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M-Vision 1000

PCI Local Bus Video Digitizer

MuTech Corporation



Applications

- Machine/Industrial Vision
- Image Analysis
- Medical Imaging
- Motion Analysis

Features

- Single slot PCI Local Bus Frame Grabber
- 0-40 M samples/second digitization
- Digital Input Module (optional MV- 1100)
- External I/O Controls
- Configurable Memory
- Plug and Play Auto Configuration
- Slave and Master Mode Data Transfer

Software

- All boards come with DOS and Windows utilities that allow the user to grab and save images in .TIF, .TGA, .BMP, file formats
- The M-Vision 1000 product line includes DOS, Windows 3.1 and Windows NT development libraries
- Many third party software packages offer M-Vision 1000 compatible drivers — Contact MuTech

The M-VISION 1000 (MV-1000) is a single slot video digitizer board for the PCI (Peripheral Component Interconnect) bus. The MV-1000 digitizes standard or non-standard analog camera video into 8 bits per pixel at rates up to 40 million samples per second. An optional 10 bit version is available for ultra high quality video applications. The digitized video is stored in on-board VRAM or transferred in real time to system memory and/or the VGA card for display. Up to four cameras may be attached to a single MV-1000.

The optional Digital Camera Interface (MV-1100) supports single ended and differential input from 8, 16, and 32 bit devices. The MV-1100 is an excellent solution for interfacing to the new generation of high speed digital RGB cameras.

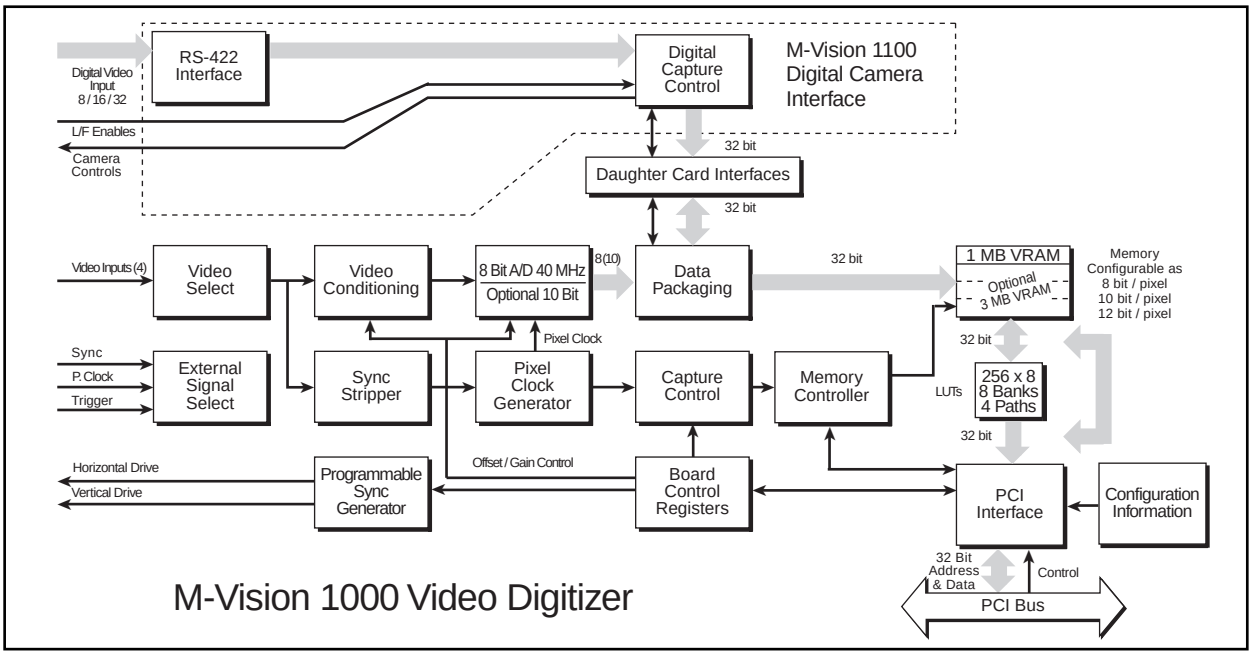
The 1 Mbyte VRAM memory of the MV-1000 may be expanded to 4 Mbytes with the optional MV-1200 memory expansion module. The on-board memory is organized as a continuous memory array, that can accept up to 8 K pixels per line.

The PCI bus used by the MuTech M-Vision 1000 has a number of distinct architectural advantages that benefit video image capture when working at high frame rates, high spatial resolution, or high color resolution. These advantages are most clearly understood when contrasted to the alternative PC bus solutions — the ISA bus and VL-Bus.

The M-Vision 1000 has been designed to sustain maximum PCI bus throughput, which on a suitably equipped PC could reach 50 Mbytes per second. And, unlike the VL-Bus, it can do so without contending with the system processor or other high speed peripherals, such as SCSI disk controllers. A final benefit for system integrators using the M-Vision 1000 is that it is truly platform independent, and is compatible with computers using not only Intel, but also Power PC, and Digital Alpha processors.

MuTech Corp • 85 Rangeway Road, Billerica, MA 01862 • Tel. 978-663-2400 • Fax. 978-663-3444 • http:/www.mutech.com

HARDWARE SPECIFICATIONS



M-VISION 1000 (MV-1000)

Analog Video Digitization

- 4:1 MUX selects analog input
- RS-170/CCIR
- AC/DC Coupled Input
- 8 bit A/D programmable up to 40 MHz
- Accepts Composite or Separate H/V Sync
- Ext. Trigger/Ext. Pixel Clock (to 40 MHz)
- 10 bit A/D (optional)
- Differential Input
- Up to 8K Pixels per Line
- Up to 8K Lines/Frame

Frame Buffer

- 1 Mbyte fast page VRAM
- Dual ported memory enables 50 Mbytes/ second access
- Simultaneous host access
- Entire on board memory mapped into 4 GB PCI address
- Supports PCI 8/16/32 bit accessing
- Mask Register for bit plane protection
- Can be configured as 8/10/12 bit frame buffer
- 8 x 256 x 8 LUTs (configurable as 10 to 8 bit)

Phase-Lock-Loop & A/D Control

- Less than 10ns (typically less than 5ns) jitter
- 5-40 MHz programmable
- 12 bit PLL counter
- Square Pixel acquisition/programmable to other aspect ratios
- Digitize Frame or Field (odd, even, next)
- Digitize Progressive Frame
- Sub-sample X2 and X4
- Digitize Frame Sequence
- Digitizing window of the video is fully programmable

Video Signal Conditioning

- Programmable Band Limiting Filter
- Clamping on back porch or sync tip (enable/disable)
- High/Low digitizing range programmable (Gain/Offset)

Other Controls

- All Controls registers are PCI memory mapped
- Status Register (V. Sync., Field, Ext. Trigger)
- Programmable interupt request
- General Purpose Control Signals (e.g. Asynchronous reset)
- Master and Slave mode Data Transfers

DIGITAL CONTROL INTERFACE (MV-1100)

- Supports EIA 422 Standard
- 8/16/32 bit differential input digital video 32 bit @ 110 MHz 8 bit input @ 40 MHz
- Inputs Supported
  - Line enable
  - Field/Frame Enable
  - Field Flag
  - P Clock < 40 MHz
- Outputs Available
  - General Purpose Control (e.g. for strobes)
  - P Clock
  - H Drive
  - V Drive

MEMORY UPGRADE MODULE (MV-1200)

- 3 Mbyte VRAM memory Module

Representative:

µTECH MuTech Corporation

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Billerica, MA 01862

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