

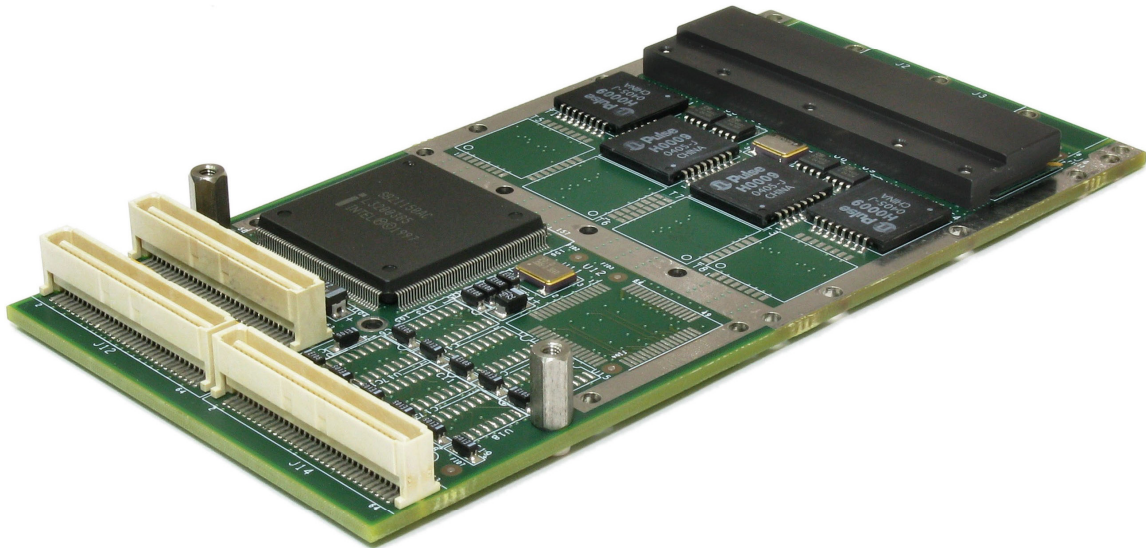


# M610

## Quad Fast Ethernet PMC

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- Up to Four IEEE 802.3/802.3u 10BASE-T and 100BASE-TX Ethernet Channels
- Four RJ45 Front Panel Jacks (Air Cooled Version Only)
- All Channels can be Either Routed to the Front Panel or PMC I/O Connector (Factory Installation)
- PCI Rev. 2.1 Compliant Supporting 32-bit @ 33 MHz Operation
- IEEE 1386-2001 (Air Cooled) or VITA 20-2001 (Conduction Cooled) Compliant
- Software Drivers for
  - Wind River VxWorks®
  - Green Hills INTEGRITY
  - Microsoft Windows
  - Linux
- Conduction and Air-Cooled Versions
- Commercial/Military Level Ruggedization
- Vibration and Shock Resistant

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### Aitech Defense Systems, Inc.

A member of the Aitech Rugged Group

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## Overview

The Aitech M610 is an industry standard air-cooled or conduction cooled PMC, providing a 10Mb/s or fast 100Mb/s Ethernet capabilities. The M610 was designed to maximize data transfers over the PCI bus.

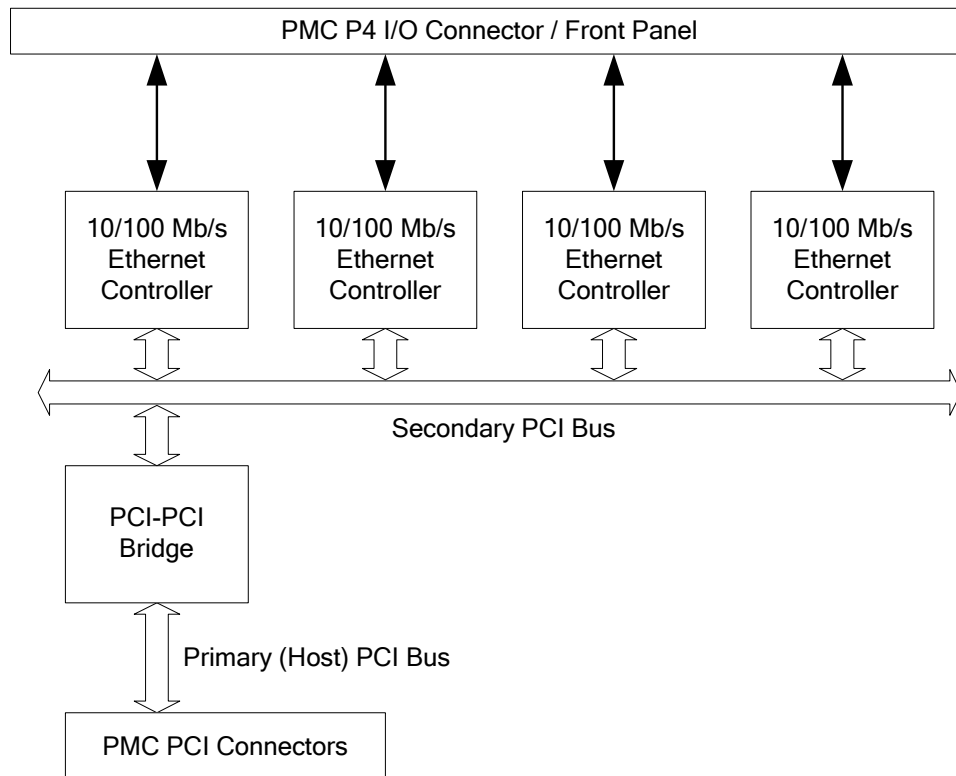
The M610 Ethernet controllers are connected to the host's PCI bus through the high performance 21150 PCI-to-PCI Bridge Device. The Bridge is fully compliant with the PCI specification, Rev. 2.1.

The physical interface is a 10BaseT/100BaseTx twisted pair.

All Ethernet signals are routed to the P4 I/O connector.

Integrated in the 82559ER Ethernet Controller, the 32-bit PCI engine provides enhanced scatter-gather bus mastering capability. Its bus master capabilities enable the card to process high level commands and perform multiple operations, which lowers CPU utilization by off-loading communication tasks from the CPU. Two large transmit and receive FIFOs of 3 kB each help prevent data underruns and overruns while waiting for bus accesses. This enables the M610 to transmit data with minimum interframe spacing (IFS).

The M610 can operate in either full duplex or half duplex mode. In full duplex mode the M610 adheres with the IEEE 802.3x Flow Control specification. Half duplex performance is enhanced by a proprietary collision reduction mechanism. The M610 also supports Auto-Negotiation to allow automatic full or half duplex operation settings.



**M610 Block Diagram**



## Features

### Ethernet Interface

- Up to four Ethernet channels
- Based on Intel 82559ER Ethernet Controller
- Dynamic transmit chaining with multiple priorities transmit queues
- Full duplex support at both 10 and 100 Mb/s
- 3kB Transmit and Receive FIFOs
- Back-to-back transmission support with minimum interframe spacing
- Enhanced Adaptive Technology capabilities
- TCP/UDP checksum off-load capabilities
- IEEE 802.3u Auto-Negotiation support
- IEEE 802.3x 100BASE-Tx Flow Control support

### PCI Bus Interface

The M610 incorporates a PCI-PCI Bridge interconnecting the primary PCI bus (carrier side) and secondary bus (LAN controllers). The PMC supports 32-bit PCI bus operation at 33MHz and is fully compliant with the PCI Rev. 2.1 specification.

The M610 is a universal PMC supporting both +5V and +3.3V PCI signaling levels. The PCI-PCI Bridge primary port connects to the PCI V<sub>I/O</sub> supply and uses this supply to set its PCI signaling levels tolerance. V<sub>I/O</sub> should be driven with either +5V or +3.3V by the carrier board to set M610 signaling levels according to the PCI bus in which it is installed.

## Software Drivers

- WindRiver Systems Inc., VxWorks

## Mechanical Features

The M610 PMC is available in two mechanical formats:

- Air-cooled per IEEE 1386-2001 for installation on top commercial and rugged air-cooled carrier boards.
- Conduction cooled per ANSI/VITA20-2001 for installation on top IEEE 1101.2 conduction-cooled carrier boards.

High power components are cooled by an aluminum heatsink.

All M610 I/O signals are routed to the PMC P4 I/O connector and front panel I/O jacks (when available).

## Dimensions

- Air-cooled: per IEEE 1386-2001
- Conduction cooled: per ANSI/VITA 20-2001

## Power Requirements

Total power consumption (maximum): 4.5W

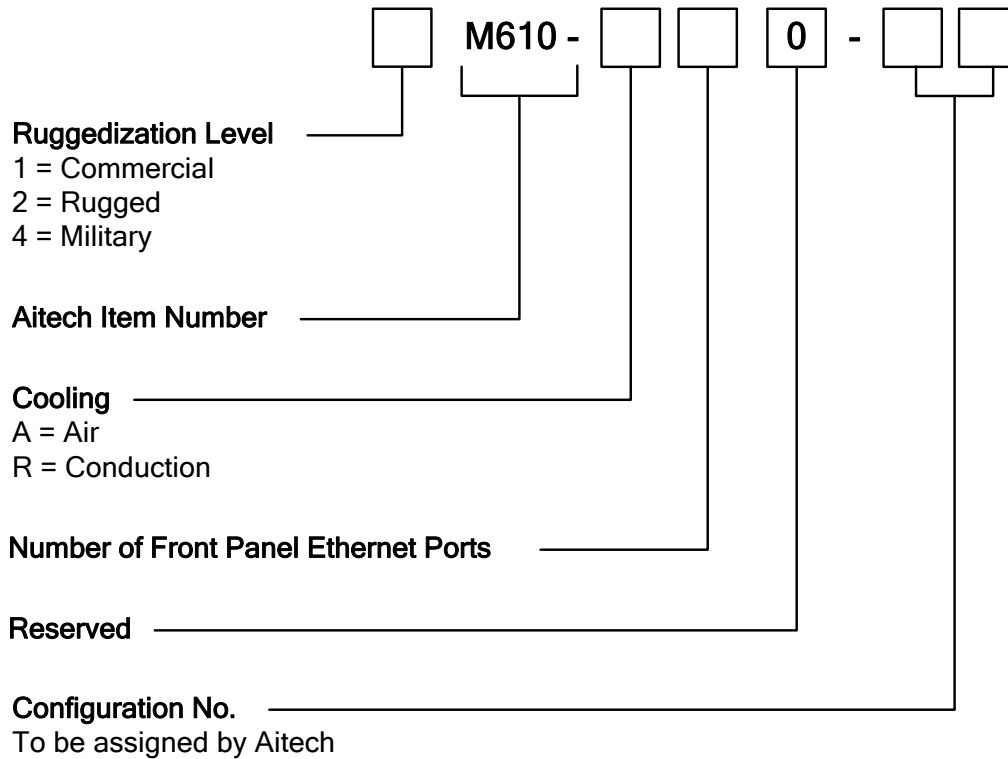
+5.0V (± 5%)	0.05A (typ)	0.1A (max)
+3.3V (± 5%)	1.0A (typ)	1.2A (max)
+12V (± 10%)	0A	
-12V (± 10%)	0A	

## Environmental Features

Please, refer to the Aitech Ruggedization datasheet.



## Ordering Information for the M610



Available M610 Configurations			
Configuration	Cooling	# of Ethernet Channels	
		Front Panel Connectors	P4 Connector
X M610-R00	Conduction	0	4
X M610-A00	Air	0	4
X M610-A10	Air	1	3
X M610-A20	Air	2	2
X M610-A30	Air	3	1
X M610-A40	Air	4	0

For more information about the M610 or any Aitech product, please contact Aitech Defense Systems sales department at (888) Aitech-8 (248-3248).

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