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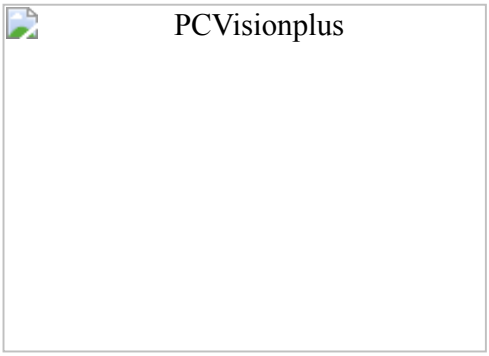
home

Products
Overview
Embedded vision
Frame grabbers
Vision software
Complete systems
Configuration guide
How to purchase
Custom quote

Email This Page
to an Associate

PCVisionplus®

High Speed Image Capture for Fast Analog, Progressive Scan and Variable Scan Cameras



- Overview
- Comprehensive Vision Software Tools
- Specifications
- Download Documentation
- Download Datasheet as PDF
- Ordering Information

OVERVIEW

Top of Page

PCVisionplus® is Imaging Technology's newest high performance analog frame grabber which digitizes monochrome analog video to 8 or 12 bits, at sample frequencies up to 53 MHz. The PCVisionplus supports broadcast standard timing (RS170, CCIR), progressive scan and non-standard (variable scan) timing as well as two monochrome cameras.

The high data transfer rate of the PCI-bus eliminates the need for on-board processing or display circuitry, so image display and processing is handled by the host computer resources. The linear format image memory allows acquisition of a variety of image sizes. The image memory behaves as a temporary buffer between the camera interface and the host PCI-bus system. The PCVisionplus incorporates a hardware "scatter gather" table for highly efficient, fully automated image transfers from the image memory. This frees the host CPU to perform processing during bus master transfers rather than controlling the transfer operation. In addition to the Hardware Scatter Gather function, the bus master controller has multiple frame ping-pong source and destination capabilities which allow the application to program the PCVisionplus to establish the needed amount of processing time.

The PCVisionplus is capable of bus mastering image data directly to a destination memory within the PCI-bus system, such as system memory or VGA memory. Transfer rates up to the theoretical 133MB/s can be sustained, depending upon the host capabilities. Images can be transferred to host memory in a fraction of the time that they were acquired. By minimizing the PCI-bus transfer time and CPU overhead, more bandwidth is available for processing or other system resources.

Video Formats

- Standard RS170 or CCIR

- Progressive scan and non-standard (variable scan) up to 53 MHz

Features & Benefits

- High speed precision analog circuitry to support the faster sample rates and 12bit resolution of ADC
- Hardware Scatter Gather bus mastering feature for high speed simultaneous acquire and transfer to host with minimal CPU involvement
- Supports target access to the registers and image memory
- High speed PCI interface allowing 133MB/s bus master transfers to host
- Hardware timer to support VIXN based software
- OPTO-22 compatible PIO port
- Highly flexible output control table allows image transfornations (flip, rotate, etc.)

Applications

- High performance vision products for professional vision application developers

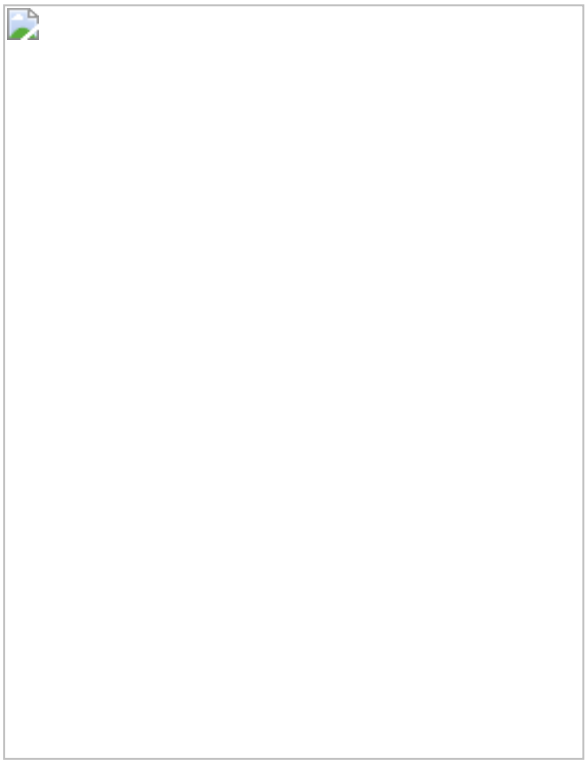
Software

- Camera Configurator® - Windows application for easy board and camera set-up
- IFC™ - Driver and Board Function Libraries
- MVTools™ - Complete run-time library (DLL) for highly robust machine vision tools for OEMs
- Sherlock™ - Complete machine vision application environment for Windows™

COMPREHENSIVE VISION SOFTWARE TOOLS

Top of Page

Four levels of software support exist for ITI's machine vision frame grabbers. At the highest level is Sherlock -- a Windows-based point & click software environment enabling rapid configuration of alignment & registration, on-line gauging, inspection, assembly verification, automatic ID, and machine guidance tasks without the need for structured language programming.



PCVisionplus Block Diagram
[click here to open large version of image]

MVTools software is next in line to provide technical professionals with a complete C/C++ run-time library (DLL) of highly robust grayscale vision tools - including Search, Blob (connectivity), Caliper, Histogram, Morphology, Image Processing, and more. MVTools is intended for OEMs and system integrators deploying machine vision in automated machines.

For developers who require maximum control of the frame grabber hardware, IFC software -- an Imaging "Foundation Class" library -- is available for controlling all functions of the frame grabber hardware. The software includes a set of high level API's for making complex board functions more straightforward and easier to use.

ITI's Camera Configurator software utility -- a first in the industry -- automatically searches for which frame grabber is installed and generates the appropriate interface parameters required to run the camera/frame grabber combination. This software greatly improves the "out-of-box experience" and gets you up and viewing live images in minutes.

SPECIFICATIONS Top of Page

Video Inputs

- Standard RS170 or CCIR (monochrome).
- Progressive scan and non-standard (variable scan) up to 53MHz. (VCR and VTR not supported)
- Two AC-coupled differential video inputs
- Programmable12-bit 53 MHz ADC

Timing Inputs

- Composite analog sync on video from CAM0 or CAM1.
- Programmable Sync Stripper line rate: 15 KHz to 66.5 KHz supports non-standard line rates in PLL mode

Trigger Inputs

- Two Opto-isolator Trigger Inputs: HP HPCL-0631 dual-channel isolator
- Two TTL Inputs, with Schmitt filters
- Two differential input, RS-422 and RS-423 compatible

Timing Outputs

- Strobe
- Frame Reset
- Programmable Timing Generator (PTG) - up to 2K by 2K (2048 by 2048),

Variable Scan Inputs

- Area scan cameras up to 4K pixels by 4K lines.
- Variable Scan inputs LEN, FEN, CLK
- CLK, Pixel Clock Input: single-ended TTL, programmable polarity, Frequency 10 Hz to 53 MHz.
- LEN, Line Enable Input: single-ended TTL, programmable polarity.
- FEN, Frame Enable Input: single-ended TTL, programmable polarity.

Image Memory

- 4MB linear mapped SGRAM.
- Programmable "valid video window" timing - 1 to 4K pixels per line, 1 to 4K lines per frame.

Output Scatter Gather Table

- "DMA Table" performs "destination scatter gather" for bus master transfer from image memory to PCI-bus host.

Host Access

- Registers, LUT and Image Memory are mapped into PCI-bus 32-bit memory address space.

Transfer Rates

- up to 133MB/s theoretical limit of PCI-bus

Parallel I/O Ports

- One parallel I/O port: 8-bit TTL input, 8-bit TTL/CMOS output.

Bus Requirements

- Board Size - PCI short card: 6.88 by 4.205 inches, 17.73 by 10.65 mm.
- Operating Temperature - 10-60 degrees Celsius.
- Relative Humidity - 0-90% non-condensing.
- Power Requirements (typical) - 1 Ampere at +5 Volts, 5 Volt to 3.3 Volt conversion performed on the Visionplus board

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