

P3I_CL/PMC

Digital Data PMC Frame Grabber for Camera Link Applications

Camera Link Digital Connection

- PMC module
- PCI performance

→ advanced

III Main Features

- Frame grabber for digital Camera Link data
- Acquires data from digital matrix and line-scan cameras
- Trigger inputs
- On-board camera control signal generator
- Real-time acquisition of images or image sequences directly into main memory
- Camera Link interface with Base Configuration (3 ports)
- On-board buffer memory 64 MB
- PCI 2.2 compliant

III Technical Details

The p3i_CL/PMC is intended for applications where up to 24-bit wide data are acquired, such as line-scan camera data in single and dual pixel mode.

An on-board control signal generator makes it easy to supply the camera with all timing signals it needs.

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

Pixel Clock Generation

The clock used for acquisition is taken directly from the pixel clock input.

Camera Link

The p3i_CL/PMC is a Camera Link-compliant version for attaching cameras with this standardized high-speed serial connection (MDR-z6). The interface conform to the Base Configuration, i.e. it has 3 8-bit input channels and one standard Camera Link connector.

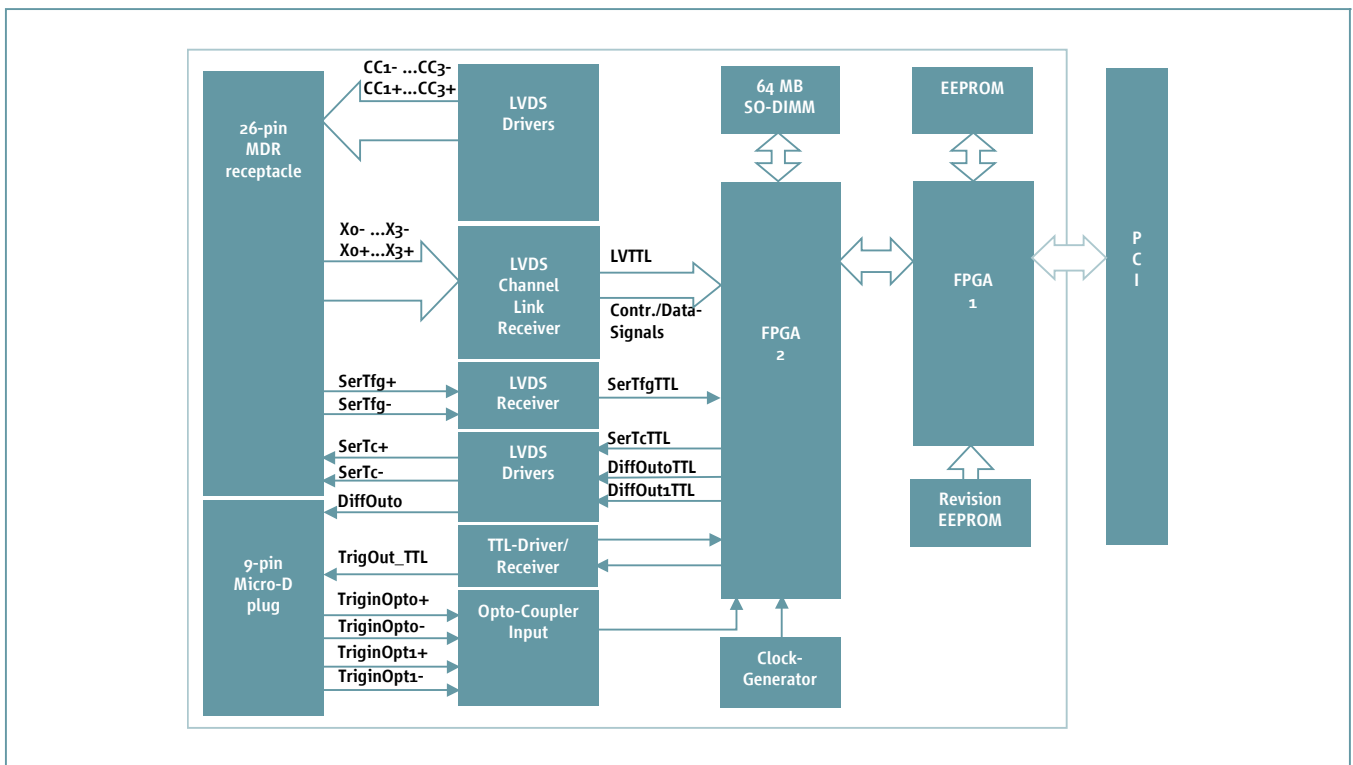
Trigger Processing

The p3i_CL/PMC has two trigger inputs with additional outputs used to trigger cameras. Strobe lights can also be triggered by the trigger outputs. All trigger outputs are adjustable in pixel clock units, internal clocks, or HSYNC/VSYNC.

DRAM Fifo

A DRAM-based fifo provides more buffer space (64 MB) to ensure uninterrupted acquisition even in situations with high PCI bus loads.

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



DMA Controller

In the last step, image data is transmitted by DMA directly into main memory. This DMA controller consists actually of 3 independent controllers, capable of transferring the video data stream into memory.

Pixel Packing Modes

To support different cameras and applications, there are several modes of storing pixel data in memory:

- 8-bit: 1..3 pixels stored in separate buffers,
- 10/12-bit: 1 or 2 10/12-bit pixels are zero-filled to 16 bits and stored into separate buffers,
- 14/16-bit: 14/16-bit pixels are zero-filled to 16 bits and stored into separate buffers,
- 24-bit: zero-filled and stored into 32-bit word.

III Frame Grabber Basic Tools

Drivers for Windows come in the form of a DLL for Windows NT/2000/XP. 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 NT/2000/XP and for Linux; support for OS-9 and VxWorks on request.

III Cameras Supported

Camera	Features supported
Pulnix TM6710 CL	Var. Exposure, ext. Trigger
Jai CVM7+CL	Var. Exposure, ext. Trigger
Additional cameras	On request

III 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

PMC Front Panel Connectors (p3i_CL/PMC)

- 1 Standard Camera Link connector (MDR-26)
- 6-pin HD (t.b.d.) for trigger, I/O, and user signals

Power Requirements

- 0.9A max., 0.5A typ. at +5 VDC \pm 5 %

MTBF

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

PCI bus

PCI 2.2 compliant

- 5V signal environment
- 3.3V signal environment on request

Documentation

- Free Internet

Please contact your local sales office for detailed information.

