Frame grabbers

Matrox **Solios eCL/XCL**

Cost-effective Camera Link® frame grabber with optional customizable FPGA-based processing core.

Key features

- x4 PCIe™ (eCL) or PCI-X® (XCL) card
- handles two fully independent Base or a single Medium (eCL/XCL), or a single Full (eCL-F/XCL-F) Camera Link® configuration[1]
- acquires at up to 66/85 MHz
- 64 MB acquisition buffer
- captures from frame and line scan cameras
- performs complete image reconstruction from multi-tap cameras with up to 10 taps[2]
- serial communication port(s) mapped as PC COM port(s)
- support for rotary encoders with quadrature output[3]
- optional customizable FPGA-based processing core[3]
- programmed using Matrox Imaging Library (MIL) sold separately
- supports 32/64-bit Microsoft® Windows® XP/Vista®/7 and 32/64-bit Linux®
- royalty-free redistribution of MIL's image processing module[4]

Cost-optimized and value-packed design

The Matrox Solios eCL/XCL frame grabber strikes a perfect balance between functionality and cost. Its versatile Camera Link® acquisition capabilities and high-performance PCI Express® (PCIe™) or PCI-X® bus interface make the Matrox Solios eCL/XCL a good match for mainstream cameras. An optional customizable FPGA-based processing core[3] is available to accelerate or offload image processing tasks. The Matrox Solios eCL/XCL is the right choice for cost sensitive applications.

Versatile Camera Link® interface

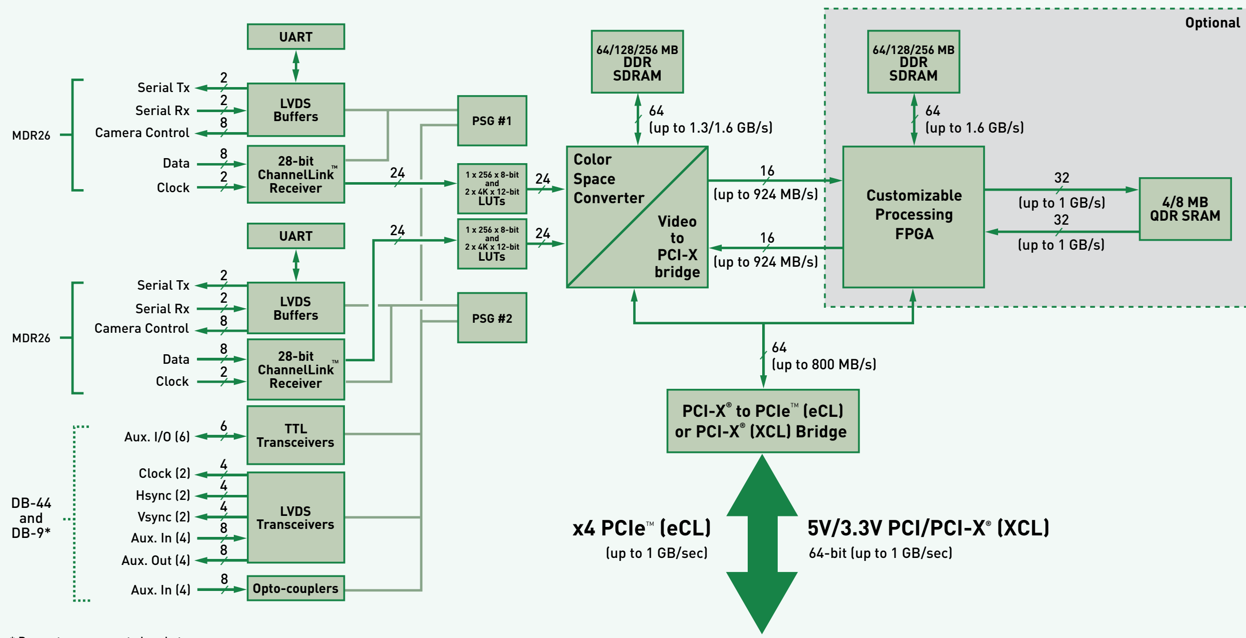
Matrox Solios eCL/XCL is available in two versions, a configurable dual-Base/single-Medium Camera Link® frame grabber (eCL/XCL) or a fixed single-Full Camera Link® frame grabber (eCL-F/XCL-F). The former can simultaneously capture from two completely independent Camera Link® cameras using the Base configuration or from a single Camera Link® camera using the Medium configuration[1]. The latter can capture from a single Camera Link® camera using the Full configuration[1] up to 10-taps. Matrox Solios eCL/XCL(-F) can to handle the most popular industrial or scientific frame and line scan cameras including complete image reconstruction from multi-tap cameras. It 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 host bus interfaces

Four lane (x4) PCIe™ and PCI-X® are the interfaces used to connect to the host PC on the Matrox Solios eCL(-F) and Matrox Solios XCL(-F) 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.

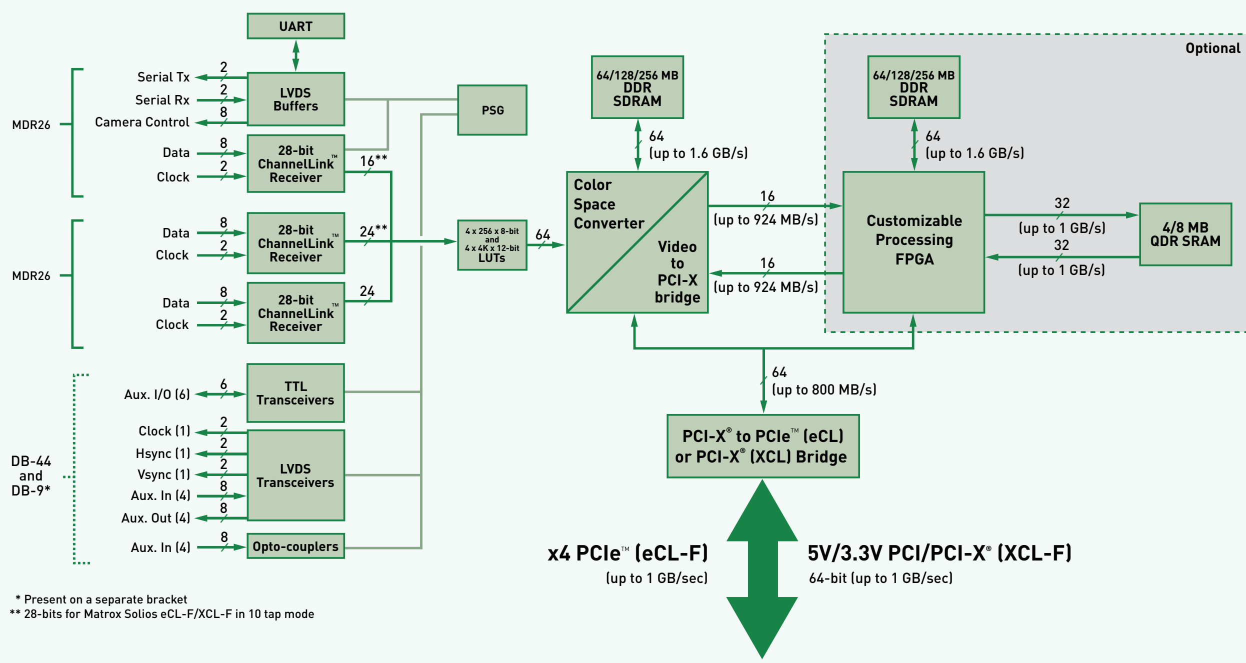
MATROX IMAGING

Matrox Solios eCL/XCL



* Present on a separate bracket

Matrox Solios eCL-F/XCL-F



* Present on a separate bracket
** 28-bits for Matrox Solios eCL-F/XCL-F in 10 tap mode

Optional FPGA-based processing core[3]

For applications that require some image processing acceleration or the offloading of some image processing tasks from the host CPU, Matrox Solios eCL/XCL(-F) 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[5] 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 eCL/XCL(-F) 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™ 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
- handles two independent Base or a single Base/Medium Camera Link® port(s) (eCL/XCL) or a single Base/Medium/Full Camera Link® port (eCL-F/XCL-F)[1]
- Channel Link™ speed of up to 66/85 MHz
- supports frame and line-scan video sources
- full reconstruction from multi-tap sources
- four 4K x 12-bit and two 256 x 8-bit LUTs (eCL/XCL) or four 4K x 12-bit and four 256 x 8-bit LUTs (eCL-F/XCL-F)
- six TTL configurable auxiliary I/Os
- four LVDS configurable auxiliary inputs
- four LVDS configurable auxiliary outputs
- separate LVDS pixel clock, hsync and vsync outputs
- four opto-isolated configurable auxiliary inputs
- serial communication port(s) mapped as PC COM port(s)
- optional customizable FPGA-based processing core[3]
  - Altera® Stratix™ family[5]
  - 64, 128 or 256MB of 100MHz DDR SDRAM
  - 4 or 8MB of 133MHz QDR SRAM

Dimensions and environmental information

- 19.1 L x 11.4 H x 1.57 W cm (7.5" x 4.5" x 0.62") from bottom edge of goldfinger to top edge of board and without bracket
- power consumption (typical): 2.75A @ 3.3v or 9.1W, 0.49A @ 5V or 2.4W, or 11.5W total[6]
- 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
- MIL drivers for 32/64-bit Linux®

Ordering Information

Hardware

Part number	Description
SOL 6M CL*	Dual-Base or single-Medium up to 66 MHz Camera Link® PCI-X® frame grabber with 64 MB DDR SDRAM and cable adapter board.
SOL 6M FC*	Dual-Base or single-Medium up to 85 MHz Camera Link® PCI-X® frame grabber with 64 MB DDR SDRAM and cable adapter board.
SOL 6M FCF*	Single-Full (10-taps) up to 85 MHz Camera Link® PCI-X® frame grabber with 64 MB DDR SDRAM and cable adapter board.
SOL 6M CL E*	Dual-Base or single-Medium up to 66 MHz Camera Link® x4 PCIe™ frame grabber with 64 MB DDR SDRAM and cable adapter board.
SOL 6M FC E*	Dual-Base or single-Medium up to 85 MHz Camera Link® x4 PCIe™ frame grabber with 64 MB DDR SDRAM and cable adapter board.
SOL 6M FCF E*	Single-Full (10-taps) up to 85 MHz Camera Link® x4 PCIe™ frame grabber with 64 MB DDR SDRAM and cable adapter board.

Software

Refer to MIL datasheet.

Cables

Camera Link® cables available from camera manufacturer, 3M Interconnect Solutions (www.3m.com), Intercon1 (www.nortechsys.com/intercon) or other third parties. Cables for cable adapter boards available from third parties.

Notes:

1. Refer to Camera Link® specification for more information.
2. 10-tap support only available with single-Full Camera Link® configurations (eCL/XCL-F).
3. Only available with up to 85 MHz Camera Link® acquisition speed configurations. Contact local representative or Matrox Imaging Sales for availability of single-Full Camera Link® configurations (eCL/XCL-F).
4. Only if FPGA-based processing core is present.
5. EP1S10, 20, 25, 30 and 40 devices.
6. Matrox Solios XCL without FPGA-based processing core.