

PC_EYE/CL

PCI Express Frame Grabber for Camera Link Cameras

- PCI Express x4 interface
- Camera Link configurations Base, Medium, and Full

→ Advanced

III Main Features

- PCI Express Frame Grabber Board
- For Camera Link®-compatible cameras
- Supports Base, Medium, and Full configuration
- Up 680 MByte/s throughput
- x4 PCI Express Interface
- 1 GB DDR-2 RAM used as FIFO
- Firmware update controlled by software supported
- PoCL (Power Over Camera Link)
- Two 26-pin Shrink Delta Ribbon connector at front panel for 2 Base cameras resp. Medium or Full camera
- TTL and opto-isolated I/O signals on front panel and flat-cable connector

III Overview

The PC_EYE/CL frame grabber is intended for Camera Link-compatible cameras. It has two input connectors for either two Base or one Medium/Full camera.

The PCI Express bus interface with four lanes (x4) offers the transfer speed (up to 1 Gbyte/s), needed for the fast cameras with a Full interface.

Camera Link Interface

The PC_EYE/CL frame grabber has inputs for digital video data compliant with the Camera Link standard Version 1.2 (© Automated Imaging Association). Since each of the two on-board Mini-Delta-Ribbon 26-pin connectors supports four ports, a total of eight ports (A-H) can be used. This makes it possible to connect either two independent Base cameras, using ports A-C each, or one Medium (A-F), or one Full (A-H) camera.

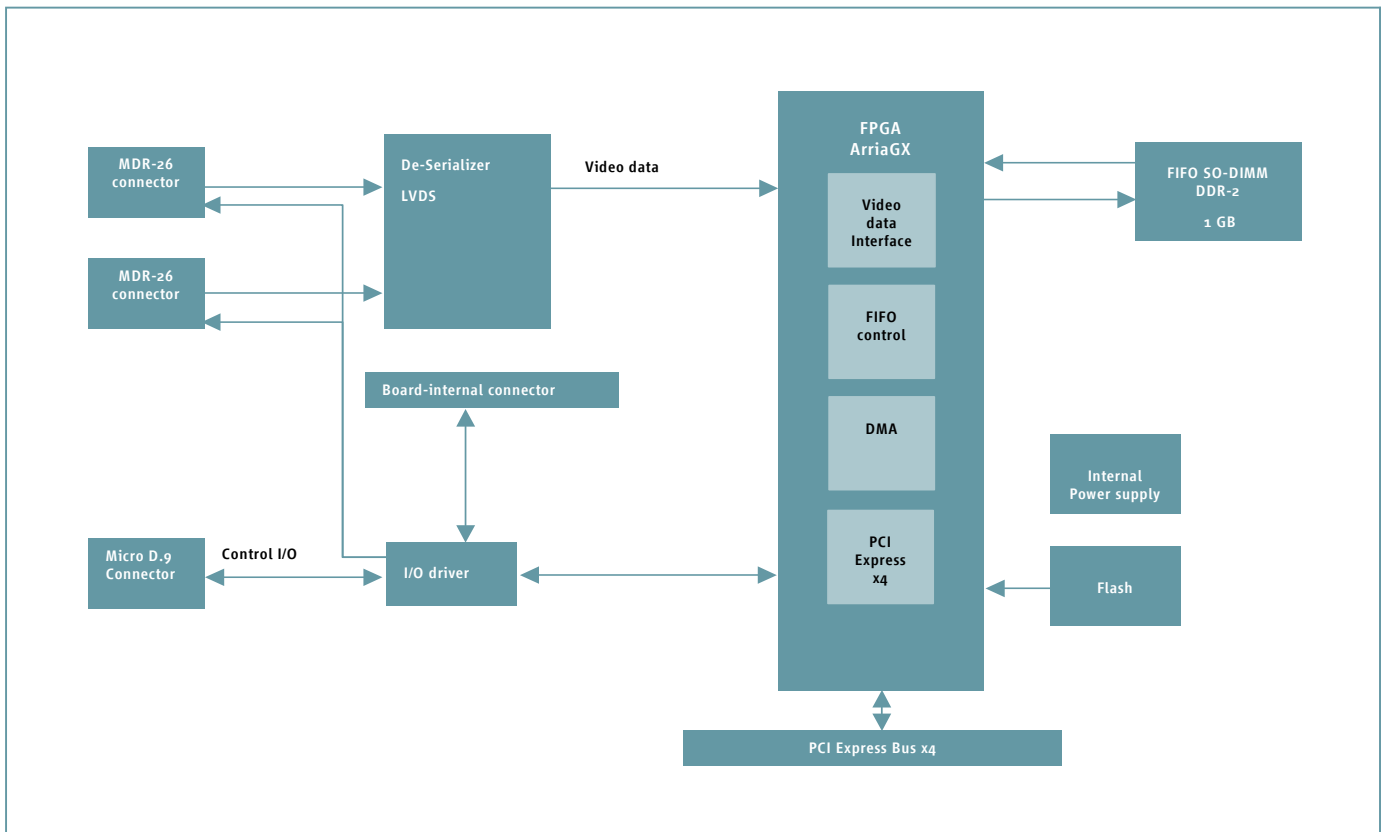
Each Camera Link port (8 bits wide) uses a high-speed 7:1 multiplexing scheme with a serial transmission rate of 2.36 Gbit/s for optimal utilization of cable capacity.

DMA Controller

Image data is transmitted by DMA directly into main memory or into the graphics card. This DMA controller consists actually of two independent controllers, capable of transferring two video data streams into two independent memory regions.

Extended FIFO

For applications with high bandwidth requirements there is a DRAM-based FIFO with additional SO-DIMM memory with DDR-2 chips and with a capacity of 1 GB. So, no image data is lost even when the PCI Express bus is not available for more than a second.



PCI Express Interface

Bus	PCI Express
width	x4, four differential bits in+out
speed	2500 MHz
Usable bandwidth	1000 MB/s (max.), 720 MB/s (typ.)

The interface to the PC's motherboard is PCI Express Rev 1.0 with a data rate of 2.5 Gbit/s per lane. It has four lanes (x4) with the corresponding x4 connector. This configuration makes a bandwidth of up to 1 GByte/s possible. Due to the PCI Express architecture with point-to-point connections instead of a common bus, each PCI Express card can utilize the full bandwidth. The motherboard must have at least one free x4 connector.

Trigger and I/O

Trigger and general-purpose I/O signals are routed to a board-internal flat-cable connector with 26 pins. A 9-pin Micro-D connector on the front panel, carries a subset of these signals.

26-pin flat-cable connector	9-pin front panel connector
4 * TTL out	2 * TTL out
4 * TTL in	2 * TTL in
2 * Opto out	-
4 * Opto in	2 * Opto in
+12V, Gnd	Gnd

Frame Grabber Basic Tools

Drivers for Windows come in the form of a DLL for Windows 2000/XP/Vista. Setup of region-of-interest adjustment, camera selection, and internal camera data is 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 2000/XP/Vista and for Linux. For the real-time operating systems VxWorks and OS-9000 there is a reduced version available on request, where parameters are set in configuration files only, no display routines are included.

Cameras Supported

Most cameras compatible to the Camera Link standard are supported, adaptation for specific cameras is available on request.

High-Level Software

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

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III Specifications

Connectors

- 2 * 26-pin MDR for Camera Link data
- 9-pin Micro D (front panel): TTL I/O, Opto in
- 26-pin jumper conn.: TTL I/O, Opto I/O, +12 V

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

- 0.5A max., 0.3A typ. at + 3.3 VDC ± 5 %
- 1.2A max., 1.0A typ. at + 12 VDC ± 5 %
- 0.8 A max. total, 12V for cameras

PCI bus Requirements

- PCI Express (x4) compliant (Rev 1.0a)

MTBF

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

Documentation

- Free Internet

Please contact your local sales office for detailed information.

