

P3I_MONO

PCI Frame Grabber for 8 Multiplexed Monochrome Analog Cameras

- PCI performance
- Monochrome input
- Restart cameras supported

III Main Features

- Frame grabber for 8 multiplexed mono-chrome channels
- Parallel acquisition into RAM and graphics
- Trigger inputs
- On-board sync generator
- Restart cameras supported
- Real-time acquisition of images or image sequences directly into main memory
- PCI 2.2 compliant

III Technical Details

The p3i_MONO is intended for applications where up to four multiplexed channels are digitized.

An on-board sync generator with four separate 75-ohm outputs makes synchronization easy.

The region of interest, i.e. the part of the video information that is acquired, can be defined on a pixel basis - not always the full frame has to be acquired.

Pixel Clock Generation

The clock used to digitize all four channels is generated either by an on-board PLL, synchronized to the horizontal camera sync with a pixel jitter of ≤ 7 ns or it is taken directly from the pixel clock input for camera-synchronous digitization.

Analog-Digital Converter / Multiplexer

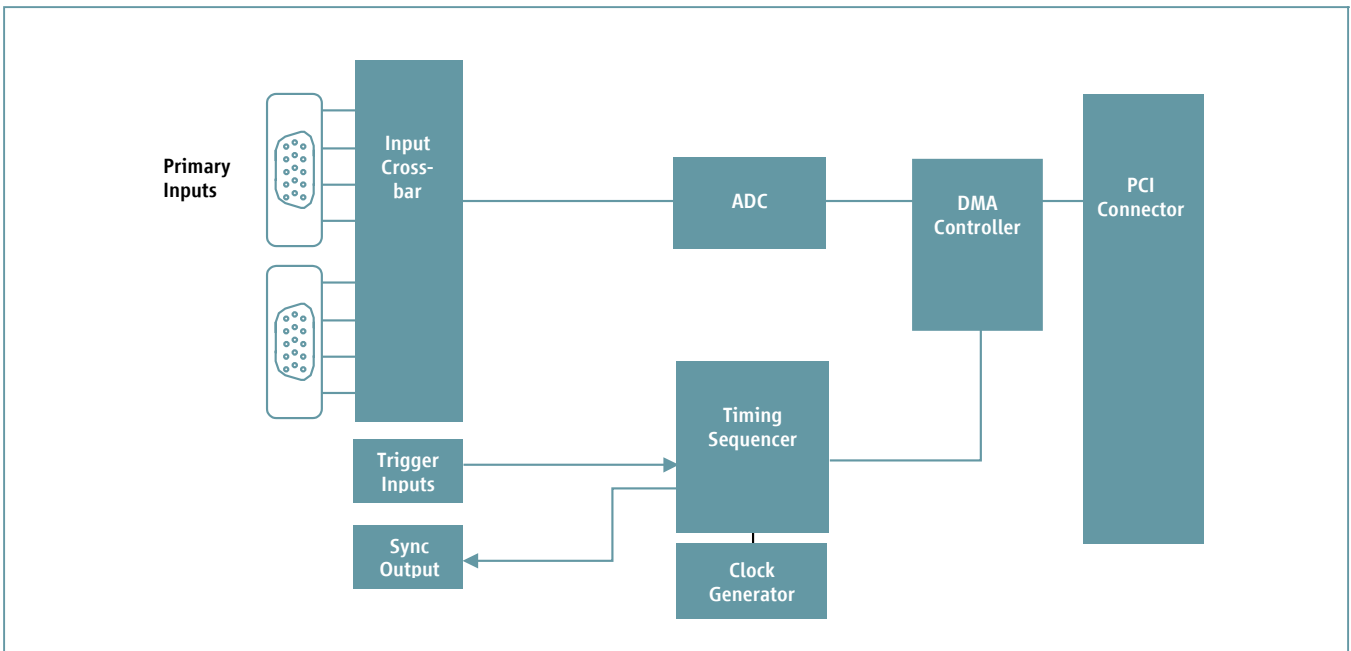
The A/D converter digitizes data each with 8 bits resolution at rates between 5 and 32 MHz. The ADC can sample data from 8 input ports.

Trigger Processing

The p3i_MONO has opto-isolated trigger inputs with additional outputs used to trigger cameras. Strobe lights can also be triggered by the trigger inputs.

DMA Controller

Bus	PCI / Rev 2.2
width	32 bits
speed	33 MHz
bandwidth	>80 MHz (typ.)



In the last step image data is transmitted by DMA directly into main memory or into the graphics card.

This DMA controller consists actually of four independent controllers, capable of transferring four video data streams into four independent memory regions.

Pixel Packing Mode

For all cameras and applications, pixel data is stored in memory as a consecutive stream of 8-bit bytes.

Frame Grabber Basic Tools

Drivers for Windows come in the form of a DLL for Windows 98/ME/NT/2000/XP. Setup of the ADC, offset/gain, region-of-interest adjustment, camera selection, scaling, color format conversion, and camera setup files are supported. Permanent (live), single-shot, and double-buffered acquisition of images can be requested and the status of the acquisition (active / finished) can be inquired.

Memory allocation for image buffers is also handled by the DLL at runtime; frame buffers appear in linear memory for easy addressing

A setup program supports test and configuration of the board under Windows. Display routines using the DirectDraw standard are supplied in source. This software level is intended for users who already have their own software support available, such as image processing libraries, or wish to create application programs by themselves.

Frame Grabber Basic Tools is available for Windows 98/ME/NT/2000/XP and for Linux. For the real-time operating systems VxWorks and OS-9 there is a reduced version, where parameters are set in configuration files only and where no display routines are included.

Cameras Supported

Cameras with reset/restart features are supported, as well as pixel clock input to the frame grabber for sub-pixel accuracy.

Camera	Features supported
Generic CCIR625	Free-running
Sony XC-55	Full frame, Interlaced, Restart, Long time exp., E-Donpisha II
Sony XC-ST50CE	t.b.d.
Sony XC-ST70CE	t.b.d., Full frame, Donpisha
Sony XC 8500	Dual, Restart
Teli 3910	Full frame, fixed, RTS pulsed Megapixel
JAI M-10 RS	Dual, Full frame, Restart
JAI M50	Restart
JAI M1	t.b.d.

High-Level Software

Support for several 3rd-party imaging tools is available under Windows:

AdOculus (The Imaging Source) is a tool for visual image processing algorithm development. All of the basic algorithms are supplied in source form for easy modification and expansion.

Heurisko (Aeon Verlag+Studio) is a tool for development of highly optimized imaging algorithms using a C-like scripting language.

Halcon (MVTec) is a very complete tool set with an integrated scripting language.

The freeware imaging library IPL98 has been tested to work; there is a demo source, showing how to use it.

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III Specifications

ADC

→ 8-bit, 32 MHz, 4 channels parallel

Connectors

- 2 * 3-row, 15-pin MinD female
- 2 * 12V-camera supplies
- 4 * 75-Ohm sync/restart outputs
- 2 * Pixel clock input (TTL, 75 Ohm)
- 2 * Trigger input (TTL)

Environmental Conditions

- Storage Temperature: -20 °C - 70 °C
- Operating Temperature: 0 °C - 45 °C (2 m/s forced air cooling)
- Maximum Operating Humidity: 85 % relative

Power Requirements

- 0.55A max., 0.5A typ. at + 5 VDC ± 5 %
- 0.2A max., 0.18A typ. at + 12 VDC ± 5 %
- 1.1A max. for each of the 2 camera supply outputs

PCI bus Requirements

- PCI 2.2 compliant
- Graphics board should be connected to AGP, rather than to PCI
- Maximum bus load generated by other boards: <20 MB/s for 100µs max.

MTBF

→ T.b.d. hrs (computed after MIL-HDBK-217E)

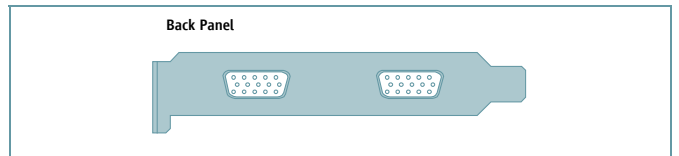
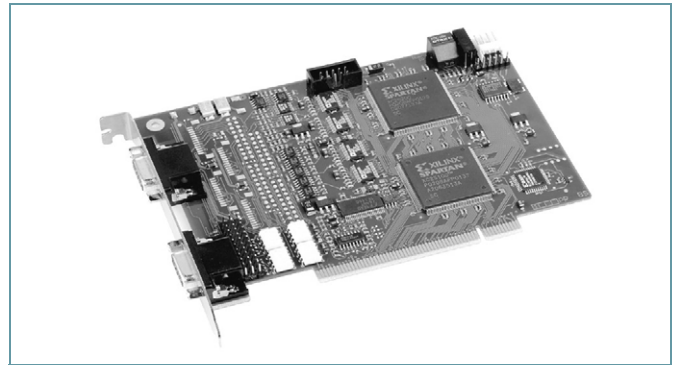
Documentation

→ Free Internet

Please contact your local sales office for detailed information.

PC_EYE 1 Compatibility

The p3i_MONO is the successor of the PC_EYE1 frame grabber board -it is software-compatible to the PC_EYE1 where applicable.



DB15	
Pin	Signal
1	R analog
2	G analog
3	B analog
4	A analog
5	Gnd
6	Gnd
7	Gnd
8	Gnd
9	Trig+
10	Gnd
11	Trig-
12	Clock
13	GPout0
14	GPout0
15	+12V