

Matrox MXO2 Revealed

Here are the answers to the most frequently asked questions about Matrox MXO2.

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How does Matrox MXO2 connect to my Mac?

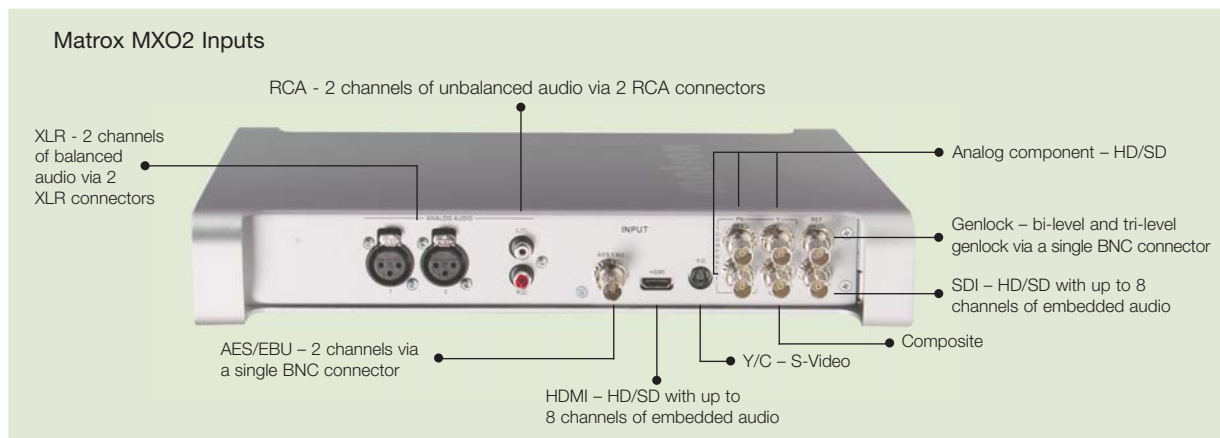
Matrox MXO2 connects to a MacBook Pro via the ExpressCard/34 slot. You may have been told that this precludes you from using the best storage solution but FireWire storage is actually more than adequate for editing multiple layers of SD or compressed HD footage. With Final Cut Pro, FireWire 800 storage lets you transfer up to 6 layers of DV, 8 layers of HDV 1080i, 2 layers of DVCPRO HD 1080i, 2 layers of ProRes 422 1080, or 2 layers of 10-bit uncompressed SD in real time.

Matrox MXO2 connects to a MacPro via the internal PCIe slot. This allows you to use any storage solution. The benefit of using the PCIe connection is that you can work with uncompressed 10-bit HD video as well as any other format including ProRes 422 HQ. You have complete flexibility.

Everything you need to connect to both systems is included in the Matrox MXO2 package.

What inputs does Matrox MXO2 have?

Matrox MXO2 offers a full complement of analog and digital, HD and SD, video and audio inputs. You can attach a variety of devices to Matrox MXO2 and use the control panel to select the active input via software. Matrox MXO2 supports SD analog black burst (bi-level) or HD tri-level sync genlock. It can genlock to any type of video input or to house sync. Timing offset controls can be used to align your video output relative to your external genlock source to compensate for cable delays within your facility.



Does Matrox MXO2 support ProRes 422?

Matrox MXO2 supports ProRes 422 and ProRes 422 HQ. It also gives you the freedom and flexibility to use a wide variety of other codecs and video formats.

Can Matrox MXO2 capture to ProRes 422 and ProRes 422 HQ in real time?

Yes. On systems with a 2.4 GHz or faster Core2 Duo CPU you can capture to SD ProRes 422 and ProRes 422 HQ in real time. On systems with at least two Dual-Core or a Quad-Core 2.4 GHz or faster CPU you can also capture to HD ProRes 422 and ProRes 422 HQ 720P or 1080i in real time.

What other codecs does Matrox MXO2 support?

There are many different codecs and video formats in use today. Unlike some other products, Matrox MXO2 does not force you to use one specific codec. You are free to use the codec that is best for each job, including your camera's native codec.

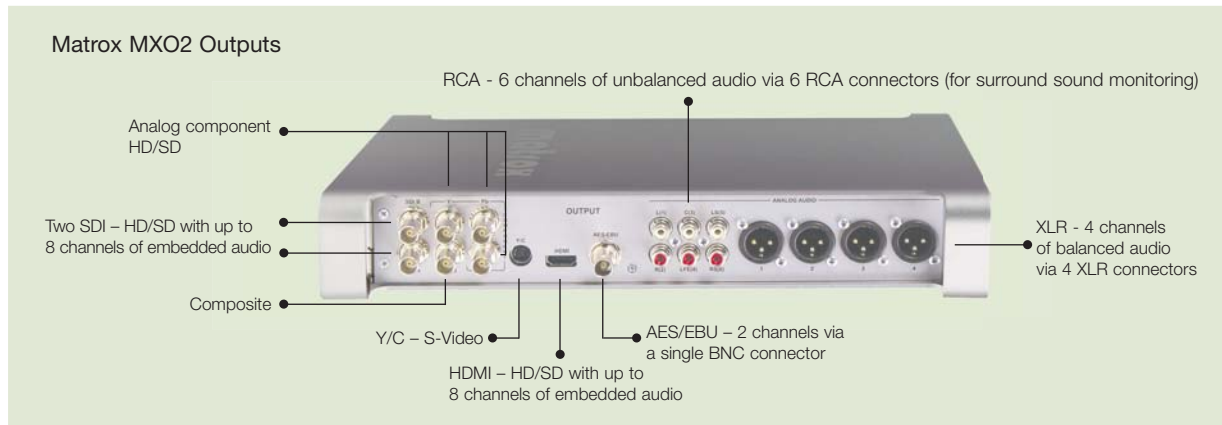
In HD for example, MXO2 supports ProRes, ProRes422 HQ, HDV, DVCPRO HD, XDCAM HD, XDCAM HD422, and XDCAM EX. Since Matrox MXO2 takes full advantage of the high bandwidth of the PCI Express bus (It is not a FireWire 800 device.), it also supports 8- and 10-bit uncompressed workflows.

Can Matrox MXO2 capture to DVCPRO HD in real time?

Yes. Using a 2.4 GHz or faster Core2 Duo CPU, Matrox MXO2 lets you capture to DVCPRO HD at 720p and 1080i in real time.

What output and monitoring capabilities does Matrox MXO2 provide?

Matrox MXO2 gives you complete freedom to customize your video and audio outputs to support the equipment in your facility and the optimal workflow for each project. You can select up to five simultaneous video outputs for print-to-tape and monitoring. The two SDI outputs are always the same, either HD or SD. The SDI, HDMI, and analog outputs are independent. You can choose whether each is HD or SD. Matrox MXO2 provides built-in 5.1 surround sound monitoring via RCA and HDMI so you don't need to invest in additional equipment as you do with some other I/O products. Matrox MXO2 also gives you the flexibility to map any audio track in Final Cut Pro to any audio output.



What can the Matrox MXO2 upscaling and downscaling feature do for me?

Matrox MXO2 provides realtime 10-bit hardware scaling on the outputs. You can upscale from NTSC or PAL to either 720 or 1080. You can downscale 720 or 1080 HD footage to NTSC or PAL.

Matrox MXO2's realtime scaling feature is particularly useful when you need to master both HD and SD because it lets you output both simultaneously from the same timeline. It is also invaluable when you need to proof DVD content from an HD video source or make quick SD rushes from HD material.

Can Matrox MXO2 convert my 720p timeline to 1080i and vice versa in real time?

Yes. Matrox MXO2 provides realtime cross conversion in hardware, saving you hours of rendering when your source material does not match your client's delivery requirements.

I shot at 23.98 fps, but now my client demands 29.97 fps for broadcast, can Matrox MXO2 help?

Yes. Matrox MXO2 provides realtime frame rate conversion in hardware. It can output a 23.98 timeline to tape at 29.97 fps in real time, saving hours of rendering. This feature is also beneficial if you work in 23.98 but your monitoring equipment does not support that frame rate. Matrox MXO2 lets you view your 23.98 fps project at 29.97 fps to ensure correct title placement and accurate color temperature of your 23.98 fps project. Conversion from 23.98 fps to 25 fps is handled by Final Cut Pro and the host.

Can Matrox MXO2 run off standard camera batteries?

Yes. Matrox MXO2 can run off field batteries as well as its power supply. For example, we have validated the Anton Bauer Dionic90 and Dionic160 field batteries for use with MXO2. A special cable adapter is required and can be purchased from your Matrox dealer.

Does Matrox MXO2 provide deck control?

Yes. Matrox MXO2 comes with an RS-422 port to communicate with devices that support this protocol. Frame-accurate capture and print-to-tape with guaranteed audio video sync are provided.

What are the system requirements for MXO2?

Matrox MXO2 requires a Mac system with the following configuration:

- Intel-based Mac Pro or MacBook Pro
- Mac OS X v10.5 or later
- One free PCIe slot on the Mac Pro to install the Matrox PCIe host adapter
- One free ExpressCard/34 slot on the MacBook Pro to install the Matrox PCIe host ExpressCard/34 adapter
- If using MXO2 with Final Cut Studio 2 or Final Cut Studio 3 – 2 GB physical memory (RAM) when working with compressed HD and uncompressed SD sources, or 4 GB physical memory (RAM) when working with uncompressed HD sources
- HDMI monitor that supports 1920×1080 and “dot-by-dot” mode is recommended for 1:1 pixel mapping

Can Matrox MXO2 do anything to preserve HD closed captioning data while I edit?

Yes, you'll no longer need to spend time and money recreating HD captioning data that is typically lost when you edit projects in Final Cut Pro. In release 1.3.1, Matrox MXO2 offers a unique patent pending workflow to capture, playback, and preserve closed captioning data while editing projects in Final Cut Pro. Nothing is destroyed.

The workflow is as follows:

Capture - If you have an HD-SDI video source that contains digital closed captioning data in the VANC (vertical ancillary data space), Matrox MXO2 lets you capture the closed captioning data along with the video using MXO2's HD-SDI input.

Edit – Matrox MXO2 will preserve your closed captioning data throughout the editing process. You can use Final Cut Pro to trim, add effects such as color correction, and add titles or credits while maintaining your closed captioning data. With Matrox MXO2, your original closed captioning data is not destroyed.

Output - When using Matrox MXO2's HD SDI output for playback, you can choose to maintain and output the digital closed captioning data that was captured using MXO2. The closed captioning data is inserted into your video's VANC.

Even if you need to scale on capture or output, you can count on Matrox MXO2 to preserve your closed captioning data throughout your production.

In addition, Matrox has worked with CPC, the closed captioning software leader, to develop an innovative solution that allows the MacCaption HD software to encode and decode HD captions to and from HD decks using Matrox MXO2. You can save time and money by encoding HD captions directly on your video editing system, without any additional hardware and with zero generation loss. It is no longer necessary to send HD master tapes to a separate deck-to-deck hardware caption encoding system. Now, instead of hiring a closed captioning service, you can bill your customers for the extra value you give them in producing their final project with closed captioning included. For more information, visit www.cpcweb.com.

Does Matrox MXO2 offer any benefits for RED users?

Yes. Matrox MXO2 can benefit RED users on location and in the post suite.

Capture, monitor, and playback on set

Matrox MXO2 provides an inexpensive way to manage your RED shoots. It can easily be taken on set and connected to the HD 720p SDI output of the RED camera. You can then capture while shooting; you can monitor on an HD SDI or HDMI monitor while shooting; and you can instantly playback the shot. This saves time and production costs by allowing your DP to instantly approve shots and scenes. At the end of the day, you can quickly create SD and HD dailies or rushes taking advantage of MXO2's realtime 10-bit hardware scaling feature.

Edit, monitor, and output in post

Back in the post suite, you can use Matrox MXO2 to work with 1K and 2K RED timelines in either 16:9 or 2:1 aspect ratio, and output to SD, 720, or 1080 via MXO2's realtime 10-bit hardware scaling feature. This lets you use HD or SD monitoring

equipment you may already own, or you can get great results using inexpensive HDMI monitors. Matrox MXO2 lets you adjust and control an HDMI monitor exactly like you would a broadcast monitor. Controls for hue, chroma, contrast, brightness, and blue-only are provided. This unique control gives you accurate color representation so that you can use your HDMI monitor with Apple Color to begin the first phase of color correction. Matrox MXO2 also makes it easy for you to output EDLs, dailies, and rushes in record time.

Does Matrox MXO2 support XDCAM EX?

Yes, Matrox MXO2 is the only portable solution that lets you log and capture your XDCAM EX files, place them on the timeline, and simply hit play – no transcoding, no drop frames, and no need to convert your files to another codec format.

Can I capture 720p ProRes on a MacBook Pro?

Yes, Matrox MXO2 lets you capture 720p 23.98 from 59.94 sources directly into ProRes 720p 23.98 with a MacBook Pro with an Intel Core2Duo 2.4 or higher CPU.

Can I capture ProRes 422 (LT) on a MacBook Pro?

Yes, Matrox MXO2 lets you capture ProRes 422 (LT) on a MacBook Pro with an Intel Core2Duo 2.4 or higher CPU. (Final Cut Studio 3 and Matrox MXO2 version 1.6 or higher are required.)

Can Matrox MXO2 scale on capture?

Yes, Matrox MXO2 lets you capture to a different format than your source video. You can benefit from MXO2's high-quality 10-bit hardware scaling to conform all your various source footage to a single format up front, before you begin to edit. Currently when you mix formats you spend time rendering your timeline to conform your footage to a single format to share with other editors, send for final color grading, or deliver to your client. With MXO2's ability to scale the input during capture, you save time bypassing the usual rendering step. This feature is also useful for converting SD archive footage for HD broadcast.

Matrox MXO2 will upscale, downscale, or cross-convert your source video to the desired capture format. Through the Matrox Control Panel, you identify the input source then select the resolution in Final Cut Pro that you would like to capture. Matrox MXO2 will scale prior to capturing to your codec of choice. The scaled video can be monitored on all Matrox MXO2 outputs during capture. Options for 4:3 and 16:9 source input from SD sources are available. The following conversions are supported on capture (frame rates must match).

- SD to 720 (not applicable to HDMI input)
- SD to 1080 (not applicable to HDMI input)
- 720 to 1080
- 720 to SD
- 1080 to 720
- 1080 to SD

Can I use Matrox MXO2 with multiple workstations and laptops?

Yes, you can share one Matrox MXO2 across your editing stations. Because Matrox MXO2 is an external device you can easily move it from system to system as the need arises. The "brains" of unit is in the box and it attaches to the MacPro via a small interface card. One interface card comes with the unit and additional cards can be purchased for just \$99 each. For example, if you have a 4-system facility, you can equip all your editors with I/O for under \$2K vs. over \$5000 if you were considering purchasing even mid-range I/O cards for each system. In addition, Matrox MXO2 comes with an ExpressCard/34 adapter to use with a MacBook Pro so you can take your Matrox MXO2 on the road too.

What are the differences between the Matrox MXO2 and Matrox MXO2 Rack?

Matrox MXO2 Rack occupies 2RU in a standard 19"inch rack. It comes with two mounting "ears" so that the unit can be mounted in the rack with the connectors facing the front or back of the rack. It also has genlock loop through and more audio inputs and outputs with up to 7.1 surround sound monitoring. Audio connectivity is as follows:

- 4-in, 8-out balanced XLR
- 4-in, 4-out unbalanced AES/EBU
- 8-in, 8-out SDI and HDMI embedded

How does Matrox MXO2 compare with other products on the market?

Matrox MXO2 vs. AJA IoHD

1. Matrox MXO2 costs substantially less – \$1,595 vs. about \$2,770.
2. Matrox MXO2 is truly portable – fits easily into a laptop bag, can run off a field battery, weighs 3 ½ lbs vs. 9 ½ lbs.
3. Matrox MXO2 is road ready and rugged – built entirely on one circuit board, MXO2 is a robust design whereas IoHD has many stacked circuit boards which can become loose over time.
4. Matrox MXO2 provides direct surround sound monitoring – IoHD has only stereo RCA output for monitoring.
5. Matrox MXO2 works with a variety of codecs, not just ProRes – there is no need to transcode your native XDCAM, P2, HDV, and DV footage, for example.
6. Matrox MXO2 does not use the FW800 bus – the PCIe bus used by MXO2 provides higher bandwidth so you are not limited to just compressed workflows, you can work with all formats including uncompressed 10-bit HD. You also have the flexibility to use popular FireWire storage solutions with MXO2, even on towers.

Matrox MXO2 vs. AJA Io Express

1. Matrox MXO2 provides 10-bit realtime hardware up/down/cross conversion on capture and output – Io Express does not provide scaling.
2. Matrox MXO2 provides analog component, Y/C, and composite I/O – Io Express has only component out.
3. Matrox MXO2 features professional XLR audio: 2-in, 4-out – Io Express does not support XLR audio.
4. Matrox MXO2 features direct 5.1 surround sound monitoring – Io Express provides stereo monitoring only.

Matrox MXO2 vs. AJA Kona3

1. Matrox MXO2 costs substantially less – \$1,595 vs. about \$2,400.
2. Matrox MXO2 is a professional breakout box – with Kona3 the breakout box is separate, increasing your cost by about \$260.
3. Matrox MXO2 works with Mac Pros and MacBook Pros – Kona3 works only with towers.
4. Matrox MXO2 provides analog, SDI, and HDMI I/O – Kona3 has analog preview output and SDI I/O only.
5. Matrox MXO2 provides direct surround sound monitoring and XLR audio – Kona3 has only stereo RCA output for monitoring.

Matrox MXO2 vs. AJA Kona LHe

1. Matrox MXO2 is a professional breakout box – with Kona LHe the breakout box is separate, increasing your cost by about \$290.
2. Matrox MXO2 works with Mac Pros and MacBook Pros – Kona LHe works only with towers.
3. Matrox MXO2 provides HDMI I/O – Kona LHe has no HDMI support.
4. Matrox MXO2 provides direct surround sound monitoring and 4 XLR audio outputs – Kona LHe has only stereo RCA output for monitoring and 2 XLR outputs.
5. Matrox MXO2 provides realtime 10-bit hardware up/down/cross conversion – Kona LHe offers only downscaling.

Matrox MXO2 vs. Blackmagic DeckLink HD Extreme

1. Matrox MXO2 works with Mac Pros and MacBook Pros – DeckLink HD Extreme works only with towers.
2. Matrox MXO2 fits in a single PCIe slot – DeckLink HD Extreme occupies one slot plus an additional bracket for the HDMI option.
3. Matrox MXO2 is a professional breakout box – DeckLink HD Extreme does not have a breakout box option.
4. Matrox MXO2 offers simultaneous HD and SD output – DeckLink HD Extreme does not.
5. Matrox MXO2 provides direct surround sound monitoring and more audio I/Os – DeckLink HD Extreme supports only two channels of audio via AES/EBU, XLR, and HDMI.
6. Matrox MXO2 provides 10-bit realtime hardware up/down/cross conversion – DeckLink HD Extreme depends on your CPU to do all scaling.

Matrox MXO2 vs. Blackmagic Multibrige Pro

1. Matrox MXO2 works with Mac Pros and MacBook Pros – Multibrige Pro works only with towers.
2. Matrox MXO2 provides direct 5.1 surround sound monitoring via RCA, 2-in/4-out XLR, and 8 channels of support for HDMI audio – Multibrige Pro has 2 channels of unbalanced audio output via RCA, 2-in/2-out XLR, and 2 channels of support for HDMI audio.
3. Matrox MXO2 provides 10-bit realtime hardware up/down/cross conversion – Multibrige Pro depends on your CPU to do all scaling, and “center-cut” aspect ratio conversion is not supported.

Matrox MXO2 vs. Blackmagic Multibrige Eclipse

1. Matrox MXO2 costs substantially less – \$1,595 vs. about \$2,275.
2. Matrox MXO2 works with Mac Pros and MacBook Pros – Multibrige Eclipse works only with towers.
3. Matrox MXO2 provides direct 5.1 surround sound monitoring via RCA and 8 channels of support for HDMI audio – Multibrige Eclipse has 2 channels of unbalanced audio output via RCA and 2 channels of support for HDMI audio.
4. Matrox MXO2 provides 10-bit realtime hardware up/down/cross conversion – Multibrige Eclipse depends on your CPU to do all scaling, and “center-cut” aspect ratio conversion is not supported.

Matrox MXO2 vs. Motu V4HD

1. Matrox MXO2 costs substantially less – \$1,595 vs. about \$2,750 plus a separate breakout cable if you want access to more than 4 channels of audio.
2. Matrox MXO2 is truly portable – fits easily into a laptop bag, can run off a field battery, weighs 3 ½ lbs vs. 14 lbs.
3. Matrox MXO2 provides HDMI input and output – V4HD does not have HDMI input.
4. Matrox MXO2 works with a variety of codecs, not just DVCPRO HD and ProRes – there is no need to transcode your native XDCAM, P2, HDV, and DV footage, for example.