Frame grabbers

Matrox **Solios eA/XA**

Cost-effective analog frame grabber with optional customizable FPGA-based processing core.

Key features

- x1 or x4 PCIe™ (eA), or PCI-X® (XA) card
- up to four fully independent inputs
- 10-bit A/D converters
- sampling rate up to 65 MHz
- video synchronization and PLL lock detection
- 64 MB acquisition buffer
- serial communication ports mapped as PC COM ports
- optional customizable FPGA-based processing core
- programmed using Matrox Imaging Library (MIL) sold separately
- supports 32/64-bit Microsoft® Windows® XP/Vista® and 32/64-bit Linux®
- royalty-free redistribution of MIL's image processing module[1]

Cost-optimized and value-packed design

The Matrox Solios eA/XA frame grabber strikes a perfect balance between functionality and cost. Its high fidelity analog acquisition capabilities and high-performance PCI Express® (PCIe™) or PCI-X® bus interface make the Matrox Solios eA/XA a good match for mainstream cameras. An optional customizable FPGA-based processing core is available to accelerate or offload image processing tasks. The Matrox Solios eA/XA is the right choice for cost sensitive applications.

High fidelity analog acquisition

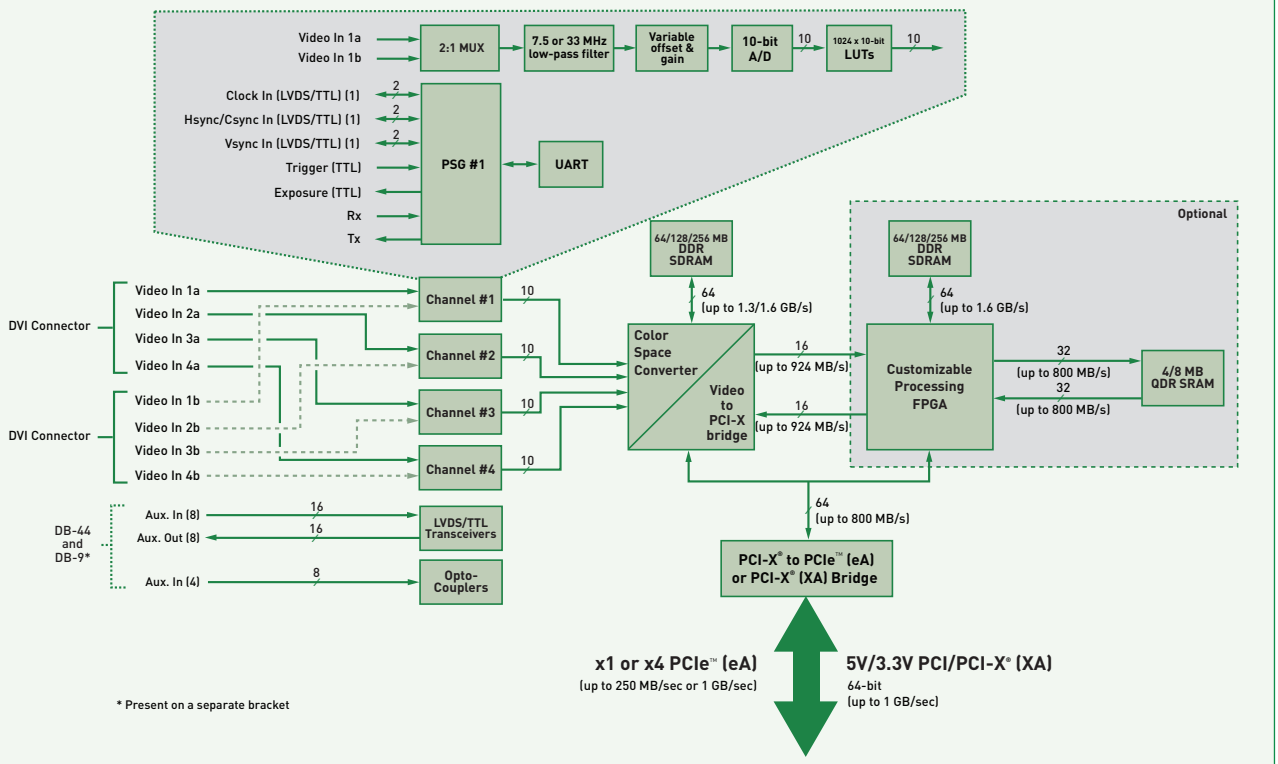
Matrox Solios eA/XA has up to four completely independent inputs for high fidelity video capture. In addition to being able to simultaneously acquire from up to four single-output video sources, the inputs can be combined to simultaneously acquire from two dual-output video sources or one RGB video source. Each input of the Matrox Solios eA/XA features circuitry to monitor the presence of a video (synchronization) signal and status of the phase-locked loop. The Matrox Solios eA/XA can also transparently convert between monochrome and packed/planar RGB color spaces enabling the optimum representation of image data for processing and/or display.

Choice of high-performance bus interfaces

Four lane (x4) PCIe™ and PCI-X® are the interfaces used to connect to the host PC on the Matrox Solios eA and Matrox Solios XA boards respectively. PCIe™ is the follow-on to conventional PCI and PCI-X®. Version 1.x of PCIe™ operates at 2.5 GHz to deliver a peak bandwidth of 1GB/sec over a x4 implementation. PCI-X® is a high-performance backwards-compatible enhancement to conventional PCI. Version 1.0a of PCI-X® specifies a 64-bit physical connection running at speeds of up to 133 MHz resulting in a peak bandwidth of up to 1 GB per second.

MATROX IMAGING

Matrox Solios eA/XA



Optional FPGA-based processing core

For applications that require some image processing acceleration or the offloading of some image processing tasks from the host CPU, Matrox Solios eA/XA is available with a configurable FPGA-based processing core. This optional processing core is based on the Altera® Stratix™ family of pin-compatible FPGA devices[2] and can include a sizable amount of DDR SDRAM and/or a smaller amount of faster QDR SRAM. Data to and from the processing core travels over the onboard secondary PCI-X bus and/or a dual-simplex link to the video capture controller.

Field-proven application development software

Matrox Solios eA/XA is supported by the Matrox Imaging Library (MIL), a comprehensive collection of software tools for developing industrial imaging applications. MIL features interactive software and programming functions for image capture, processing, analysis, annotation, display and archiving. These tools are designed to enhance productivity, thereby reducing the time and effort required to bring your solution to market. Refer to the MIL datasheet for more information.

Included with MIL are ready-made configurations for the FPGA-based processing core that implement a wide variety of image processing functions. Custom configurations can also be created on demand and upon evaluation.

Specifications

Hardware

- x1 or x4 PCIe™ card, or PCI/PCI-X® card with universal 64-bit card edge connector (64-bit 33/66 MHz 5V/3.3V PCI and 64-bit 66/100/133 MHz PCI-X®)
- 64MB of 83/100 MHz DDR SDRAM for acquisition
- up to four independent analog video inputs with
  - 2:1 mux
  - AC coupling
  - selectable low pass filter: 7.5 MHz or 33 MHz
  - variable gain amplifier and adjustable references
  - 10-bit A/D with sampling rate up to 65 MHz
  - SNR of 55.6 dB[3]
  - pixel jitter of ±2.3ns[4]
  - video synchronization and PLL lock detection
  - 1K x 10-bit LUT
  - LVDS/TTL pixel clock, hsync/csync, and vsync inputs or outputs
  - TTL trigger input and exposure output
  - serial communication port mapped as PC COM port
- inputs can be combined to acquire from
  - component RGB source
  - two dual-output monochrome video sources
- supports frame and line-scan video sources
- eight TTL/LVDS configurable auxiliary inputs
- eight TTL/LVDS configurable auxiliary outputs
- four opto-isolated configurable auxiliary inputs
- PROM for storing calibration parameters
- optional customizable FPGA-based processing core
  - Altera® Stratix™ family[2]
  - 64, 128 or 256 MB of 100 MHz DDR SDRAM
  - 4 or 8MB of 133 MHz QDR SRAM

Dimensions and environmental information

- 23.4 L x 11.4 H x 1.57 W cm (9.225" x 4.5" x 0.62") from bottom edge of goldfinger to top edge of board and without bracket and retainer
- power consumption (typical): 1.64A @ 5V or 8.21W, 0.325A @ 12V or 3.90W, or 12.11W total[5]
- operating temperature: 0°C to 55° C (32° F to 131° F)
- relative humidity: up to 95% (non-condensing)
- FCC class A
- CE class A
- RoHS-compliant

Software drivers

- Matrox Imaging Library (MIL) drivers for 32/64-bit Microsoft® Windows® XP/Vista®
- MIL drivers for 32/64-bit Linux®

Ordering Information

Hardware

Part number	Description
SOL 6M 4A*	Analog PCI-X® frame grabber with four independent inputs, 64 MB DDR SDRAM and cable adapter board (LVDS aux. I/O).
SOL 6M 1A*	Analog PCI-X® frame grabber with single input, 64 MB DDR SDRAM and cable adapter board (LVDS aux. I/O).
SOL 6M 4A E*	Analog x4 PCIe™ frame grabber with four independent inputs, 64 MB DDR SDRAM and cable adapter board (LVDS aux. I/O).
SOL 6M 1A S*	Analog x1 PCIe™ frame grabber with single input, 64 MB DDR SDRAM and cable adapter board (LVDS aux. I/O).

Software

Refer to MIL datasheet.

Cables

Part number	Description
DVI-TO-8BNC/O	8' or 2.4 m cable, DVI to 8 BNCs and open end (requires customization).

Notes:

1. Only if FPGA-based processing core is present.
2. EP1S10, 20, 25, 30 and 40 devices.
3. Measured with 33 MHz low pass filter.
4. Measured with a horizontal reference signal at 15.7KHz (RS-170).
5. Solios XA with four independent inputs and without FPGA-based processing core.

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