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 [1]

❯ filters packets from up to four GigE Vision™ streams

❯ 128 MB acquisition buffer

❯ captures from frame and line scan cameras

❯ full complement of discrete I/Os

❯ programmable color space converter[2]

❯ optional customizable FPGA-based processing core

❯ programmed using Matrox Imaging Library (MIL) sold separately

❯ supports 32/64-bit Microsoft® Windows® XP/Vista®/7

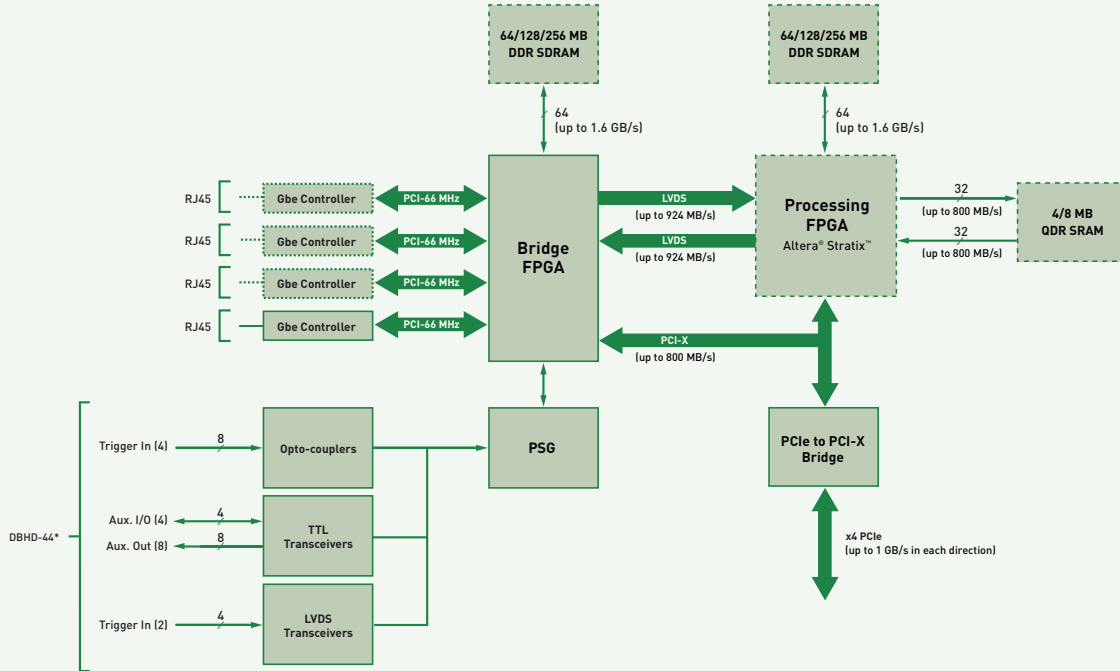❯ royalty-free redistribution of MIL's image processing module[1]

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 that 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.

MATROX
IMAGING

Diagram labels:

- 64/128/256 MB DDR SDRAM
- 64/128/256 MB DDR SDRAM
- 64 (up to 1.6 GB/s)
- 64 (up to 1.6 GB/s)
- RJ45 — Gbe Controller — PCI-66 MHz
- RJ45 — Gbe Controller — PCI-66 MHz
- RJ45 — Gbe Controller — PCI-66 MHz
- RJ45 — Gbe Controller — PCI-66 MHz
- Bridge FPGA
- LVDS (up to 924 MB/s)
- LVDS (up to 924 MB/s)
- Processing FPGA Altera® Stratix™
- 32 (up to 800 MB/s)
- 32 (up to 800 MB/s)
- 4/8 MB QDR SRAM
- PCI-X (up to 800 MB/s)
- Trigger In (4) — 8 — Opto-couplers
- PSG
- PCIe to PCI-X Bridge
- Aux. I/O (4) — 4
- Aux. Out (8) — 8 — TTL Transceivers
- DBHD-44*
- Trigger In (2) — 4 — LVDS Transceivers
- x4 PCIe (up to 1 GB/s in each direction)
- – – – – – – – Optional
- * Present on a separate bracket

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 devices[2] and can include a sizable amount of DDR SDRAM and/or a smaller amount of faster QDR SRAM to maximize image processing performance.

Field-proven application development software

Matrox Solios GigE 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 variety of image processing functions. Custom configurations can also be created on demand and upon evaluation.

Specifications

Hardware

- x4 PCIe™ short card
- up to four GbE ports
- Intel® 82541ER GbE controllers
- 128 MB of 100 MHz DDR SDRAM for acquisition
- filters packets from up to four 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™ family[2]
    - 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
- CE class A
- RoHS-compliant

Software drivers

- Matrox Imaging Library (MIL) drivers for 32/64-bit Microsoft® Windows® XP/Vista®/7

Ordering Information

Hardware

Part number	Description
SOL 1M 4G E*	Quad GbE PCIe® NIC with 128 MB DDR SDRAM for acquisition.
SOL 1M 4G E 30546*	Quad GbE PCIe® NIC with 128 MB DDR SDRAM for acquisition, EP1S30...C5 processing FPGA, 4MB QDR SRAM and 64MB DDR SDRAM for processing.

Software
Refer to MIL datasheet.

Notes:

1. Only if FPGA-based processing core is present.
2. EP1S10, 20, 25, 30 and 40 devices.