Matrox **Rapixo CXP**

Multi-link CoaXPress® 2.0[1] frame grabbers with optional FPGA-based image processing offload

Matrox Rapixo CXP at a glance

- **Support for the highest speeds** available in CoaXPress 2.0
- **Connect and capture from up to four cameras** or combine connections for even higher data rates
- **PoCXP support simplifies cabling** between cameras and vision computer
- **Offload host computer** of custom image processing using FPGA device
- **Auxiliary I/Os per CXP connection** to synchronize with sensors, encoders, and controllers
- **License fingerprint for MIL software** avoids the need for a separate hardware key

Interface cards for high-speed imaging

Matrox® Rapixo CXP is a new generation of frame grabbers, supporting version 2.0 of the CoaXPress (CXP) digital interface standard for machine vision applications. The Rapixo CXP series supports data rates of either up to 6.25 Gbps (CXP-6) or up to 12.5 Gbps (CXP-12). A PCIe® 3.1 x8 host interfaces comfortably matches the maximum input bandwidth from the CXP links. The CXP links are accessed through high-density BNC connectors allowing for a homogenous interconnection with new cameras. Power-over-CoaXPress (PoCXP) support on each connection simplifies system configurations, combining the camera's power interface with its command- and data-interface onto the same coaxial cable.

The Matrox Rapixo CXP features four connections for interfacing to independent cameras as well as for handling higher data rates through connection aggregation. The Rapixo CXP series possess sufficient onboard memory to buffer incoming image data in situations where the host computer is temporarily unable to accept data. The fanless design for select models ensures extended use without maintenance.

The Matrox Rapixo CXP makes use of a field-programmable gate array (FPGA) device from the Xilinx Kintex® UltraScale™ family for not only integrating the controlling, formatting, and streaming logic of the various interfaces, but also allowing developers to incorporate Matrox Imaging- or user-developed custom image pre-processing operations to offload from the host computer.

Pairs with MIL[2] software

The Matrox Rapixo CXP board supports 64-bit Windows® and Linux®[3] through the latest Matrox Imaging Library (MIL) software. The card also acts as a license fingerprint and can store a supplemental license for MIL software, avoiding the need for a separate hardware key.

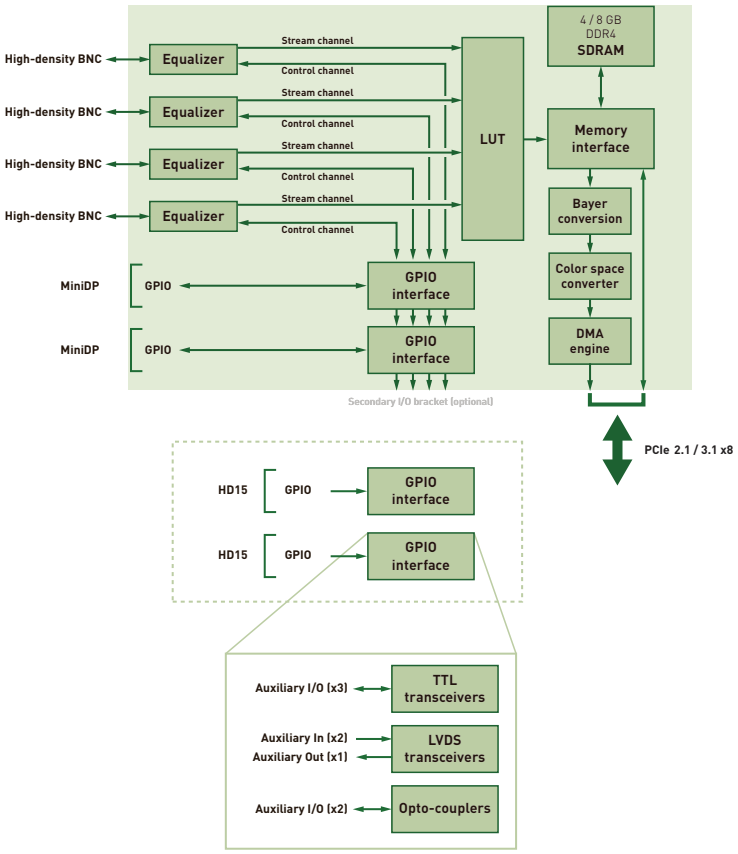
Field-proven development software

Matrox Rapixo is supported by MIL[2] software—a comprehensive software development kit (SDK) with a 25-year history of reliable performance. This toolkit features interactive software and programming functions for image capture, processing, analysis, annotation, display, and archiving operations, with the accuracy and robustness needed to tackle the most demanding applications. Refer to the MIL datasheet for more information.

PRELIMINARY

MATROX IMAGING

Matrox Rapixo CXP



The Matrox Imaging Advantage

Assured Quality & Longevity
We adhere to industry best practices in all hardware manufacturing and software development; product designs pay careful attention to component selection to secure consistent long-term availability. Matrox Imaging is able to meet Copy Exact and Revision Change Control procurement requirements in particular circumstances, backed by our dedicated team of QA specialists.

Trusted Industry Standards
Matrox Imaging champions industry standards in our design and production. We leverage these standards to deliver quality compatible products, protecting our customers' best interests by ensuring our hardware and software components work with as many third-party products as possible.

Comprehensive Customer Support
Our devoted front-line support and applications teams are on call to offer timely product installation, usage, and integration assistance, while the exclusive Matrox Imaging Vision Squad provides hands-on support, helping assess application feasibility, recommend best methods, and even prototype solutions.

Tailored Customer Training
Matrox Vision Academy comprises online and on-premises training for our vision software tools. On-premises intensive training courses are regularly held at Matrox headquarters, and can also be customized for onsite delivery. Vision Academy online training platform hosts a comprehensive set of on-demand videos available when and where needed.

Long-Standing Global Network
Matrox Imaging customers benefit from a global network of distributors who offer complementary products and support, and integrators who build customized vision systems. These relationships are built on years of mutual trust and span the globe, ensuring customer access to only the best assistance in the industry.

Specifications

Hardware

Host interface	
Interconnect	PCIe 2.1 / 3.1 x8
Camera/video interface	
Standard	CXP version 2.0
Configuration	Four (4) connections
Speeds	1.25 / 2.5 / 3.125 / 5 / 6.25 / 10 / 12.5 Gbps (CXP-1, 2, 3, 5, 6, 10, and 12 respectively)
Streams	Up to eight (8) total
Connectors	High-density BNC
Power output	PoCXP From PC power supply via 6-pin connector
Miscellaneous	Connection-status indicator LEDs
Memory	
Type	DDR4 SDRAM
Quantity	4 or 8 GB
Purpose	Image buffering and processing
Image processing capabilities	
On-board look-up tables	8- / 10- / 12-bit support
On-board Bayer interpolation	GB, BG, GR, and RG pattern support
On-board color space conversion	Input formats: 8- / 16-bit mono/Bayer, 24- / 48-bit packed BGR Output formats: 8- / 16-bit mono, 24- / 48-bit packed/planar BGR, 16-bit YUV, 16-bit YCbCr, 32-bit BGRa
Custom processing	Matrox- or user-developed using Xilinx Vivado® Design Suite and Matrox FPGA Development Kit (FDK)
General purpose I/Os	
Types	Three (3) TTL I/Os per connector Two (2) LVDS inputs per connector One (1) LVDS output per connector Two (2) opto-isolated inputs per connector
Connectors	Two (2) mDP connectors on main I/O bracket accessed through a mDP-to-HD15 adaptor Two (2) HD15 connectors on secondary I/O bracket
Physical	
Form factor	Half-length, full-height, PCIe add-in card
Product dimensions	167.65 x 111.15 x 18.7 mm (4.376 x 6.600 x 0.74 in)[4]
Power consumption	20 W (typical)
Environmental	
Operating temperature	0°C to 55°C (32°F to 131°F)
Operating relative humidity	10% to 90% (non-condensing)

Specifications (cont.)

Software

Compatible software	Matrox Imaging Library (MIL) 10[5]
Operating system support	Windows 7 (64-bit) Windows 10 (64-bit) Linux (64-bit)[3]
Licensing provisions	MIL license fingerprint and storage

Ordering Information

Hardware

Part number	Description
RAP 4G 4C6	Matrox Rapixo CXP quad CXP-6 frame grabber with 4 GB DDR4 SDRAM. Includes one (1) mDP-to-HD15 GPIO cable adaptor. Note: Cable adaptors for second, third, and fourth GPIOs sold separately.
RAP 4G 4C12	Matrox Rapixo CXP quad CXP-12 frame grabber with 4 GB DDR4 SDRAM. Includes one (1) mDP-to-HD15 GPIO cable adaptor. Note: Cable adaptors for second, third, and fourth GPIOs sold separately.

Contact Matrox Imaging for other part numbers, including those for custom onboard processing.

Accessories

Part number	Description
RAPACCKIT01	Additional Matrox Rapixo CXP GPIOs accessory kit. Includes one (1) additional mDP-to-HD15 GPIO cable adaptor and one (1) secondary dual HD15 I/O bracket with ribbon cable.

Software

Refer to MIL datasheet and Matrox FDK datasheet .

Endnotes:
1. Pending ratification by standards body (i.e., Japan Industrial Imaging Association [JIIA]).
2. The software may be protected by one or more patents; see www.matrox.com/patents for more information.
3. Ask for availability.
4. Dimensions (length x width x height) are taken from bottom edge of goldfinger to top edge of board. These measurements do not include mounting bracket.
5. Through an update.

About Matrox Imaging

Founded in 1976, Matrox is a privately held company based in Montreal, Canada. Imaging, Graphics, and Video divisions provide leading component-level solutions, leveraging the others' expertise and industry relations to provide innovative, timely products.

Matrox Imaging is an established and trusted supplier to top OEMs and integrators involved in machine vision, image analysis, and medical imaging industries. The components consist of smart cameras, vision controllers, I/O cards, and frame grabbers, all designed to provide optimum price-performance within a common software environment.

Corporate headquarters
Matrox Electronic Systems Ltd.
1055 St. Regis Blvd. Dorval, Quebec, Canada, H9P 2T4
Tel: +1 (514) 685-2630, Fax: +1 (514) 822-6273

For more information, please contact us at 1-800-804-6243 (toll free in North America), (514) 822-6020, imaging.info@matrox.com, or www.matrox.com/imaging.

PRELIMINARY