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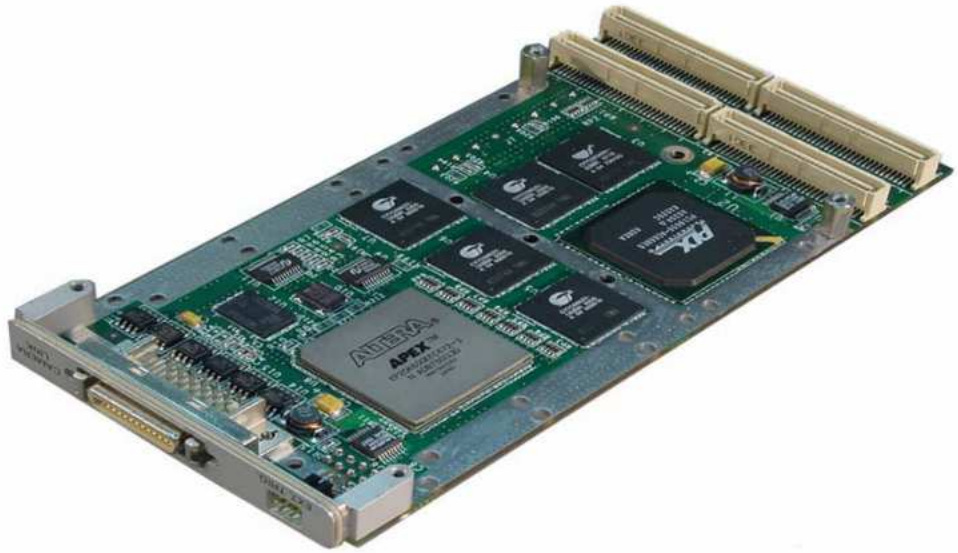
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Find the *Aitech Defense Systems 1M570-A* at our website: *Click HERE*

M570

CameraLink™ Frame Grabber PMC



- Acquisition and Processing of CameraLink™ Digital Video From Any CameraLink™ Compliant Camera
- Fully Compliant with the CameraLink™ Specification
- CameraLink™ LVDS Interface at Front Panel or PMC I/O Connector
- Front Panel 3M Connector Meets the CameraLink™ Connector Specification
- Base Configuration – Single Channel Link, Single Cable Connector
- UART Port for Camera Control
- Four Camera Control Signal Pairs (CC1 – CC4)
- High Frame Rate Grabbing Capability (Over 50 Fps)
- High Performance and Flexible Image Processing Engine, Implemented in a High-End FPGA (Field Programmable Gate Array) Device
- Image-Processing Engine Allows for a Wide Variety of Image Processing Applications
- 2 MB Frame Buffer for Frame Storage and Image-Processing Support
- 64 kB Buffer for Image-Processing Products Storage
- PCI Rev. 2.2 Compliant Supporting 64-bit @ 66 MHz
- IEEE 1386-2001 (Air Cooled) or VITA 20-2001 (Conduction Cooled) Compliant
- Commercial/Military Level Ruggedization
- Drivers for VxWorks®

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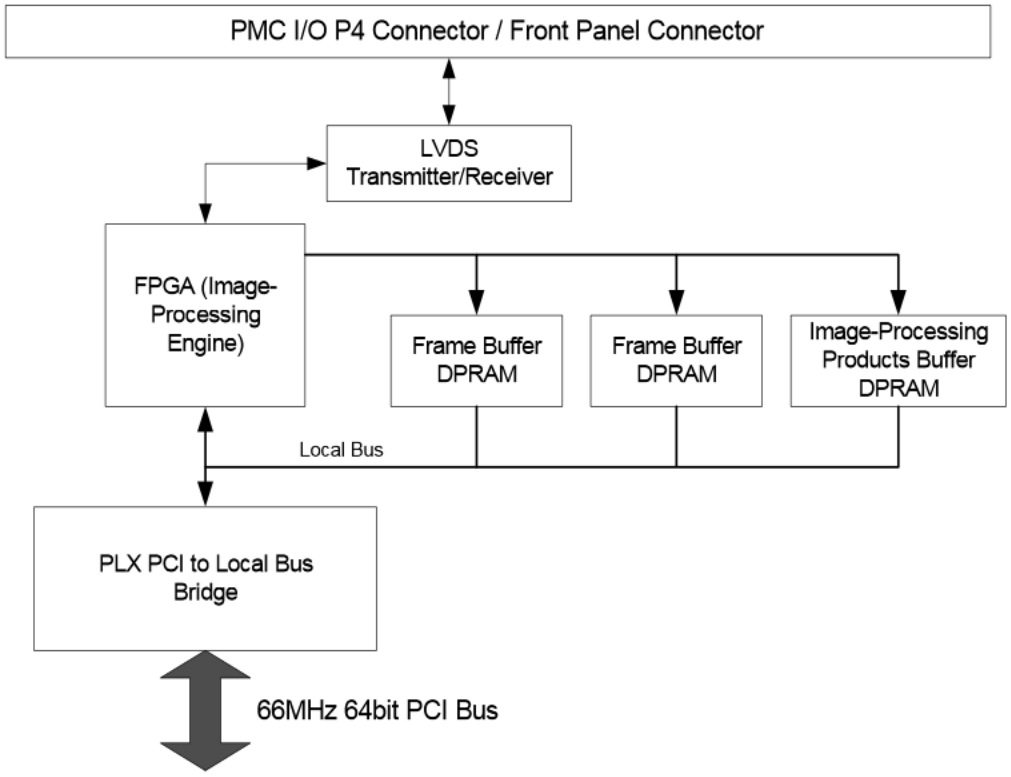
High Performance CameraLink™ Frame Acquisition and Processing

The M570 CameraLink™ frame grabber PMC interfaces with digital still cameras supporting the CameraLink™ protocol and physical interface. Data received from the camera may be delivered to the carrier board resources over the PCI bus or be manipulated on-board the M570 PMC using its integrated image-processing engine.

The M570 provides hardware image processing through a processing module implemented in a high-end FPGA. The image-processing engine is supported by two memory arrays. One array allows for storage of complete digital video frames as received from the camera or for image-processing support (temporary storage of the image processing products). The second array is used for storage of the image-processing engine final products. The two memory arrays are accessible from the PCI bus through the PCI Bridge. Data stored within the arrays may be transferred to the carrier board over the PCI bus.

The image-processing engine may be implemented per customer requirements. Further flexibility is provided through software allowing the manipulation of the processing parameters.

The M570 PMC is available in rugged version and is designed to perform in harsh environment applications.



M570 - Block Diagram

Functional Description

CameraLink™ Interface

The M570 provides a CameraLink™ interface fully compliant with the CameraLink specification. It allows the connection to any digital camera supporting the CameraLink™ specification through an LVDS interface (ANSI/TIA/EIA-644). The M570 provides Base configuration connections – single channel link, single connector. It supports capture frame rate of over 50fps and allows control of the camera through a UART interface as defined in the standard.

Image-Processing Engine

The M570 incorporates a high performance hardware image-processing engine implemented in a high-end FPGA device. This allows for a very flexible design to help meet customers' specific requirements.

The processing engine includes an interface to a large memory array (2 MB) allowing for both, storage of captured frames and support for the processing sequence.

Another memory array (64 kB) is available for the processing sequence final products storage. Both these arrays are accessible from the PCI bus for transfer of the data to the carrier board over the PCI bus.

The image-processing engine implemented in the FPGA ranges from simple algorithms such as capturing a region of interest (ROI), edge detection (comparing the incoming pixels to a certain threshold level), to very complex system implementations including filters employing convolutions on the incoming pixel stream. Filters systems implementing convolution perform a progressive multiply and add process on the incoming pixel stream with a pre defined constant matrix (system). The matrix may be configured per customer to meet his specific requirements (size and mode). The values of the matrix are software programmable allowing the user to configure the filter to his demands through software only.

The systems and algorithms are customer specific and are designed per request. Currently all simple algorithms are available as well as several convolution systems designs.

Another level of flexibility is provided through software allowing the user to manipulate the algorithm implementation (the processing system) parameters.

Full frames captured from the camera may also be transferred over the PCI bus at over 50 frames per second depending on the carrier board bus capabilities.

PCI Bus Interface

The M570 incorporates a high performance PLX PCI to Local bus Bridge supporting 64-bit PCI bus operation at 66 MHz and is fully compliant with the PCI Rev. 2.2 specification.

This board is a universal PMC supporting both +5V and +3.3V PCI signaling levels. The PLX PCI to Local Bridge connects to the PCI V_I/O supply and uses this supply to set its PCI signaling levels tolerance. V_I/O should be driven with either +5V or +3.3V by the carrier board to set M570 signaling levels according to the PCI bus in which it is installed.

The Bridge enables access from the PCI bus to all M570 local resources and transfer of the captured digital video data over the PCI bus.

The Bridge is equipped with four individual DMA engines for high data rates transfer and high PCI bus utilization.

Software Driver

The M570 is supplied with a software driver providing an interface for controlling all the M570 functionality and features. It provides the user with the capability to control the FPGA implemented processing engine parameters and PCI interface operation.

In addition, it allows communication with the camera through the UART interface and control channels (CC1 through CC4), and enables status readings on all modules.

Drivers are currently available for WindRiver VxWorks RTOS.

Other operating system drivers are available on request.

Mechanical Features

The M570 PMC is available in two mechanical formats:

- Air-cooled per IEEE P1386.1-2001 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 a metal heatsink.

All M570 I/O signals are routed to the PMC P4 I/O connector.

Dimensions

Air-cooled:	per IEEE P1386.1-2001
Conduction cooled:	per ANSI/VITA 20-2001

Power Requirements

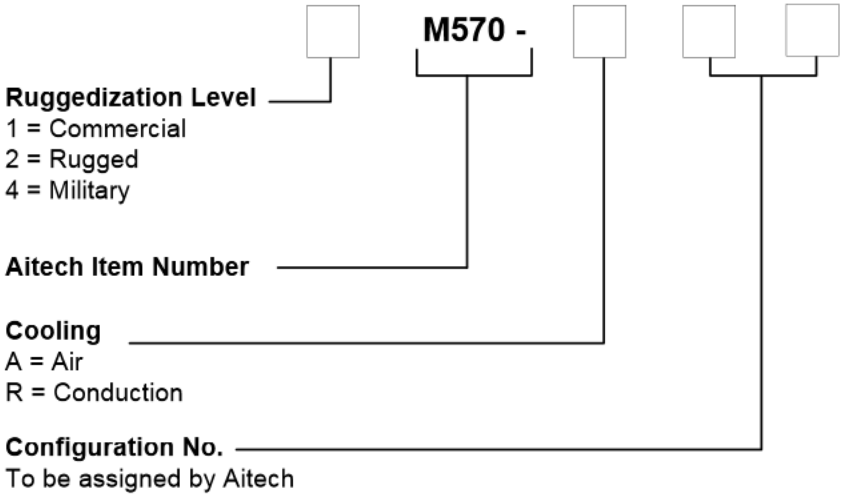
The M570 draws all its power from the +3.3V power supply. It has its on-board power circuits for other power levels required by its components.
Total power consumption (maximum): 5W

+5V	(± 5%)	0A	
+3.3V	(± 5%)	1.2A (typ)	1.5A (max)
+12V	(± 10%)	0A	
-12V	(± 10%)	0A	

Environmental Features

Please, refer to the Aitech ruggedization datasheet.

Ordering Information for the M570



Example: 4M570-A02

For more information about the M570 or any Aitech product, please contact Aitech Defense Systems sales department at (888) Aitech-8 (248-3248).

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