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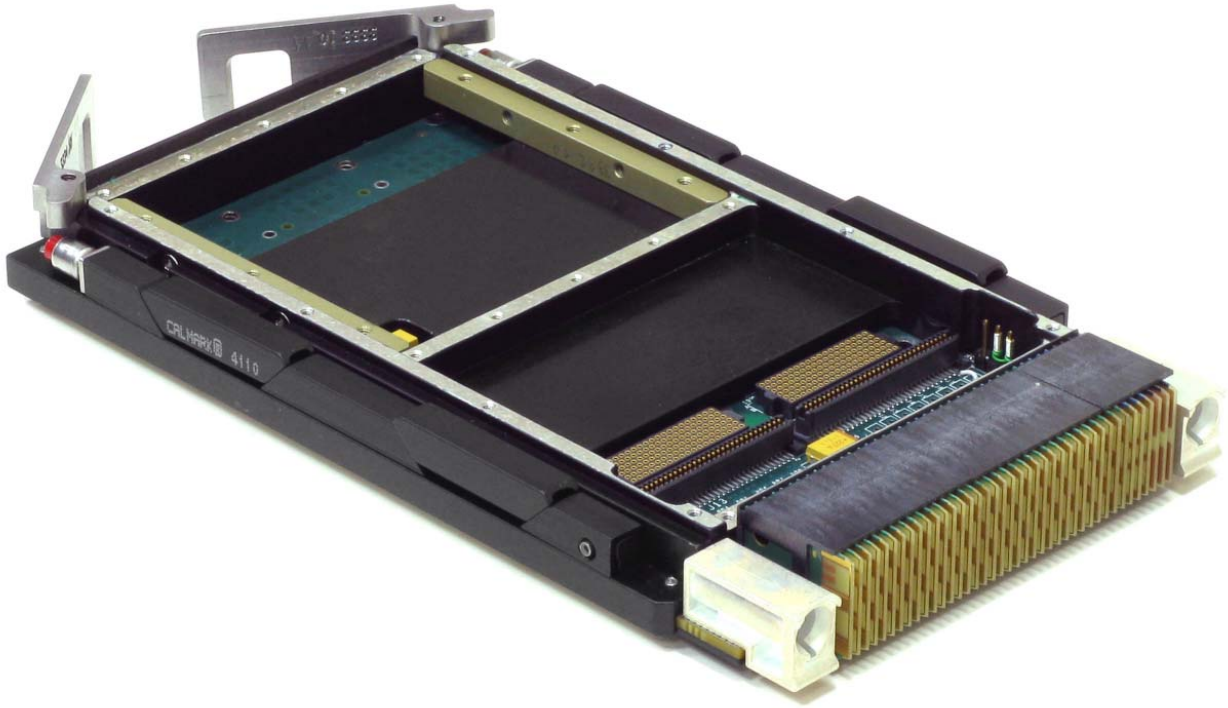
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Find the *Aitech Defense Systems CM870* at our website: ***Click HERE***

CM870

3U VPX PMC/XMC Carrier Board



- **Rugged 3U VPX Carrier Board**
- **VPX Backplane Fabric Interface with Support for up to Four PCIe x4 Ports Per VITA 46.3 and 46.4**
- **PCI Express Revision 2.0 with Backward Compliance to PCIe 1.1**
- **Configurable for Switch Operation Supporting up to 4 PCIe Ports per VITA 46.20 Profile SLT3-SWH-4F-14.4.4**
- **PMC Site Supports 64-bit 66/133 MHz PCI-X and 33/66 MHz PCI**
- **XMC Site Supports PCIe x8**
- **PMC/XMC I/O Routed to VPX P2**
  - **64 PMC I/O Signals**
  - **35 Single Ended + 20 Differential XMC I/O Signals**
- **No need for Software Drivers**
- **OpenVPX Compliant**
- **Conduction and Air-Cooled Versions**
- **Vibration and Shock Resistant**

Aitech Defense Systems, Inc.
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CM870 – 3U PMC/XMC Carrier VPX Board

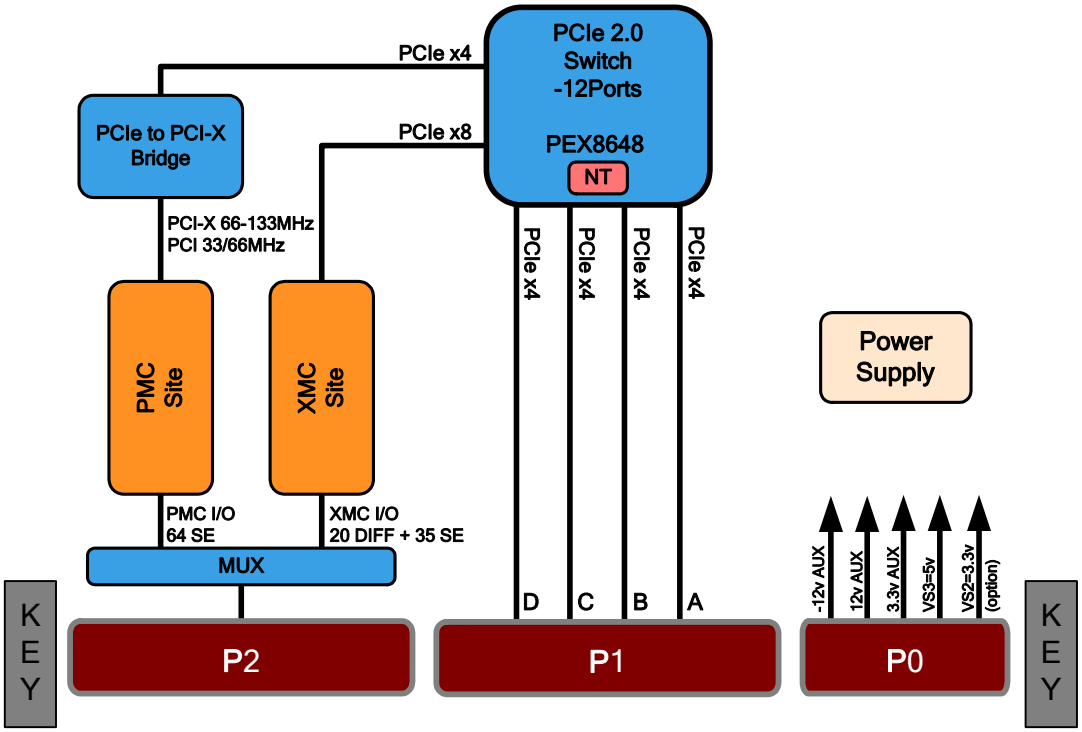
As the processing power of SBCs continues to increase, expanding system functionality by means of PCI Mezzanine Cards (PMCs) and Switched Mezzanine Cards (XMCs) is frequently the method of choice for maximizing performance while minimizing system size, power consumption, and cost.

To facilitate expandability beyond the PMC/XMC sites on 3U VPX SBCs, Aitech has developed the CM870 PMC/XMC Carrier. The CM870 provides an additional active interface between the 3U VPX backplane and a PMC/XMC, for each available 3U VPX backplane slot. Four PCIe x4 (four lane) links are routed to the VPX backplane connector to enable fast connection with the processor board over the switch fabric in OpenVPX systems.

In addition, CM870 can operate as a 4 port VPX switch supporting up to 4 VPX PCIe agents (slots).

Designed for harsh environment applications, the CM870 is available in commercial and rugged air-cooled or conduction-cooled configurations.

With its low power consumption, the CM870 expands capabilities while consuming minimum resources.



CM870 Block Diagram

Functional Description

Bus Architecture

The CM870 architecture is based on the PCIe bus for interconnecting its PMC/XMC sites to the VPX fabric.

The PCIe infrastructure core element is implemented via a 12-port 48-lane PCIe switch device. The PCIe switch manages point to point PCIe connection between all on-board PCIe resources as well as the VPX fabric. It supports one non-transparent port, which enables the implementation Dual-Host & Failover Support.

For the PMC site the CM870 implements a PCIe to PCI/PCI-X bridge connected to the switch through a PCIe x4 link.

XMC Site

The CM870 XMC site interconnects to the PCIe switch port through a PCIe x8 link that is fully compliant with PCIe 2.0 at 5.0 GHz with backward compliance to PCIe 1.1.

The XMC site is fully complaint with VITA 42.

PMC Site

The CM870 PMC site interconnects to the PCIe switch through a PCIe to PCI/PCI-X bridge. The PCI/PCI-X bus is dynamically configured at run time for the proper operation mode per the installed PMC module capabilities. The CM870 on-board logic probes the PMC during reset and sets the bus operation accordingly to its PCI/PCI-X operation, and the bus operation frequency to 33/66 MHz for PCI or 66/100/133 MHz for PCI-X. The CM870 PMC PCI/PCI-X bus is fully compliant with PCI Rev. 3 and PCI-X Rev. 1.0a.

The PMC site supports universal PCI I/O signaling levels (i.e. 3.3 V and 5.0 V), and is capable of hosting air-cooled PMC modules per IEEE1386/1386.1-2001 and conduction-cooled modules per VITA 20-2001.

I/O Routing

The PMC and XMC I/O lines share the same pins at the VPX P2 connector. I/O routing to the VPX connector is factory configurable per the CM870 ordering information. For PMC configuration the CM870 provides all 64 I/O lines and for XMC configuration it provides 35 single-ended and 20 differential I/O lines routed to the VPX connector.

Front Panel Features

The air-cooled version of the board includes a front panel with a cutout to accommodate PMC/XMC modules with front panels (connectors, switches, indicators, etc.)

Mechanical Features

The CM870 is available in three mechanical formats.

Features & Dimensions

Air-cooled	per ANSI/VITA 46.0
Conduction-cooled	per ANSI/VITA 46.0
Conduction-cooled REDI:	per VITA 48.2

All mechanical formats are single slot 3U modules.

A custom metal frame integral to the conduction-cooled version of the CM870 provides excellent rigidity and shock resistance. The frame also provides an array of stiffeners to support rugged PMC/XMC cards.

Weight

Air-cooled:	< 300 g (0.66 lbs)
Conduction-cooled:	< 330 g (0.73 lbs)
Conduction-cooled REDI:	< 355g (0.79 lbs)

Thermal Management

Careful mechanical design, including custom heatsinks combined with a metal frame, provides optimal heat dissipation for the PMC/XMC modules.

The CM870 PMC/XMC site provides both primary and secondary thermal interface support for conduction-cooled PMC/XMC modules.

Power Requirements

The CM870 takes its power, +5.0 V, from the VPX backplane as defined in the OpenVPX specification. The other power supplies are routed from the backplane to the PMC/XMC site.

Power consumption of the CM870 (not including the PMC/XMC module's consumption) is as follows:

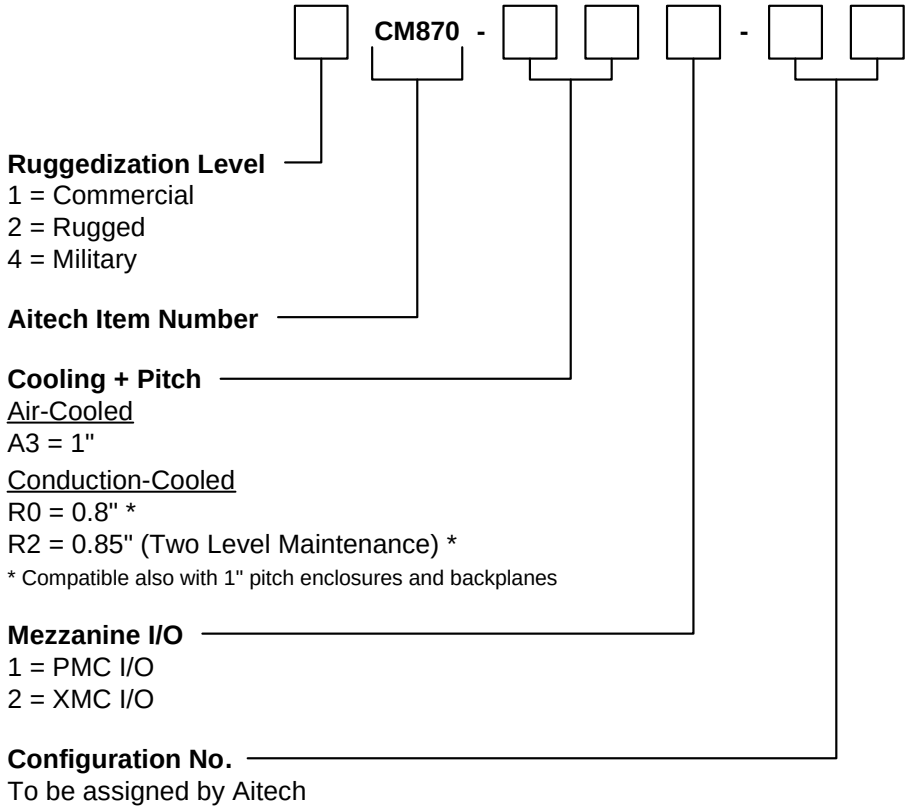
+3.3 V (± 5%)	0 A
+5.0 V (± 5%)	1.1A
+12 V (± 10%)	0 A
–12 V (± 10%)	0 A

Environmental Features

Please refer to the Aitech Ruggedization datasheet.

CM870
3U VPX PMC/XMC Carrier Board

Ordering Information for the CM870



Ruggedization Level
1 = Commercial
2 = Rugged
4 = Military

Aitech Item Number

Cooling + Pitch
Air-Cooled
A3 = 1"
Conduction-Cooled
R0 = 0.8" *
R2 = 0.85" (Two Level Maintenance) *
* Compatible also with 1" pitch enclosures and backplanes

Mezzanine I/O
1 = PMC I/O
2 = XMC I/O

Configuration No.
To be assigned by Aitech

Example: 2CM870-R22-00

For more information about the CM870 or any Aitech product, please contact Aitech Defense Systems sales department at (888) Aitech-8 (248-3248).

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