Matrox **Clarity UHD** »

Multi-format multi-input UHD video capture card
with optional H.264 encoding

MATROX
IMAGING

Overview

Multi-facet video capture with UHD clarity

Matrox® Clarity UHD is a comprehensive video capture card supporting the full range of video formats from standard definition (SD) to high definition (HD) all the way to ultra-high definition (UHD). Mini DisplayPort®, HD-BNC, HDMI®, and custom analog DVI[1] connectivity are provided to hook up to and switch between the different types of legacy and advanced video sources used in medical, surveillance, and simulation-training applications. System setup and management are further simplified with the board's automatic video source presence and format detection. Matrox Clarity UHD can simultaneously acquire multiple streams—such as eight HD (1080p60) or two 4K UHD (2160p60) video streams—and reliably transfer these off-board using its efficient PCIe® 2.0 x8 host interface.

Video pre-processing and H.264 encoding

In addition to video capture, Matrox Clarity UHD can offload video pre-processing tasks such as scaling, compositing, and de-interlacing from the host processor. An optional H.264 encoder supports a range of profiles—from baseline up to the high 4:4:4 predictive[3]—for the broadest choice in encoded video quality for recording and distribution. Video pre-processing and H.264 encoding are designed to keep up with the board's multi-stream acquisition capability.

Matrox Clarity UHD at a glance

Capture from legacy to the latest video sources through support for SD analog to UHD digital formats

Connect and switch between different video sources via Mini DisplayPort, HD-BNC, HDMI, and custom analog DVI[1] connectivity

Handle multiple video sources with the simultaneous capture of up to eight HD or two UHD streams[2]

Optimize video transmission and storage through onboard multi-stream H.264 encoding

Minimize system footprint by way of a single-slot PCIe card design

Simplify application development using the Matrox Imaging Library (MIL) X software development kit (SDK)

Deploy on a current platform of choice with support for 64-bit Windows® 7/10 and Linux®

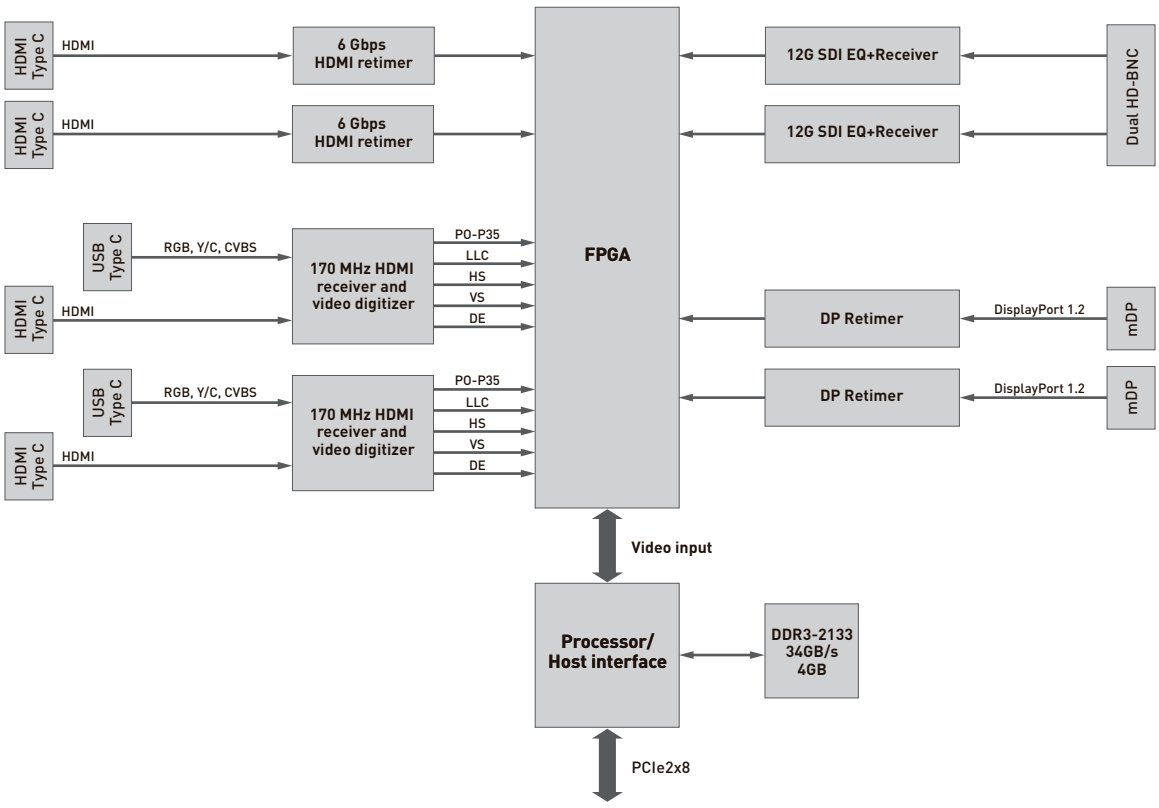
Software Environment

Application development with MIL X

Complementing the Matrox Clarity UHD capture card is MIL X, which provides a comprehensive collection of software tools for developing imaging applications. MIL X 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 solutions to market. The MIL API is not only intuitive and straightforward to use, but it is also portable. It allows applications to be moved from one supported video interface or operating system to another easily, providing platform flexibility and protecting the original development investment.

Connectivity

Matrox Clarity UHD block diagram



Specifications

Matrox Clarity UHD	
Hardware	
Host interface	
Interconnect	PCIe 2.0 x8
Camera/video interface	
Standard	Analog (RGB, Y/C, and CVBS), single-link DVI (via HDMI), DisplayPort 1.2, HDMI, and SDI (12 G) video acquisition
Connectors	Two (2) USB Type C connectors for analog (via custom DVI-I adaptor cable)
	Two (2) Mini DisplayPort connectors
	Four (4) HDMI Type C connectors
	Two (2) HD-BNC connectors
Video acquisition paths	Up to eight (8) independent acquisition paths
Maximum acquisition bandwidth	Up to 4 GB/s combined bandwidth
Memory	
Type	DDR3 SDRAM
Quantity	4 GB
Purpose	Image buffering and processing
Image processing capabilities	
On-board video pre-processing	Scaling and de-interlacing
On-board color space conversion	Output formats: 8-bit mono, 8-/10-bit YUV 4:2:2, 8-bit YUV 4:4:4 planar, 8-bit YUV 4:2:0, 8-bit RGB planar, 8-bit BGR32, 10-bit BGRa
Encoding capabilities	
Compression standard	On-board H.264 encoding (Pre-licensed for MIL X)
Profiles	Baseline to high 4:4:4 predictive profile (Up to 10 bits)
Physical	
Form factor	¾-length, full-height, PCIe add-in card
Dimensions (L x W x H)	21.3 x 1.87 x 11.5 cm (8.38 x 0.74 x 4.38 in)
Power consumption	
	45 W (typical)
Environmental	
Operating temperature	0°C to 55°C (32°F to 131°F)
Relative humidity	Up to 95% (non-condensing)
Software	
Compatible software	MIL X
Operating system support	Windows 7 (64-bit)
	Windows 10 (64-bit)
	Linux (64-bit)
Licensing provisions	MIL X license fingerprint and storage

Ordering Information

Part number	Description
Hardware	
CLA 4G HDSA	Matrox Clarity UHD PCIe 2.0 x8 video capture card with 4 GB of memory supporting HDMI, DisplayPort, SDI, and analog acquisition.
CLA 4G HDSA E	Matrox Clarity UHD PCIe 2.0 x8 video capture card with 4 GB of memory supporting HDMI, DisplayPort, SDI, and analog acquisition, plus H.264 encoding.
Software	
Refer to MIL X datasheet.	
Accessories	
CLA-CBL-USBDVI	Two (2) USB Type-C to DVI analog cable adaptors for the Matrox Clarity UHD.

Endnotes:
1. Using supplied USB Type C to DVI-I adaptor cable.
2. Up to a maximum combined bandwidth of 4 GB/sec.
3. Up to 10-bit.

The Matrox Imaging advantage

Assured quality & longevity
Adhering 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 a dedicated team of QA specialists.

Trusted industry standards
Matrox Imaging champions industry standards in its design and production. Leveraging these standards to deliver quality compatible products, Matrox Imaging protects its customers' best interests by ensuring hardware and software components work with as many third-party products as possible.

Comprehensive customer support
Devoted front-line support and applications teams are on call to offer timely product installation, usage, and integration assistance. Matrox Professional Services delivers deep technical assistance to help customers develop their particular applications in a timely fashion. Services include personalized training and device interfacing as well as application feasibility, prototyping, troubleshooting, and debugging.

Tailored customer training
Matrox Vision Academy comprises online and on-premises training for Matrox Imaging vision software tools. On-premises intensive training courses are regularly held at Matrox headquarters, and can also be customized for onsite delivery. The Matrox 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.

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.

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