



Frame grabbers

Matrox Solios GigE >>>

Industrial Gigabit Ethernet NIC with customizable FPGA-based processing core.



Key features

- > x4 PCIe™ short card
- > up to four independent Gigabit Ethernet (GbE) ports
- > filters packets from up to eight GigE Vision™ streams
- > 64 MB acquisition buffer
- > captures from frame and line scan cameras
- > full complement of discrete I/Os
- > programmable color space converter
- > 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 Kit (FDK) – Altera® Edition
- > supports Microsoft® Windows® XP¹ and Linux^{2,3}
- > royalty-free redistribution of MIL's image processing module⁴

Optimizing the use of GigE Vision™

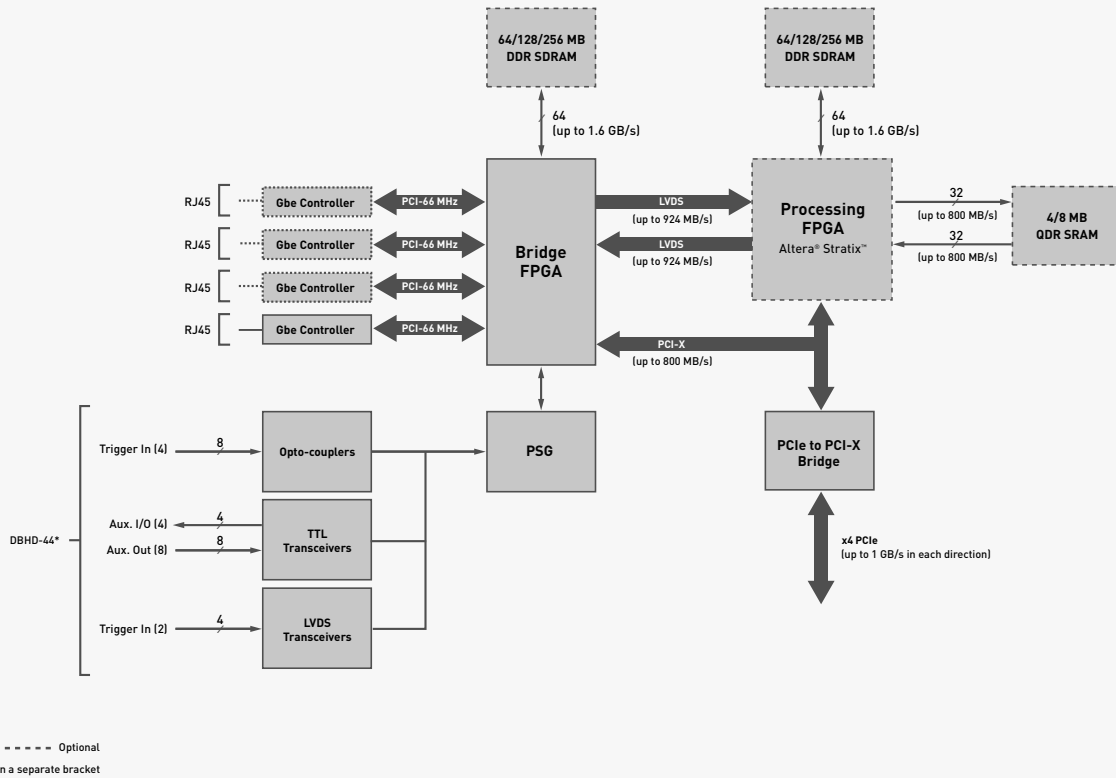
Matrox Solios GigE is a Gigabit Ethernet (GbE) network interface card (NIC) optimized for the use of GigE Vision™ devices such as industrial cameras in the most demanding imaging applications. Resource intensive packet filtering is performed on the Matrox Solios GigE, thereby making more of the CPU available for other tasks such as image processing. Pushing application performance even further, the optional customizable FPGA-based processing core can provide acceleration or offloading of both standard and custom image processing functions. Discrete I/O is an essential aspect of typical industrial imaging applications. Unlike generic GbE NICs, the Matrox Solios GigE includes a full complement of digital inputs and outputs thus eliminating the need for integrating additional components to the system. The built-in I/Os allow an application to directly manage trigger events such as activating a strobe light, tracking movement using a rotary encoder or detecting faults (e.g., a missed image capture trigger).

Leverage Ethernet with GigE Vision™

GigE Vision™ is a standard which leverages Ethernet technology for industrial imaging applications. It takes advantage of the favorable cost, proven capabilities (e.g., high bandwidth, long cable, etc.) and ubiquitous nature of Ethernet technology specifically for video transmission. GigE Vision™ is based on existing Ethernet standards with extensions for device (e.g., camera) discovery and feature description, device and application control, and data (e.g., image) transmission. The use of GigE Vision™ is further enhanced by employing the functionality of the Matrox Solios GigE for the most demanding industrial imaging applications.



Preliminary



Optional FPGA-based processing core

For applications that requires image processing acceleration or the offloading of image processing from the host, Matrox Solios GigE is available with a configurable FPGA-based processing core. This optional processing core is based on the Altera® Stratix™ family of FPGA devices⁵ and can include a sizable amount of DDR SDRAM and/or a smaller amount of faster QDR SRAM to maximize image processing performance.

Software

Software support is available for Microsoft® Windows® XP¹ and Linux^{2,3}, 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 functions⁶. Custom configurations and processing functions can also be created using the Matrox FPGA Developer's Toolkit (FDK) Altera® Edition.

Specifications

Hardware

- x4 PCIe™ short card
- up to four GbE ports
- Intel® 82541ER GbE controllers
- 64 MB of 100 MHz DDR SDRAM for acquisition
- filters packets from up to eight GigE Vision™ streams
- supports frame and line-scan video sources
- integer sub-sampling of an image down to 1/16th
- programmable color space converter with support for 8, 10, 12, 14 and 16-bit monochrome as well as RGB, YCbCr and YUV color sources
- four opto-isolated configurable auxiliary inputs
- two LVDS configurable auxiliary inputs
- eight TTL configurable auxiliary outputs
- four TTL configurable auxiliary I/Os
- optional customizable FPGA-based processing core
 - Altera® Stratix™ family⁵
 - 64, 128 or 256 MB of 83 MHz DDR SDRAM
 - 4 or 8 MB of 100 MHz QDR SRAM

Dimensions and environmental information

- 16.7 cm L x 10.7 cm H x 1.59 cm W cm (6.6" x 4.2" x 0.625") from bottom edge of goldfinger to top edge of board and without bracket
- operating temperature: 0°C to 55° C (32° F to 131° F)
- relative humidity: up to 95% (non-condensing)
- FCC class A pending
- CE class A pending
- RoHS-compliant

Software Environment

- host driver for Microsoft® Windows® XP¹ and Linux^{2,3}
- programmed under Microsoft® Windows® using MIL/MIL-Lite (.NET DLLs) with Microsoft® Visual C++® (.NET 2003)
- programmed under Microsoft® Windows® using ActiveMIL/ActiveMIL-Lite (ActiveX controls) with Microsoft® Visual Basic® .NET 2003 or Visual C++® .NET 2003
- programmed under Linux^{2,3} using MIL/MIL-Lite with GNU Compiler Collection (GCC)
- FPGA configurations programmed under Microsoft® Windows® XP¹ using Matrox FDK with Altera® Quartus II®⁷

Ordering Information

Hardware

Part number	Description
SOL 6M 4G E*	Quad GbE PCIe® NIC with 64 MB DDR SDRAM for acquisition.
SOL 6M 4G E 30546*	Quad GbE PCIe® NIC with 64 MB DDR SDRAM for acquisition, EP1S30...C5 processing FPGA, 4MB QDR SRAM and 64MB DDR SDRAM for processing.

Software

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

Notes:

1. 32-bit edition.
2. Contact local representative or Matrox Imaging Sales for availability.
3. Contact local representative or Matrox Imaging Sales for supported distribution.
4. Only if FPGA-based processing core is present.
5. EP1S10, 20, 25, 30 and 40 devices.
6. Refer to Matrox FDK datasheet for list of functions.
7. Refer to Matrox FDK datasheet for supported versions.

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