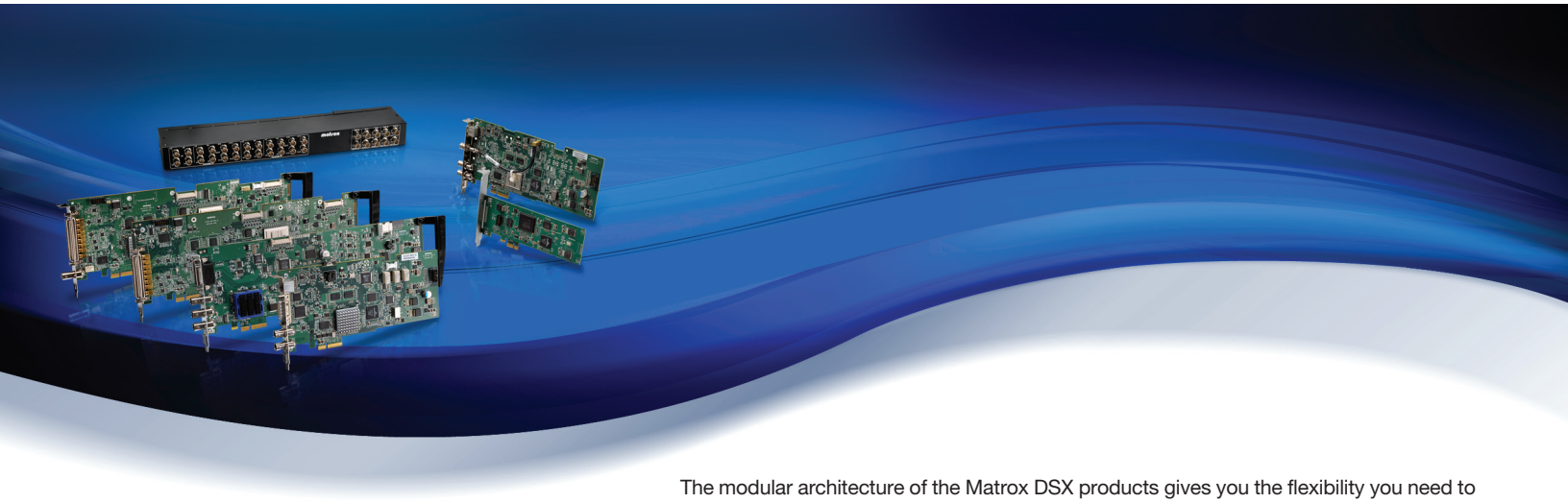
Matrox DSX Developer Products

Matrox Video Products Group offers an entire family of cutting-edge 3G, HD, and SD digital video hardware and software development tools in the Matrox DSX product line – the only fully-integrated development platform on the market.

OEMs, systems integrators, and developers of video equipment for broadcast, medical, and industrial applications can build their own innovative digital media systems on the solid foundation of the Matrox DSX products. Broadcast applications include channel-in-a-box solutions, broadcast graphics systems, capture/playout servers, streaming servers, clip and still stores, render farms, and nonlinear editing systems.Medical applications include servers for video capture, diagnosis, and review.



Industry-Leading Hardware

- 24/7 reliability
- Built-in fail-safe mechanisms
- Full range of multi-channel I/O solutions
- On-board scaling and video mixing
- Frame synchronization with audio resampling
- HANC and VANC support

Feature-Rich SDK

- Built on 20 years of experience
- Constantly expanding selection of codecs
- Extensive file format support
- Advanced tools for quick app development

Unlimited Premium Support

- Experienced applications engineer dedicated to you
- Sample apps to accelerate development
- Online developer forum
- Optional training and design review programs
- Feature customization to meet your specific needs

The modular architecture of the Matrox DSX products gives you the flexibility you need to create and repurpose solutions to suit the diverse needs of your customers, in high-end as well as cost-conscious market segments.

Capitalizing on over 30 years of innovation, Matrox helps you stay at the forefront of both traditional and emerging video markets. Support for realtime HD H.264 codecs, streaming media tools, stereoscopic solutions, file-based workflows, and 3G-SDI are among the technologies that keep your solutions at the vanguard of today's divergent media marketplace.

Matrox DSX Hardware Platform

The Matrox DSX hardware components are designed for optimal performance, flexibility, and scalability. They share a memory centric, asynchronous architecture that provides high-speed transfers of video, audio, and graphics data between I/O peripherals, co-processors, the CPU, and host memory. On-board DMA engines allow data transfers to occur without any intervention from the CPU. Some products also feature on-board hardware compositors/scalers to off-load CPU or GPU processes.

The full range of broadcast quality video/audio inputs and outputs are supported in NTSC and PAL as well as 480p, 720p, 1080p, and 1080i HD resolutions at all frame rates. Support for 4:3 and 16:9 aspect ratios is provided. A variety of I/O configurations are available to meet your specific application needs. All of the hardware components are supported by the Matrox DSX SDK.

Matrox DSX LE3 – Cost effective multi-channel 3G, HD and SD digital I/O card
Matrox X.mio2 Plus - Multi-channel 3G, HD and SD I/O card featuring the Matrox Control Engine
Matrox X.mio2 - Multi-channel 3G, HD and SD I/O card (PCIe x8)
Matrox X.mio2 Server - Multi-channel 3G, HD and SD I/O card (onboard up, down and cross scaler)
Matrox X.RIO - Reconfigurable I/O module for X.mio2 card
Matrox X.264io – SDI/ASI I/O card with onboard H.264 encoder
Matrox X.264 - Faster than realtime HD/SD H.264 encoder
Matrox X.AVCio - DVI, SDI, and analog I/O card with hardware H.264 codec
Matrox DSX.sd - Multi-channel SD analog/digital I/O card
Matrox DSX LE2 - All-in-one HD and SD digital/audio/graphics effects platform
Matrox X.open - Software-based HD and SD digital video platform

Matrox DSX SDK (Software Development Kit)

Designed to enable rapid application development, the Matrox DSX SDK is modeled on a COM-based asynchronous architecture that provides a common API across the entire DSX family of hardware components. A single development effort lets you create a variety of products at different levels to suit your target customers. The Matrox DSX SDK provides comprehensive development tools including versatile file reading/writing, memory management, streaming synchronization, and a large selection of software codecs and effects. A large and ever-growing series of pre-designed software modules helps you complete your development on a tight schedule. Plus, a dedicated team of talented applications engineers is available to provide assistance at every stage in your development so you can get to market quickly.

The Matrox DSX SDK software modules are designed to give you the widest possible flexibility in developing cost-effective video products to satisfy the specific needs of your customer base.

Extensive file format support

- MXF (OP1a, OPatom)
- MOV
- MPG, M2V
- AVI
- MP4
- GXF
- PitchBlue
- WMV (Windows Media 9, 10, 11, 12)
- AVCHD (with PCM audio)

Extensive codec support

- SD codecs
  - DV, DVCAM, DVCPRO, and DVCPRO50
  - D10
  - MPEG-2 I-frame YUV 4:2:2
  - MPEG-2 I-frame YUVA 4:2:2:4
  - MPEG-2 IBP 422 and IBP 420
  - MPEG-4/H.264
- HD codecs
  - DVCPRO HD
  - MPEG-2 I-frame YUV 4:2:2
  - MPEG-2 I-frame YUVA 4:2:2:4
  - MPEG-2 IBP 422 and IBP 420
  - Sony XDCAM HD
  - MPEG-4/H.264
  - AVC-Intra Class 50 and Class 100
  - AVID DNxHD*
  - Apple ProRes*
  - RLE
- VFW software codecs
- Proxy formats
  - Microsoft WMV
  - Apple Quicktime
- Audio codecs
  - AAC
  - MPEG1 layer II audio

Advanced ancillary data handling

- Support for extracting and inserting Ancillary Data Packets including:
  - All VANC packets
  - Closed captions (including line 21)
  - Timecode (SMPTE 12-2)
  - AFD and Bar Data (SMPTE 2016)
- Support for reading and writing of ancillary data in various file formats
- Advanced VANC manipulation for closed captions, AFD, and Bar Data
- Tools for analyzing and modifying the values of the Ancillary Data Packets
- Conversion tools for SD and HD closed captions

Versatile Matrox Flex File Reader and Writer

- Built-in file playlist support with multiple clip elements
  - Support for Trim In and Trim Out of the clip
  - Support for mixed file formats and codec formats in one playlist
  - Support for mixed resolution (SD/HD) in one playlist
  - Support for Dynamic Motion Control (DMC) within the playlist
  - Smooth scrubbing and seeking capability
- Seamless, dynamic, frame accurate switching among file readers and among file writers
- Guaranteed video, audio, and ancillary data synchronization for multi-clip and multi-channel play out
- Time delay/instant replay support for file reading and writing
- Advanced file editing tools
  - File appending support on existing clips
  - Faster than real time file transcoding
  - File consolidation without re-encoding the video data
- Auto file format detection of clips with missing or wrong file extensions
- Tools for validation of media files

End-to-end A/V synchronization mechanism

- Tools to synchronize asynchronous inputs
- Time stamping of video and audio buffers for frame-accurate scaling and compositing of multiple layers
- Synchronization of audio capture and playback using system sound card

Matrox Software Compositor

- Infinite-layer compositing
- Shaped or unshaped compositing
- Logo input support

Matrox Color Space Converter

- Bi-directional YUV 4:2:2 and RGB
- Bi-directional YUVA 4:2:2:4 and RGBA

Device control

- 1394
- RS422

SD/HD format conversion

- Aspect ratio conversion
- Color space conversion

Matrox Flex CPU effects

- CPU power used to perform software effects on multiple HD/SD video streams in real time
- 2D DVE with sub-pixel positioning and scaling
  - 1/256 pixel accuracy in 8-bit
  - 1/1024 pixel accuracy in 10-bit
  - High-quality edge softening with linear and non-linear gradients
  - Pixel-based cropping
  - Anchor point support
  - YUV 4:2:2 and YUVA 4:2:2:4
- 3-way selective color correction
- Chroma/luma keying (with and without shadow)
- Fade or dissolve
- Speed changes with field or frame repeat or blending
- Wipes
- Track matte
- Mixed-format multi-camera
- ARGB curves support for color correction
- Timecode

Matrox Flex GPU effects

- GPU used to perform hardware accelerated and/or realtime effects on multiple video streams
- 3D DVE with rounded corners and soft, colored borders
- Alpha mask
- Mask blur
- Mask mosaic
- Shadow effect
- Page curl
- Blur/glow/soft focus
- Anamorphic pan and scan
- Material slab with surface finish
- Four corner pin
- Crystallize
- Old movie
- Shine
- Lens flare
- Ripple
- Impressionist
- Cube
- Twirl
- Advanced mask creation
- Sphere
- Explosion

Development environment

- Operating Systems:
  - Windows XP 32-bit
  - Windows Server 2008 R2
  - Windows 7 32-bit/64-bit
- Microsoft Visual .NET 2010 programming environment

*License agreements with Avid and Apple are required.

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