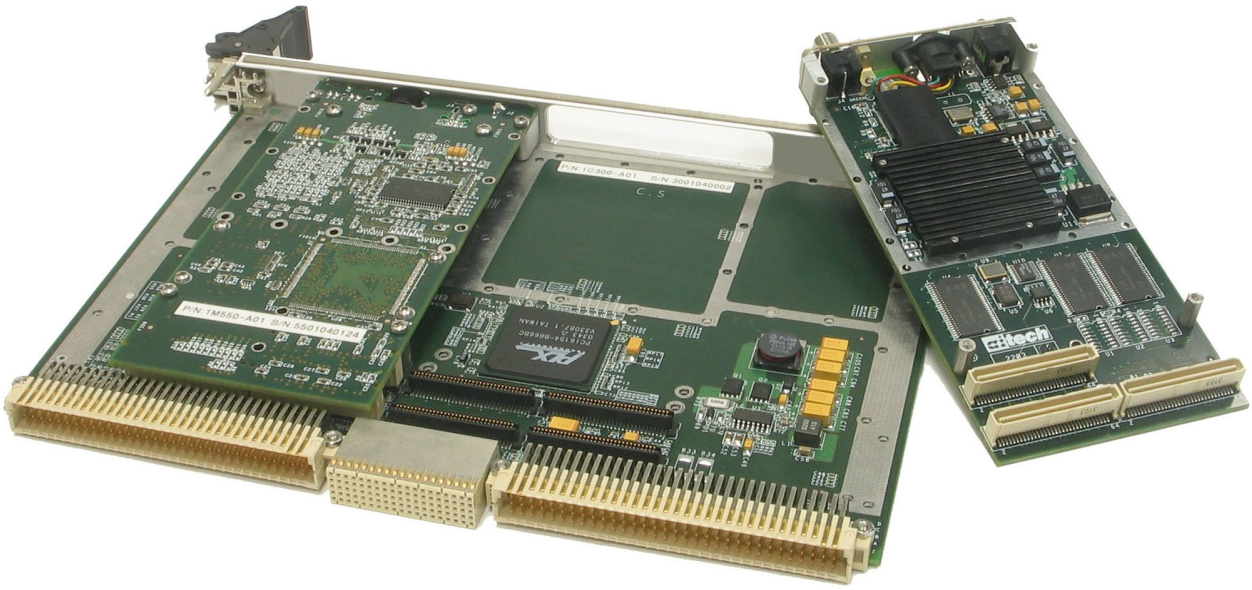
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Find the *Aitech Defense Systems TM106* at our website: *Click HERE*

CM106

Rugged PMC Carrier Expansion Card



- Accommodates Two Single-wide or One Double-wide PMC
- Single-Slot Rugged 6U Carrier Board (VMEbus Form Factor)
- Expands PowerPC® SBCs through PCI over P0
- PLX 6154 PCI-PCI Transparent Bridge
- PCI 2.3 Interface Compliant: 64-bit @ 33 MHz
- Full Arbitration for PMC Master Operation Support
- Front Panel Area for PMC I/O
- PMC I/O Routed to P2
- Requires Only +5 V from Backplane
- Onboard or Backplane 3.3 V Supply
- 4 W Power Consumption
- Configuration Facilities for Operation Within COTS Backplane
- Air-Cooled Version per ANSI/VITA 1
- Conduction-Cooled Version per IEEE 1101.2
- Three Ruggedization Levels

Aitech Defense Systems, Inc.
A member of the Ai-Rugged Group
9301 Oakdale Ave, Chatsworth, Ca 91311
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CM106 Rugged PMC Carrier Expansion Card

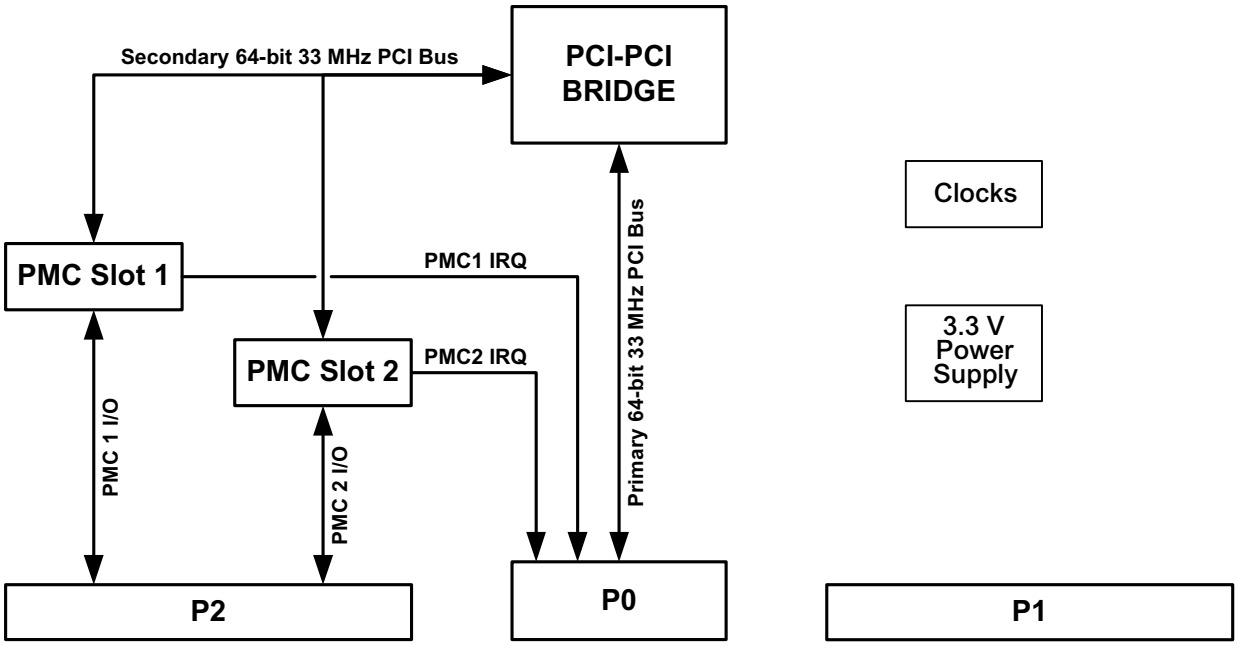
As the processing power of SBCs continues to increase, expanding system functionality by means of PCI Mezzanine Cards (PMCs) is frequently the method of choice for maximizing performance while minimizing system size, power consumption, and cost.

In order to facilitate expandability beyond the PMC sites on SBCs, Aitech has developed the CM106 PMC Carrier. When used in conjunction with PowerPC® SBCs that provide PCI on P0, such as Aitech's C106, the CM106 adds two PMC sites per backplane slot. Depending on the SBC, up to two CM106s can be used, providing a total of up to 6 PCI sites including those on the SBC.

CM106 architecture is based on a PCI-PCI bridge connecting the primary 64-bit 33 MHz PCI expansion bus on P0 to a secondary 64-bit 33 MHz PCI bus on which the two PMC sites reside. A total of 110 factory configurable PMC I/O lines are routed to the VME P2 connector. Air-cooled versions of the CM106 also provide front panel access to PMCs equipped with front panel features.

Designed for harsh environment applications, the 6U form factor CM106 is available in commercial and rugged air-cooled and conduction-cooled configurations.

With it's extremely low power consumption (4W maximum) the CM106 provides maximum expansion capabilities while consuming minimum resources.



CM106 Block Diagram

Functional Description

Bus Architecture

The CM106's architecture was designed to maximize utilization of all bus interfaces.

In order to fully exploit SBC processing power and to provide a fast highway for data transfer, the CM106 uses the advanced highly integrated PLX PCI Bridge.

PCI Expansion is performed through P0. The PCI on P0 bus supports 64-bit at 33 Mhz operation and fully complies with PCI, Rev. 2.3.

The C106 SBC PCI expansion bus is capable of hosting up to two additional PCI agents providing bus arbitration and interrupt support.

PMC I/O Expansion

The CM106 provides two PMC expansion sites operating at 64-bit and 33 MHz, to accommodate two single-wide or one double-wide standard PMC.

Both PMC slots are capable of hosting IEEE1386/1386.1-2001 compliant air-cooled and VITA 20-2001 compliant conduction-cooled PMC modules.

Both slots support 3.3 V and 5.0 V PCI signaling levels.

I/O Routing

I/O for both PMCs is routed to the VME P2 connector in accordance with ANSI/VITA 35-2000. A total of 110 PMC I/O lines are routed, with 46 fixed I/O lines per PMC and 18 additional lines that can be factory routed to either PMC slot.

Front Panel Features

The air-cooled version of the board is provided with a front panel having cutouts to accommodate PMCs with front panels and front panel features (I/O connectors, switches, indicators, etc.)

Primary PCI Bus Configuration

In order to avoid conflicts among PCI signals unique to each CM106 slot (***IDSEL***, ***PCICLK*** and ***REQ#/GNT#***) between the C106 SBC and CM106 carriers connected to it, the CM106 is available in various configurations for use in custom backplanes as well as COTS backplanes with P0 overlays, as are commonly used in development platforms.

In custom backplanes conflicts among these signals are avoided by independently routing them to each CM106 slot. In COTS backplanes with P0 overlays, signals cannot be routed separately since all P0 pins are connected together in parallel by the P0 overlay. In order to circumvent this problem, the different CM106 configurations receive these signals over different CM106 P0 pins. Therefore, when using two CM106 carriers in a COTS backplane with P0 overlay, each of the carriers must be a different configuration. Refer to the CM106 ordering information for the available configurations.

Mechanical Features

The CM106 is available in two mechanical formats:

- Air-cooled per ANSI/VITA 1-1994
- Conduction cooled per IEEE 1101.2

Both mechanical formats are single slot 6U modules.

Custom metal frame provides excellent rigidity and shock resistance. In addition, a custom metal frame provides an array of stiffeners to support rugged PMC boards.

Dimensions

- Air-cooled: per ANSI/VITA 1-1994
- Conduction cooled: per IEEE 1101.2

Standard Compliance:

IEEE 1101.2-1992 with wedgelocks and extractors

Weight

Air-cooled:	< 475g (1.1 lbs)
Conduction-cooled:	< 475g (1.1 lbs)

Thermal Management

Careful mechanical design including custom heatsinks combined with a metal frame, provide optimal heat dissipation for the PMCs.

The CM106 provides both primary and secondary thermal interface support for conduction cooled PMCs (CCPMC).

Power Requirements

The CM106 receives all its power from the VME backplane +5.0 V supply and generates +3.3 V using on board power circuits, or it may be configured to use the +3.3 V backplane supply as defined in the VME64x specification.

The CM106 on board +3.3 V power supply is fully compliant with the PMC specification regarding power consumption allowed per PMC module (total of 15 W for both PMC sites). However the CM106 onboard +3.3 V power circuit is capable of driving currents greater than that. High PMC power consumption requires careful thermal design. Please contact Aitech when designing systems with high +3.3 V power consumption.

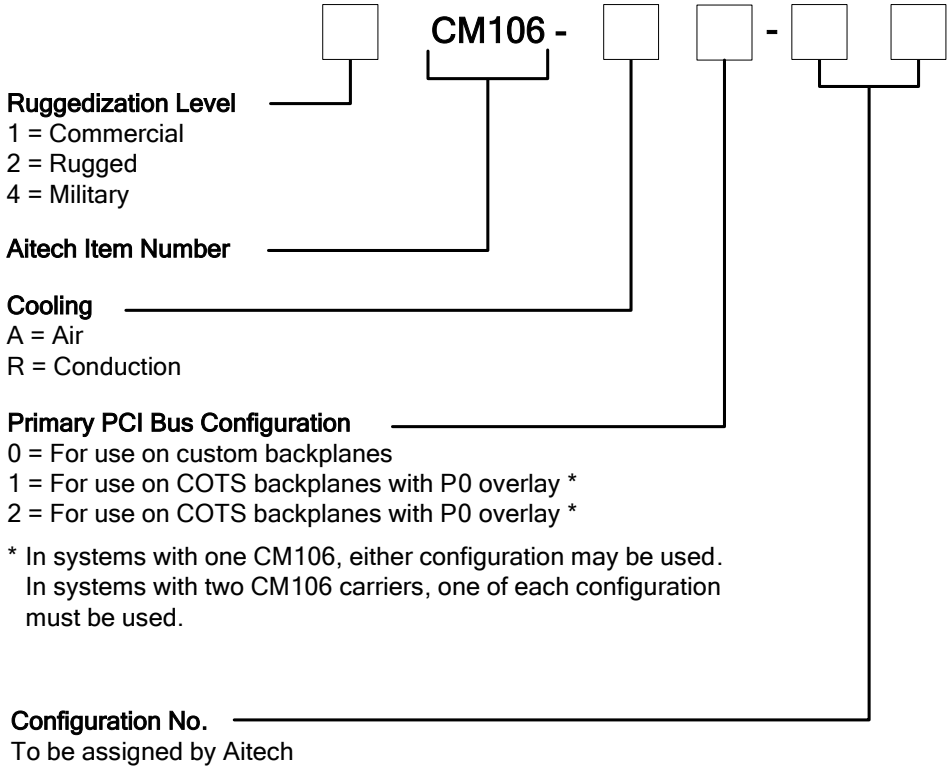
When configured to operate from the +5.0 V power supply alone, power consumption of the CM106 (not including power consumption of the PMCs) is as follows:

+3.3 V	(± 5%)	0 A
+5.0 V	(± 5%)	0.8 A (max)
+12 V	(± 10%)	0 A
–12 V	(± 10%)	0 A

Environmental Features

Please Refer to the Aitech Ruggedization Datasheet.

Ordering Information for the CM106



Example: 2CM106-R0-00

For more information about the CM106 or any Aitech product, please contact Aitech Defense Systems sales department at (888) Aitech-8 (248-3248).

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