Matrox **Clarity UHD** ≫

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

Benefits

Capture from legacy to the latest video sources through support for standard definition (SD) analog to ultra-high definition (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 four 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) software development kit (SDK)

Deploy on a current platform of choice with support for 64-bit Windows® 7/10 and Linux®[3]

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 four HD (1080p60) or two UHD (4K) video streams and reliably transfer these off board using its efficient PCIe® 2.0 x8 host interface.
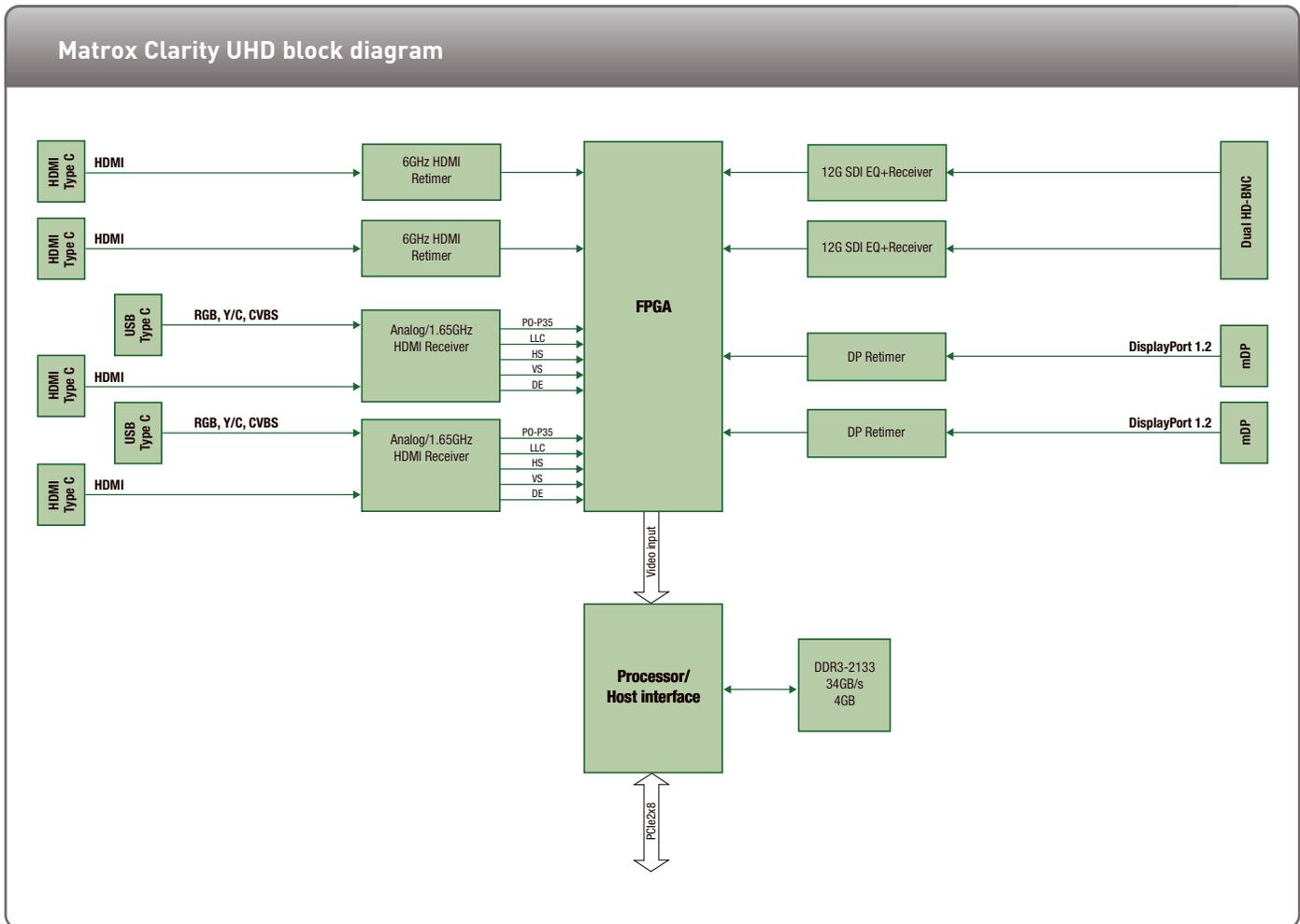
Video pre-processing and H.264 encoding
In addition to video capture, Matrox Clarity UHD can offload video pre-processing tasks such as scaling, compositing and de-interlacing from the host processor. An optional H.264 encoder supports a range of profiles, from the baseline one up to the high 4:4:4 predictive[5] one, 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.

Lifecycle managed for consistent long term supply
Along with the careful selection of each component that goes into the Matrox Clarity UHD to ensure product availability in excess of five years, Matrox Imaging also exercises strict change control to provide consistent supply. Longevity of stable supply lets OEMs achieve maximum return on the original investment without incurring the additional costs associated with the repeated validation due to constantly changing products.

MATROX
IMAGING

Application development with Matrox Imaging Library (MIL)

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

Matrox Clarity UHD block diagram

Component	
HDMI Type C — HDMI	6GHz HDMI Retimer
HDMI Type C — HDMI	6GHz HDMI Retimer
USB Type C — RGB, Y/C, CVBS	Analog/1.65GHz HDMI Receiver (P0-P35, LLC, HS, VS, DE)
HDMI Type C — HDMI	
USB Type C — RGB, Y/C, CVBS	Analog/1.65GHz HDMI Receiver (P0-P35, LLC, HS, VS, DE)
HDMI Type C — HDMI	

FPGA

12G SDI EQ+Receiver — Dual HD-BNC
12G SDI EQ+Receiver — Dual HD-BNC
DP Retimer — DisplayPort 1.2 — mDP
DP Retimer — DisplayPort 1.2 — mDP

Video input

Processor/Host interface ↔ DDR3-2133 34GB/s 4GB

PCIe2x8

Specifications

Hardware

- PCIe® 2.0 x8 ¾-length single-width board
- 4GB SDRAM memory
- Analog (RGB, Y/C and CVBS), single-link DVI (via HDMI), DisplayPort 1.2, HDMI and SDI (12G) video acquisition
- Eight (8) independent video acquisition paths through
  - two (2) USB Type C connectors (via custom DVI-I adaptor cable) for analog
  - two (2) Mini DisplayPort connectors
  - four (4) HDMI Type C connectors
  - two (2) HD-BNC connectors
- Multi-stream (path) video acquisition at up to 4 GB/s (4096 MB/s) combined bandwidth

Video input format (maximum rate)	Maximum bandwidth usage
Analog (175 MHz)	680 MB/s
Single-link DVI (165 MHz)	660 MB/s
DisplayPort 1.2 (17.28 Gbit/s)	2880 MB/s
HDMI (6 Gbit/s)	2250 MB/s
12G-SDI YUV422 (12 Gbit/s)	2500 MB/s

- Onboard video pre-processing: scaling, compositing and de-interlacing
- Onboard H.264 encoding (baseline to high 4:4:4 predictive profile[5]) pre-licensed for MIL
- MIL license fingerprint and storage

Specifications (Cont.)

Dimensions and environmental information

- 213 mm x 111 mm
- Power consumption: 45W
- Operating temperature: 0 C to 50 C (32 F to 122 F)
- Relative humidity: up to 95% (non-condensing)

Software Drivers

- Matrox Imaging Library (MIL) drivers for 64-bit Windows® 7/10 and Linux®[3]

Ordering Information

Hardware

Part number & Description

CLA 4G HDSA	Matrox Clarity UHD PCIe® x8 video capture card with 4 GB of memory supporting HDMI, DisplayPort, SDI and analog acquisition.
CLA 4G HDSA E	Matrox Clarity UHD PCIe® x8 video capture card with 4 GB of memory supporting HDMI, DisplayPort, SDI and analog acquisition, and H.264 encoding.

Notes:
1. Using supplied USB Type C to DVI-I adaptor cable.
2. Or a maximum combined bandwidth of 4 GB/sec.
3. Ask for availability.
4. From supported formats.
5. Up to 10-bit.

For more information, please call: 1-800-804-6243 (toll free in North America) or (514) 822-6020
or e-mail: imaging.info@matrox.com or http://www.matrox.com/imaging

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