



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
- > available software is sold separately and includes Matrox Imaging Library (MIL)/ActiveMIL, MIL-Lite/Active MIL-Lite, Matrox Inspector and Matrox FPGA Developer's Toolkit (FDK) – Altera® Edition
- > supports Microsoft® Windows® XP^{1,2} and Linux^{3,4}
- > royalty-free redistribution of MIL's image processing module⁵

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.

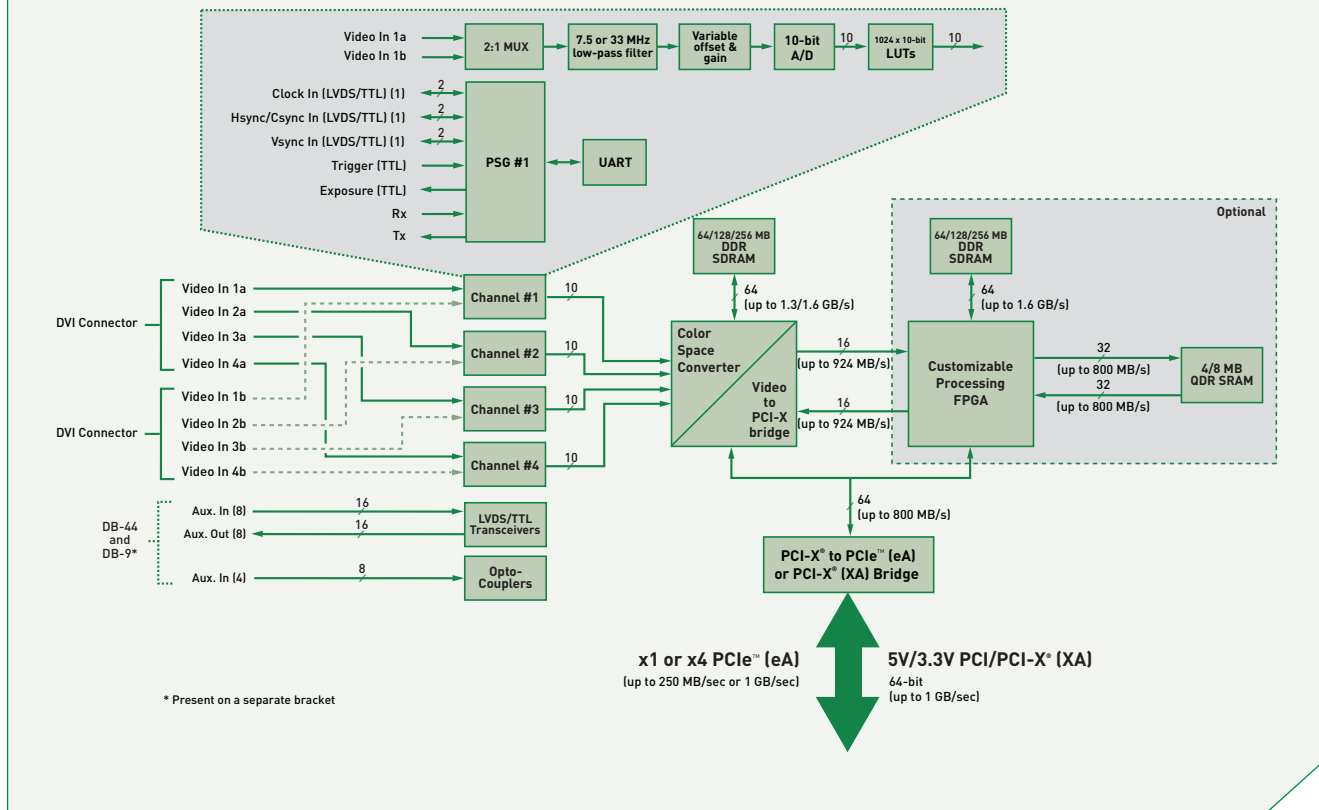
Choice of high-performance bus interfaces



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 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 devices⁶ 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.

Software

Software support is available for Windows® XP^{1,2} and Linux^{3,4}, and consists of Matrox Imaging Library (MIL)/ActiveMIL or MIL-Lite/ActiveMIL-Lite development toolkits for creating custom applications. Included with these development toolkits are ready-made configurations for the FPGA-based processing core that implement a wide variety of image processing functions⁷. Custom configurations can also be created using the Matrox FPGA Developer's Toolkit (FDK). Matrox Solios eA/XA is also supported by Matrox Inspector interactive Windows® imaging software.

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 dB⁸
 - pixel jitter of $\pm 2.3\text{ns}$ ⁹
 - 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™ family⁶
 - 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 total¹⁰
- 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 Environment

- host driver for Microsoft® Windows® XP^{1,2} and Linux^{3,4}
- programmed under Windows® using MIL/MIL-Lite ('C' DLLs) with Microsoft® Visual C++® (.NET 2003)
- programmed under Windows® using ActiveMIL/ActiveMIL-Lite (ActiveX controls) with Microsoft® Visual Basic®.NET 2003 or Visual C++® .NET 2003
- processing FPGA programmed under Microsoft® Windows® XP¹ using Matrox FDK with Altera® Quartus II®¹¹
- programmed under Linux^{3,4} using MIL/MIL-Lite with GNU Compiler Collection (GCC)

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

Part number	Description
MIL LITE 8 WIN	MIL-Lite board control library for Microsoft® Windows® XP ^{1,2} (see MIL-Lite brochure for more details).
MIL 8 WIN P or U	Matrox Imaging Library (MIL) for Microsoft® Windows® XP ^{1,2} (see MIL brochure for more details).
MIL LITE 8 LNX ^{3,4}	MIL-Lite board control library for Linux ^{3,4} (see MIL-Lite brochure for more details).
MIL 8 LNX U ^{3,4}	Matrox Imaging Library (MIL) for Linux ^{3,4} (see MIL brochure for more details).
SOL FDK AQ2	Matrox FPGA Developer's Toolkit (FDK) – Altera® Edition for Microsoft® Windows® XP ¹ (see FDK brochure for more details).
INSPECTOR 8 P or U	Matrox Inspector interactive Windows® imaging software.

Cables

Part number	Description
DVI-T0-8BNC/O	8' or 2.4 m cable, DVI to 8 BNCs and open end (requires customization).

Notes:

- 32-bit edition.
- Microsoft® Windows® 2000 support available on select products. Contact local representative or Matrox Imaging Sales for availability.
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- Contact local representative or Matrox Imaging Sales for supported distribution.
- Only if FPGA-based processing core is present.
- EP1S10, 20, 25, 30 and 40 devices.
- Refer to Matrox FDK datasheet for list of functions.
- Measured with 33 MHz low pass filter.
- Measured with a horizontal reference signal at 15.7KHz (RS-170).
- Solios XA with four independent inputs and without FPGA-based processing core.
- Refer to Matrox FDK datasheet for supported versions.

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