

# P3I\_ASYNC/PMC / MOCO/PMC

This Data Sheet Covers the Frame Grabber Boards p3i\_ASYNC/PMC and p3i\_MOCO/PMC

- PMC form factor
- PCI performance

### III Features p3i\_ASYNC/PMC

- Frame grabber for 4 simultaneous monochrome video signals
- Digitizes four parallel, separate images from non-synchronized cameras
- Restart cameras supported
- Real-time acquisition of images or image sequences directly into main memory
- Image memory format monochrome with 8-bits / pixel
- Single-size PMC module
- PCI 2.2 compliant

### III Technical Description

The p3i\_ASYNC/PMC module is a frame grabber module for multi-camera-applications b&w cameras. Thus, it can be used for simultaneous acquisition from up to four non-synchronized cameras.

The four images are stored in separate memory regions as separate images. Cameras do not have to be synchronized for this operating mode.

The region of interest, i.e. the part of the video information that is acquired, can be defined for the four video inputs independently - not always the full frame has to be acquired.

### Pixel Clock Generation

The clock used to digitize all monochrome channels is generated either by an on-board PLL, synchronized to the horizontal camera sync with a pixel jitter of  $\leq 7$  ns or it is taken directly from the pixel clock input for camera-synchronous digitization. For the color input, the clock is derived from the color carrier.

### Analog-Digital Converter

The four monochrome A/D converters digitize data with 8 bits resolution at rates between 5 and 30 MHz.

### DMA Controller

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

### III Features p3i\_MOCO/PMC

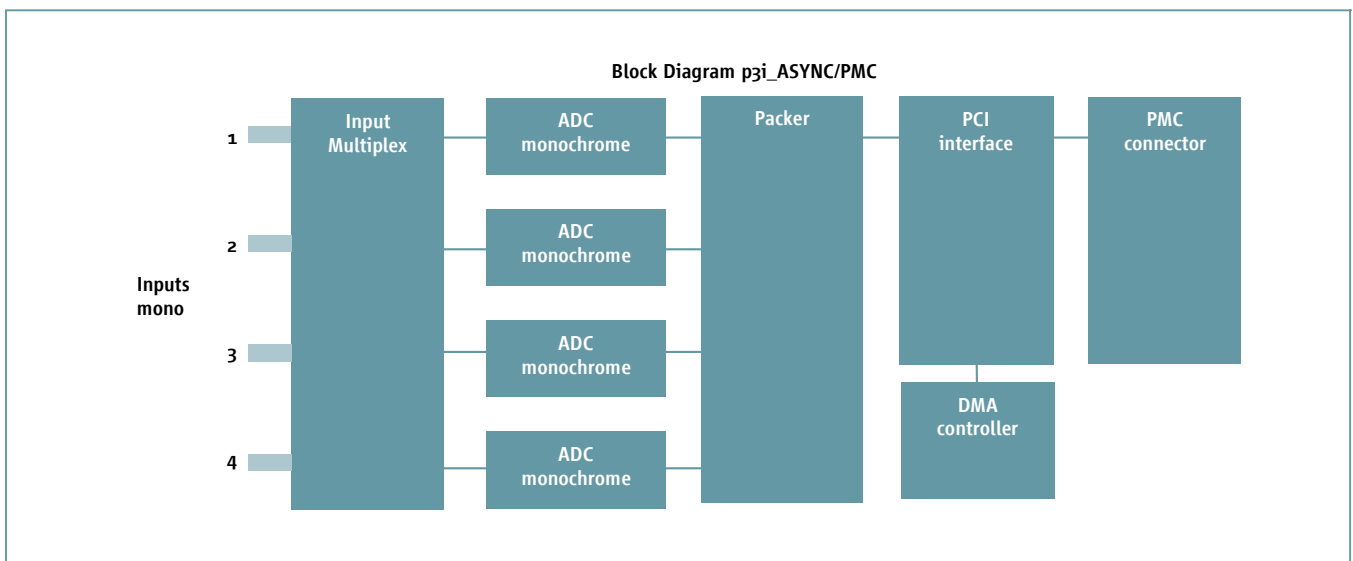
- Frame grabber for 3 simultaneous channels, 2 monochrome + 1 color
- Digitizes two parallel, separate images from non-synchronized cameras
- Restart cameras supported
- Real-time acquisition of images or image sequences directly into main memory
- Image memory formats for color inputs include RGB24, RGB32, YUV (4:2:2) and for monochrome inputs 8 bits/pixel
- Single-size PMC module
- PCI 2.2 compliant

### III Technical Description

The p3i\_MOCO/PMC module is a frame grabber module for security applications with color and b&w cameras. Thus, it can be used with one infrared camera and simultaneous acquisition from a color camera. The three images are stored in separate memory regions as separate images. Cameras do not have to be synchronized for this operating mode.

The region of interest, i.e. the part of the video information that is acquired, can be defined for the three video inputs independently - not always the full frame has to be acquired.

Input signal	Memory format	Bits/Pixel
b/w	monochrome	8
S-Video	RGB	24
S-Video	RGB	32
S-Video	YUV	16



### Pixel Clock Generation

The clock used to digitize all monochrome channels is generated either by an on-board PLL, synchronized to the horizontal camera sync with a pixel jitter of  $\leq 7$  ns or it is taken directly from the pixel clock input for camera-synchronous digitization. For the color input, the clock is derived from the color carrier.

### III Software p3i\_ASYNC/PMC and p3i\_MOCO/PMC

#### Basic Tools Configuration Software

Drivers for Windows come in the form of a DLL for Windows 98/NT/2000/XP and Linux. Setup of the ADC, offset/gain, region-of-interest adjustment, camera selection, scaling, and 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 PMC 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.

Basic Tools is available for Windows (98/NT/2000/XP) and for Linux. Versions for OS-9 and VxWorks on request.

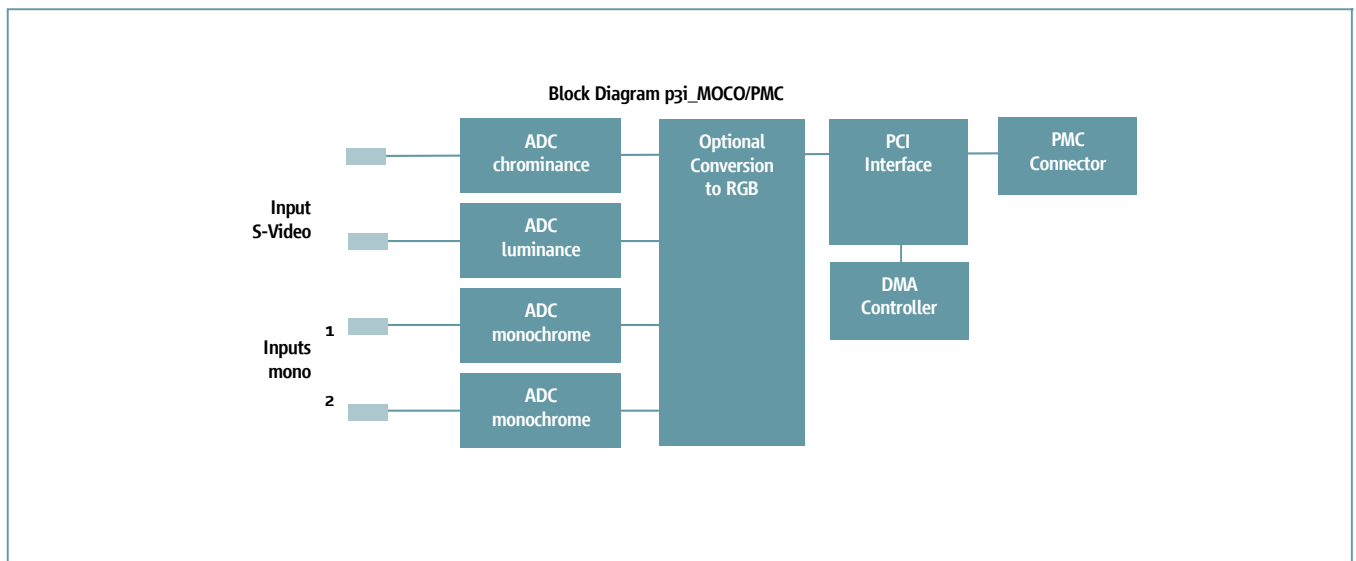
#### High-Level Software

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. Available also for Linux.

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

The freeware imaging library IPL98 has been tested to work under Windows and Linux; there is a demo source, showing how to use it. The Intel IPP library has also been adapted for use.



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### III Specifications p3i\_ASYNC/PMC (p3i\_MOCO/PMC)

#### PMC

- 32-bit, 33 MHz PCI interface, 5V and 3.3V
- Single-slot PMC module

#### ADC

- Four 8-bit, 30 MHz
- 8-bit, 30 MHz (p3i\_MOCO/PMC)

#### Connectors (3-row, 15-pin D female)

##### Connector 1:

- Video inputs 2 \* monochrome (1 Vpp nom.)
- 12V-Camera supplies
- 3 \* Outputs (TTL, programmable)
- 2 \* Pixel clock input (TTL, 75 Ohm)
- 2 \* Trigger input (TTL)

##### Connector 1 (p3i\_MOCO/PMC):

- Video inputs 1..2 (1 Vpp nom.)
- 12V-Camera supplies
- 2 \* Outputs (TTL, programmable)
- 1 \* Pixel clock input (TTL, 75 Ohm)
- 1 \* Trigger input (TTL)

##### Connector 2:

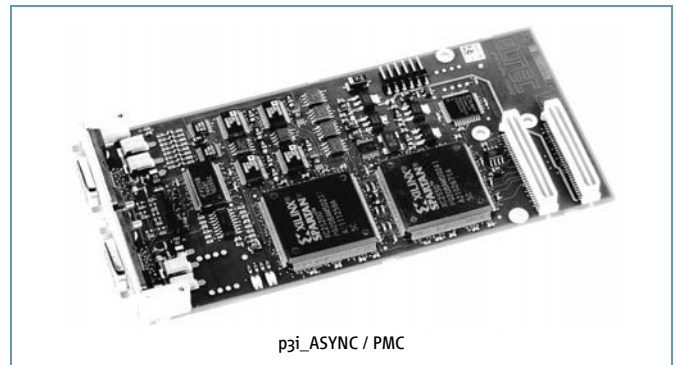
- Video inputs 2 \* monochrome (1 Vpp nom.)
- 12V-Camera supplies
- 3 \* Outputs (TTL, programmable)
- 2 \* Pixel clock input (TTL, 75 Ohm)
- 2 \* Trigger input (TTL)

##### Connector 2 (p3i\_MOCO/PMC):

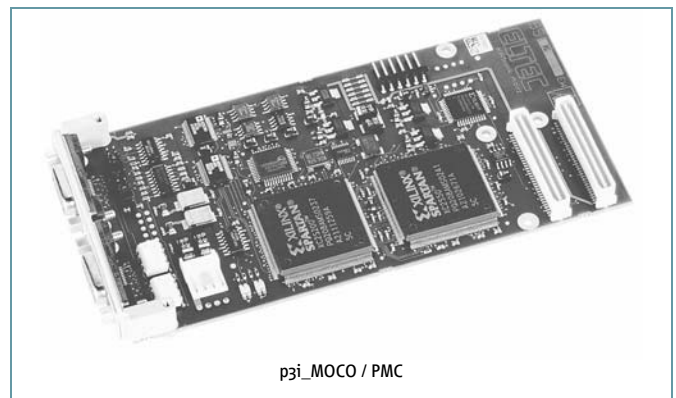
- Video inputs 1 \* mono (1 Vpp nom.) + 1 \* S-Video
- 12V-Camera supplies
- 2 \* Outputs (TTL, programmable)
- 1 \* Pixel clock input (TTL, 75 Ohm)
- 1 \* Trigger input (TTL)

#### 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



p3i\_ASYNC / PMC



p3i\_MOCO / PMC

#### Power Requirements

- 0.5A max., 0.3A typ. at + 5 VDC ± 5 %
- 0.2A max., 0.18V typ. at + 12 VDC ± 5 %
- 3A max. total, 12V for camera supply, 1A max. for each of the 2 camera supply outputs

#### MTBF

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

#### Documentation

- Free Internet
- Please contact your local sales office for detailed information.