

Io<sup>®</sup>



Powerful and Flexible Professional I/O



Io<sup>®</sup>



## Powerful and Flexible Professional I/O

The Io family delivers powerful workflows in a compact form, bringing flexible I/O and high performance to any compatible workstation or laptop.

AJA's Io family of devices brings desktop I/O power to a portable size and shape. Move between desktop and mobile, macOS®, and Windows® with a single device that has all the power and functionality your work requires.

The needs of video professionals continue to evolve. The ability to run full featured software on laptops and smaller form factor computers as well as the growing needs of streaming applications, on-set functionality and the move to 4K and HDR workflows, all create a tremendous need for compact video and audio I/O solutions. AJA answers that call with a range of products that provide desktop level functionality in a portable form factor that's powerful enough to deliver in the edit suite, and sturdy enough to handle life in the field.

Housed in a rugged chassis, Io devices are small and light enough to carry in a backpack along with a laptop, providing fully functional

systems without having to transport large racks of additional gear. All Io devices are compatible with Windows or macOS, offering you the flexibility to work on your desired platform with the software of your choice.

Io models range from support for PCIe to Thunderbolt™ 3, ensuring that you can handle any desktop or laptop connectivity you may face.

The Io family is built to the exacting standards of all AJA hardware and backed by our world class support network, three year international warranty and advance replacement service.



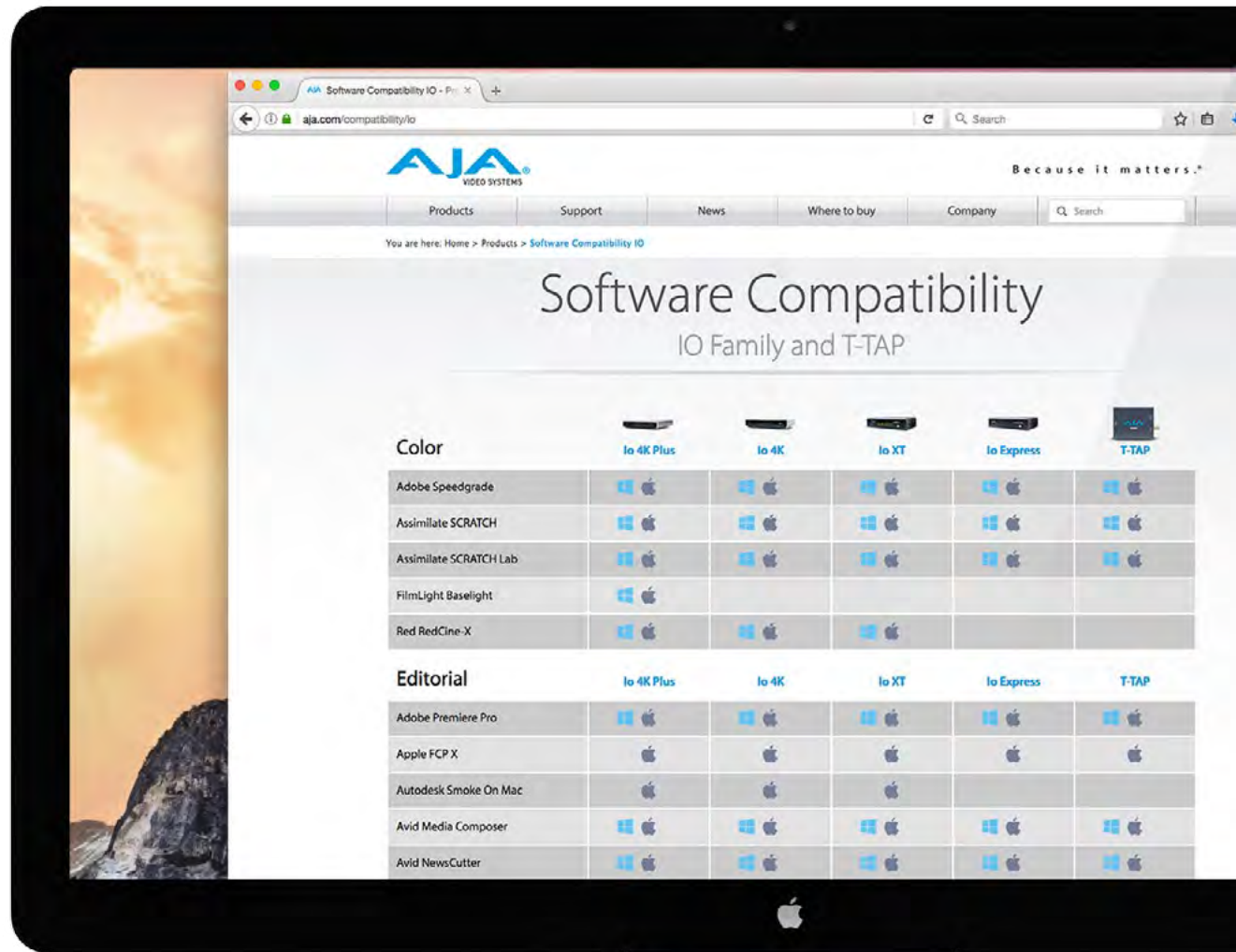


# Software Compatibility

Io's are cross-platform and compatible with a wide range of professional Mac and Windows software applications.

AJA hardware is compatible with a wide range of professional software applications on both macOS and Windows.

AJA drivers and plug-ins create a seamless integration between the native software and AJA's high quality hardware that lets you focus on the work, not the technology.



View our Software Compatibility chart for the following categories:

Color | Editorial | Effects | Streaming/Live Production | Audio | Ingest/Playout | Dailies | Graphics | Test/Measure | Restoration

[View Compatibility Chart](#)



\* For more information on the latest Software Compatibility please visit: [www.aja.com/en/category/edit/compatibility](http://www.aja.com/en/category/edit/compatibility)



# Features Comparison Chart

AJA Io<sup>®</sup> devices are available in four models to meet your workflow needs, all built with AJA's reputation for quality, reliability and support.



Io<sup>®</sup> 4K Plus



Io<sup>®</sup> 4K



Io<sup>®</sup> XT



Io<sup>®</sup> Express

SD (NTSC and PAL)	yes	yes	yes	yes
HD (720p, 1080i, 1080PsF)	yes	yes	yes	yes
2K (2048 x 1556, 2048 x 1080) Dual Link HD, 2K HSDL, 4:4:4 RGB	yes	yes	-	-
4K (3840 x 2160, 4096 x 2160) YCbCr and RGB color spaces	yes	yes	-	-
4K HFR (dependent on Thunderbolt™ bandwidth)	yes	yes	-	-
HDR 10	yes	yes	-	-
HLG*	yes	yes	-	-
SDI I/O	12G/6G/3G x4 bidirectional	3G x4 bidirectional	3G x1 in, x1 out	1.5G x1 in, x1 out
HDMI I/O	HDMI 2.0 input/output	HDMI 1.4 input/output	HDMI 1.3 input/1.4 output	HDMI 1.3 input/output
HD to SD Down-conversion (10-bit, in hardware)	yes	yes	yes	-
SD to HD Up-conversion (10-bit, in hardware)	yes	yes	yes	-
HD to HD Cross-conversion (1080 to/from 720, 10-bit, in hardware)	yes	yes	yes	-
12-bit Analog Video (component, composite, and Y/C)	-	-	output	output
HD Video+Key	yes	yes	yes	-
Analog Audio I/O (balanced XLR over Tascam DB-25 connector)	x8 in/x8 out/x4 in + x4 out	x8 out	x8 out	-
Analog Audio (unbalanced RCA)	-	2-Channel	-	2-Channel
Embedded SDI Audio (via BNC)	input/output 16-Channel	input/output 16-Channel	input/output 16-Channel	input/output 8-Channel
Embedded HDMI Audio	input/output 8-Channel	input/output 8-Channel	input/output 8-Channel	input/output 8-Channel
Professional Genlock	yes	yes	yes	yes
LTC Input/Output	LTC input (shared with reference BNC)	LTC input (shared with reference BNC)	LTC input (shared with reference BNC)	LTC input (shared with reference BNC)
RS-422 Machine Control	yes	yes	yes	yes
Interface	Thunderbolt 3	Thunderbolt 2	Thunderbolt	ExpressCard/PCIe
3 year AJA Warranty	yes, included	yes, included	yes, included	yes, included

\* Please check HDR capabilities with your software manufacturer.

# Io<sup>®</sup> 4K Plus



\$2,495 US MSRP\*

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Io 4K Plus will revolutionize and simplify your portable or desktop high quality I/O capabilities with the speed and bandwidth of Thunderbolt™ 3 via USB-C.

Explore HDR to 4K/UltraHD HFR and deep color support with 12G-SDI and true HDMI 2.0 connectivity.

## Thunderbolt™ 3 Performance from SD to 4K

Io 4K Plus delivers tremendous performance and flexibility for your video and multi-channel audio I/O requirements. Ingest, monitor and output across 12G-SDI (which also supports 6G, 3G, and 1.5G-SDI) and HDMI 2.0 with embedded or analog audio. Power any creative project using a rich professional feature set with support for High Frame Rate, Deep Color and HDR workflows.

The power and performance of Thunderbolt 3 enables Io 4K Plus to transfer your video and audio whether SD, HD, 2K, UltraHD or full 4K over both SDI and HDMI and supports 4K frame rates up to 50p/60p to and from your Thunderbolt 3 equipped Mac or PC. Io 4K Plus has dual Thunderbolt 3 ports enabling daisy chaining for configuration flexibility.

Io 4K Plus hides immense power under its elegant exterior. Aluminum construction provides a solid shield from the rigors of life in the field, while looking beautiful in your edit suite. Io 4K Plus seamlessly integrates with leading production, post, mastering and streaming tools from Apple®, Adobe®, Avid®, Autodesk®, Telestream® and many more.



# Io<sup>®</sup> 4K Plus

## Professional Connectivity

Thunderbolt 3 technology allows even greater bandwidth between host computer systems and properly engineered Thunderbolt devices. AJA's Io 4K Plus takes full advantage of this improved throughput to enable capture, monitoring and output of video signals from 4K over a single 12G or HDMI 2.0 cable, through to SD-SDI over a single 1.5G cable and everything in between.

Io 4K Plus supports 4K, UltraHD, 12G-SDI, 6G-SDI, 3G-SDI, Dual Link, HD-SDI and SD-SDI as well as UltraHD and HD over HDMI 2.0 for both capture and output. The HDMI output accurately displays HDR 10 and HLG for support of emerging HDR workflows. A dedicated, real time, always on HD-SDI output allows Io 4K Plus to simultaneously output to HD monitors when working at 4K or UltraHD resolutions, providing cost effective monitoring options in addition to full resolution outputs.



HDR

## Futureproof

Io 4K Plus has the connectivity required for today's broad bandwidth workflows. 12G-SDI in and out (connections also support 6G, 3G, and 1.5G SDI) as well as HDMI in and out, simplifies your cable runs between cameras, routers, switchers, recorders and VTRs.

Io 4K Plus elegantly handles 4K HFR, and the increased color space and luminance ranges demanded by emerging HDR workflows. Bring your imagery to life with HDR 10 or HLG and a compatible HDMI monitor.



## Small, Yet Powerful

Io 4K Plus makes full use of Thunderbolt 3 speed, power and bandwidth, to enable outstanding capabilities and performance for all your 4K/UltraHD/2K/HD or SD production, post, streaming or live event needs.

All at a size that's small and rugged enough to easily take on-set or in the field. Connect to a Thunderbolt 3 laptop or desktop workstation anywhere and power your performance while dual Thunderbolt 3 ports enable daisy chaining for configuration flexibility, making life easier for you whether in the field or studio.



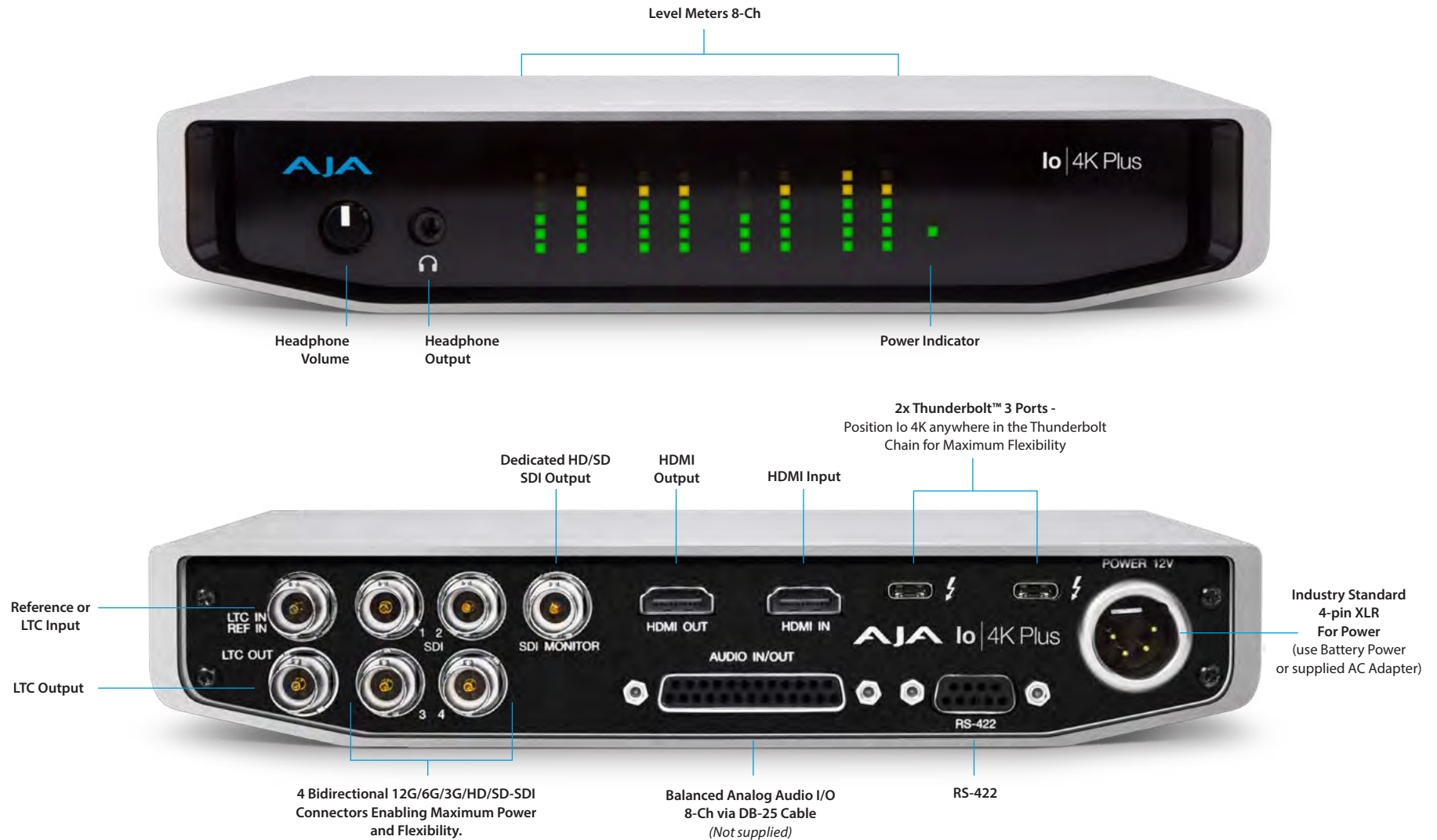
## Proven

Io 4K Plus utilizes AJA's proven driver and plug-in technology for compatibility with a wide range of production, editing, graphics, and broadcast software packages. Capture and monitor directly within your application of choice for a seamless workflow solution wherever your creativity takes you, from set to studio and everywhere in-between.

Io 4K Plus provides the flexibility to use the software tools that are appropriate for your workflow while maintaining consistent, high quality hardware capture, monitoring and output.

# Io<sup>®</sup> 4K Plus

## Connections

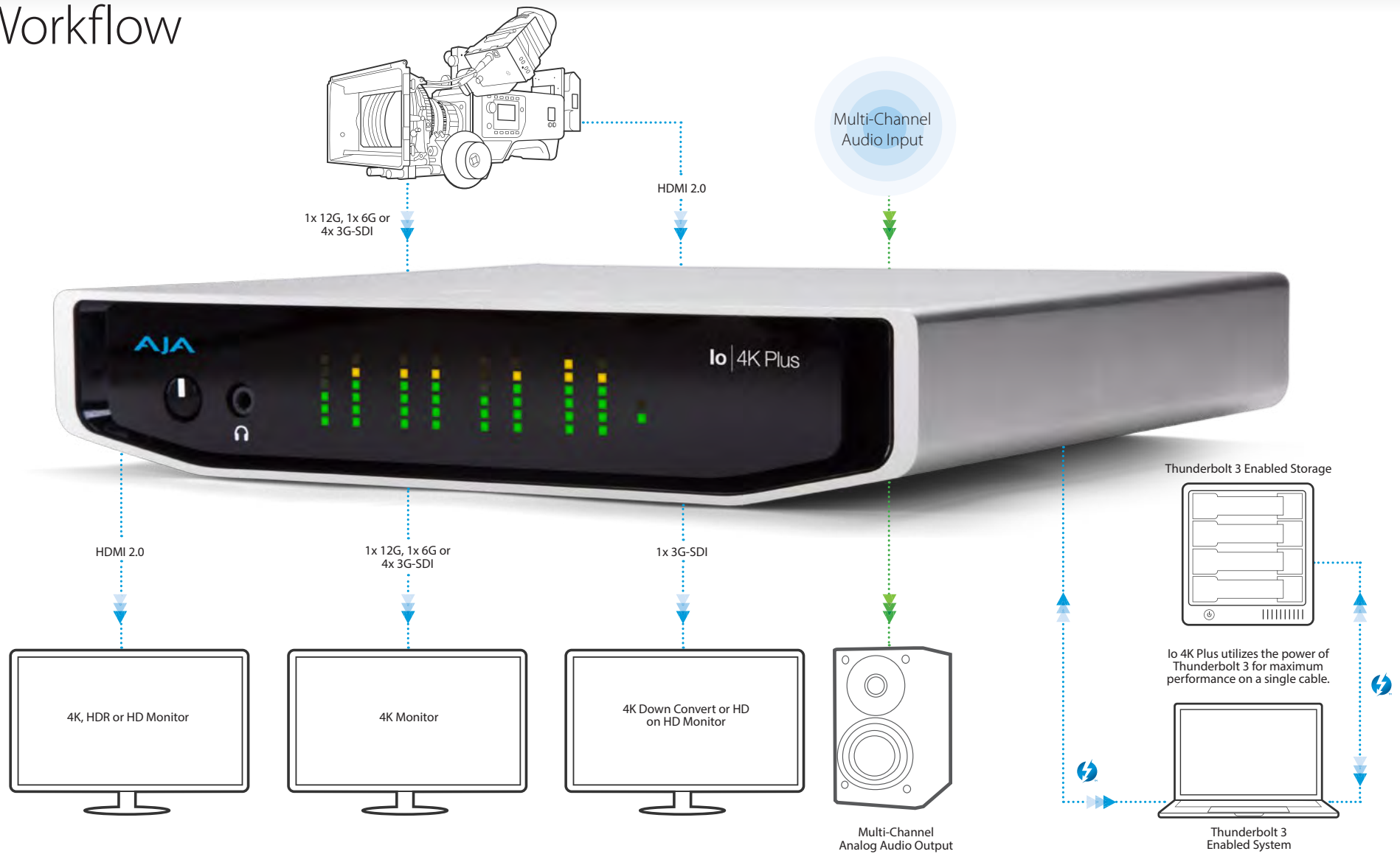


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# Io<sup>®</sup> 4K Plus

## Workflow





# Io<sup>®</sup> 4K Plus

## Tech Specs

### Video Formats

- (4K) 4096 x 2160p 23.98, 24, 25, 29.97, 30, 47.95, 48, 50, 59.94, 60
- (4K) 4096 x 2160PsF 23.98, 24, 25
- (UltraHD) 3840 x 2160p 23.98, 24, 25, 29.97, 30, 47.95, 48, 50, 59.94, 60
- (UltraHD) 3840 x 2160PsF 23.98, 24, 25
- (2K) 2048 x 1080p 23.98, 24, 25, 29.97, 30, 47.95, 48, 50, 59.94, 60
- (2K) 2048 x 1080PsF 23.98, 24, 25, 29.97, 30
- (HD) 1080p 23.98, 24, 25, 29.97, 30, 47.95, 48, 50, 59.94, 60
- (HD) 1080PsF 23.98, 24, 25, 29.97, 30
- (HD) 1080i 50, 59.94, 60
- (HD) 720p 50, 59.94, 60
- (SD) 625i 25
- (SD) 525i 29.97

Note: High Frame Rate capabilities are dependent on host system attributes. Not all systems and configurations will support all frame rates.

### Video Inputs

- 12G-SDI, SMPTE-2082, 12-bit\*, 10-bit and 8-bit
- 6G-SDI, SMPTE-2081, 10-bit and 8-bit
- 3G-SDI, SMPTE-259/292/296/424/425, 12-bit\*, 10-bit and 8-bit
  - 4K/UltraHD 4:4:4 (4 x BNC)
- 1.5G-SDI, SMPTE 372M, Dual Link HD 4:4:4 (2 x BNC), 12-bit\*, 10-bit and 8-bit
- 1.5G-SDI, SMPTE 292M, Single Link 4:2:2 (1 x BNC), 10-bit and 8-bit
- HDMI v2.0
  - 30/36 bits/pixel, RGB or YUV, 6 Gbps.
  - 4K, UltraHD, 2K, HD and SD with HFR support up to 60p (4:2:2), 10-bit and 8-bit

\*Bit depth support is application dependent. Check with your software manufacturer for compatibility.

Note: 12G-SDI, 6G-SDI configured outputs support UltraHD / 4K only

### Video Outputs

- 12G-SDI, SMPTE-2082, 12-bit\*, 10-bit and 8-bit
- 6G-SDI, SMPTE-2081, 10-bit and 8-bit
- 3G-SDI, SMPTE-259/292/296/424, 12-bit\*, 10-bit and 8-bit
  - 4K/UltraHD 4:4:4 (4 x BNC)
- 1.5G-SDI, SMPTE 372M, Dual Link HD 4:4:4 (2 x BNC), 12-bit\*, 10-bit and 8-bit
- 1.5G-SDI, SMPTE 292M, Single Link 4:2:2 (1 x BNC), 10-bit and 8-bit
- HDMI v2.0
  - 30/36 bits/pixel, RGB or YUV, 6 Gbps
  - 4K, UltraHD, 2K, HD and SD with HFR support up to 60p (4:2:2), 10-bit and 8-bit
  - HDR 10 Support - HDR Infoframe metadata, compatible with HDMI 2.0a/CTA-861.3
  - HLG Support - compatible with HDMI 2.0b/CTA-861-G\*\*

\*Bit depth support is application dependent. Check with your software manufacturer for compatibility.

\*\*HLG support is application dependent. Check with your software manufacturer for compatibility.

Note: 12G-SDI, 6G-SDI configured outputs support UltraHD/4K only

### Audio Inputs Digital

- 16-Channel, 24- and 16-bit SDI embedded audio, 48 kHz sample rate, synchronous
- 8-Channel, 24- and 16-bit HDMI embedded audio, 48 kHz sample rate, synchronous

### Audio Inputs Analog

- 8-Channel, 24 and 16-bit D/A analog audio, 48 kHz sample rate, balanced, using industry standard 8x XLR on DB-25 breakout cable (cable not included)
- +24 dBu full scale digital (0dBFS)
- +/- 0.2 dB 20 to 20 kHz frequency response
- Up to 8 channels can be used (if all 8 set exclusively for input)
- Up to 4 channels can be used (if input and output is enabled simultaneously)

### Audio Outputs Digital

- 16-Channel, 24-bit SDI embedded audio, 48 kHz sample rate, synchronous
- 8-Channel, 24-bit HDMI embedded audio, 48 kHz sample rate, synchronous

### Audio Outputs Analog

- 8-Channel, 24-bit D/A analog audio, 48 kHz sample rate, balanced, using industry standard 8 x XLR on DB-25 breakout cable (cable not included)
- +24 dBu full scale digital (0dBFS)
- +/- 0.2 dB 20 to 20 kHz frequency response
- Up to 8 channels can be used (if all 8 set exclusively for output)
- Up to 4 channels can be used (if input and output is enabled simultaneously)

### Downstream Keyer

- Supports graphics with alpha channel over video, matte or framebuffer, or framebuffer content over incoming video or matte
- Down-Conversion 4K/UltraHD
- Real time, dedicated 4K down-conversion output (1 x BNC)
- 4K to 2K down-conversion
- UltraHD to HD down-conversion

### Reference and LTC I/O

- 1 x BNC LTC output
- 1 x BNC assignable to Reference video or LTC input

### Reference

- Analog Color Black (1V) or Composite Sync (2 or 4V) or HD Tri-Level Sync (1V)
- Nonterminating

### Electrical Interface

- Thunderbolt 3 (2 x)

### Machine Control

- RS-422, Sony 9-pin protocol
- 9-pin D-connector pinout is as follows:

1	GND
2	RX-
3	TX+
4	GND
5	No Connection
6	GND
7	RX+
8	TX-
9	GND
Shell	GND

### Size (w x d x h)

- 8.74" x 8.11" x 1.65" (222mm x 206mm x 42mm)

### Weight

- 3.4 lbs (1.5 kg)

### Power (device only)

- 10-20V, 30W typical, 33W max, 70W max with USB-C power delivery to external devices

### Environment

- Safe Operating Temperature Range: 0 to 40C (32xF to 104xF)
- Safe Storage Temperature (Power OFF): -40 to 60 degrees C (-40 to 140 degrees F)
- Operating Relative Humidity: 10-90% noncondensing
- Operating Altitude: <3,000 meters (<10,000 feet)

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# Io<sup>®</sup> 4K



\$1,995 US MSRP\*

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Extend your portable power with high quality 4K, UltraHD, 2K and HD I/O powered by Thunderbolt 2 technology.

## 4K Performance and Flexibility

Io 4K is a powerful workhorse for capture, monitoring and output offering a full set of professional video and audio connectivity with support for 4K and UltraHD devices. The power of Thunderbolt 2 enables Io 4K to handle a wide range of formats from SD to HD, UltraHD and full 4K over both 3G-SDI and HDMI with High Frame Rate (HFR) support up to 60p, plus HDR 10 and HLG support for emerging HDR workflows.

The dual Thunderbolt 2 ports on Io 4K allow you to daisy chain additional peripherals such as high resolution displays and high capacity storage with plenty of flexibility.

Io 4K's elegant, aluminum construction is strong enough to survive the rigors of life in the field, while looking beautiful in your edit suite. Io 4K is a solid and trusted solution for artists and editors using leading post-production and delivery tools from Apple<sup>®</sup>, Adobe<sup>®</sup>, Avid<sup>®</sup>, Autodesk<sup>®</sup>, Telestream<sup>®</sup> and many more.



# Io<sup>®</sup> 4K

## Professional Connectivity

Thunderbolt 2 technology provides high speed connectivity between host computer systems and properly engineered Thunderbolt devices. AJA's Io 4K takes full advantage of this throughput to allow capture and output of video signals from SD to 4K and everything in between.

Io 4K supports 4K, UltraHD, 3G-SDI, Dual Link, HD-SDI and SD-SDI as well as UltraHD and HD over HDMI 1.4a for both capture and output. The HDMI output is also able to accurately display HDR 10, HLG to support emerging HDR workflows. A dedicated, real time, always on HD-SDI output allows Io 4K to simultaneously output to HD monitors when working at 4K or UltraHD resolutions, providing cost effective monitoring options in addition to full resolution outputs.



### Flexible

Io 4K offers solid support for formats all the way from SD to 4K. The real time down-converter also means you can work at higher resolutions and easily create lower resolution deliverables without the need to recapture or re-edit.

Io 4K's support for emerging HDR workflows. HDR offers increased dynamic range, bringing your imagery to life on HDR 10, HLG compatible HDMI displays.



### Robust

Thunderbolt 2 technology provides a high speed I/O interface between host computer systems and high quality Thunderbolt devices. Io 4K capitalizes on this speed to allow up to 4K signals to be captured and output.

With dual Thunderbolt 2 ports, compatible with Thunderbolt 2, Io 4K can daisy chain additional devices together such as high resolution displays and high capacity storage for a complete, portable solution that's powerful enough to meet the demands of professional production.



### Compatible

AJA's industry proven drivers and application plug-ins provide tight integration with leading postproduction and delivery tools such as Apple Final Cut Pro<sup>®</sup> X, Adobe Creative Cloud<sup>®</sup>, AJA Control Room<sup>™</sup>, Avid<sup>®</sup>, Telestream Wirecast<sup>®</sup> and more.

Io 4K gives you the flexibility to use the software tools that are appropriate for your workflow while maintaining consistent, high quality hardware capture and output that's ideal for your most demanding projects.

# Io<sup>®</sup> 4K

## Connections



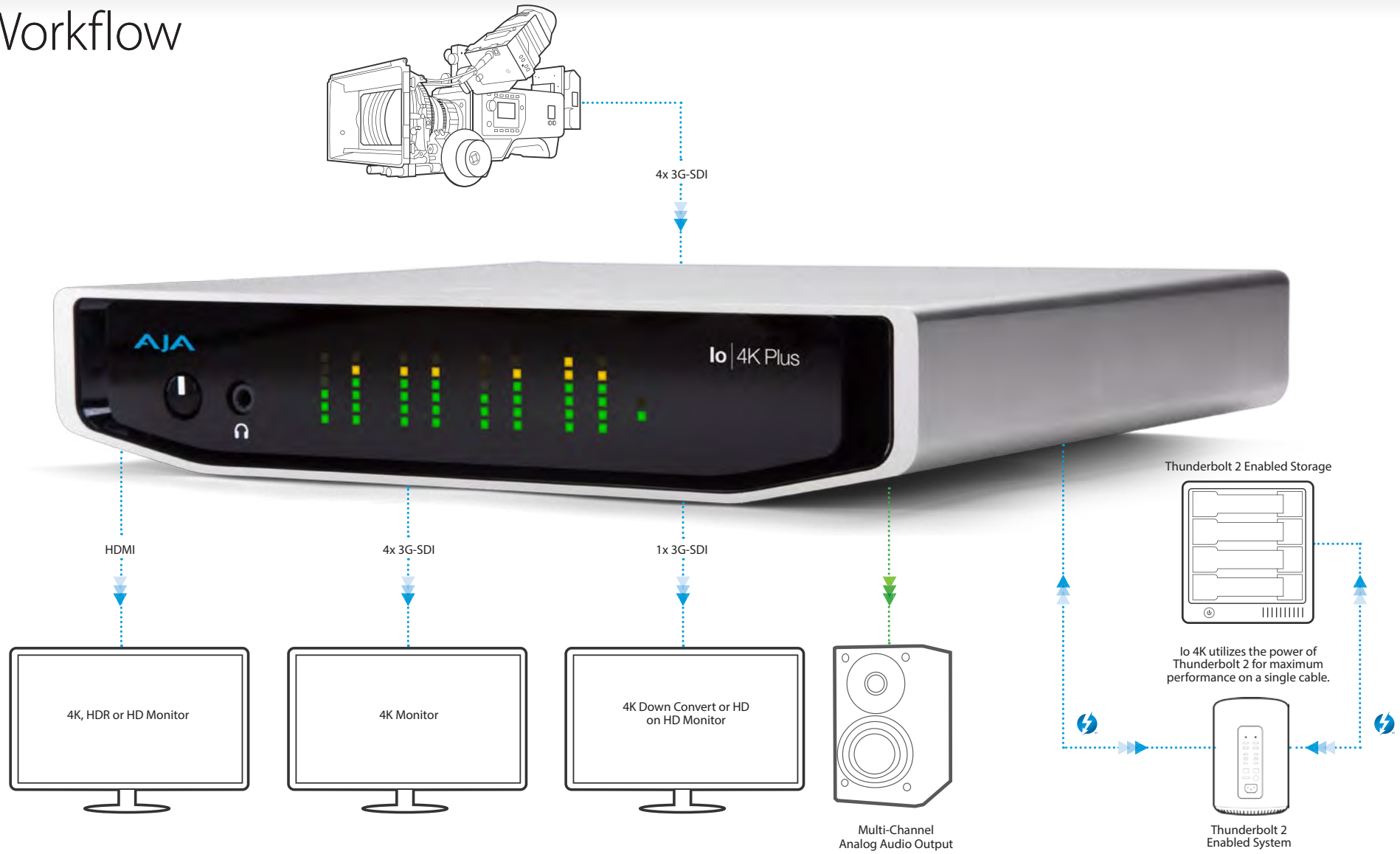
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# Io<sup>®</sup> 4K

## Workflow



## Tech Specs

### Video Formats

- (4K) 4096 x 2160P 23.98, 24, 25, 29.97, 30, 50, 59.94, 60
- (4K) 4096 x 2160PsF 23.98, 24, 25
- (UltraHD) 3840 x 2160P 23.98, 24, 25, 29.97, 30, 50, 59.94, 60
- (UltraHD) 3840 x 2160PsF 23.98, 24, 25
- (2K) 2048 x 1080p 23.98, 24, 25, 29.97, 30, 50, 59.94, 60
- (2K) 2048 x 1080PsF 23.98, 24, 25, 29.97, 30
- (HD) 1080i 50, 59.94, 60
- (HD) 1080PsF 23.98, 24, 25, 29.97, 30
- (HD) 1080p 23.98, 24, 25, 29.97, 30, 50, 59.94, 60
- (HD) 720p 50, 59.94, 60
- (SD) 625i 25
- (SD) 525i 29.97

Note: High Frame Rate support is dependent on Thunderbolt speed. Not all systems will support all frame rates.

### Video Inputs

- 3G-SDI, SMPTE-259/292/296/424/425, 8-bit, 10-bit and 12-bit\*
- 4K/UltraHD 4:4:4 (4 x BNC)
- 2K HSDL (High Speed Data Link) 4:4:4 (2 x BNC)
- Dual Link HD 4:4:4 (2 x BNC)
- Single Link 4:2:2 or 4:4:4 (1 x BNC)
- HDMI v1.4
  - 30/36 bits/pixel, RGB or YUV, 2.25 Gbps.
  - UltraHD, 2K, HD and SD

\*Bit depth support is application dependent. Check with your software manufacturer for compatibility.

### Video Outputs

- 3G-SDI, SMPTE-259/292/296/424, 8-bit, 10-bit and 12-bit\*
- 4K/UltraHD 4:4:4 (4 x BNC)
- 2K HSDL (High Speed Data Link) 4:4:4 (2 x BNC)
- Dual Link HD 4:4:4 (2 x BNC)
- Single Link 4:2:2 or 4:4:4 (1 x BNC)
- HDMI v1.4b
  - 30/36 bits/pixel, RGB or YUV, 2.25 Gbps
  - 2K, HD, and SD, UltraHD with HFR support up to 60p 4:2:0
  - HDR 10 Support - HDR Infoframe metadata, in accordance with HDMI 2.0a/CTA-861.3
  - HLG Support - in accordance with HDMI 2.0b/CTA-861-G\*\*

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\*\* HLG support is application dependent. Check with your software manufacturer for compatibility.

### Audio Inputs Digital

- 16-Channel, 16- and 24-bit SDI embedded audio, 48 kHz sample rate, synchronous
- 8-Channel, 16- and 24-bit HDMI embedded audio, 48 kHz sample rate, synchronous

### Audio Outputs Digital

- 16-Channel, 16- and 24-bit SDI embedded audio, 48 kHz sample rate, synchronous
- 8-Channel, 16- and 24-bit HDMI embedded audio, 48 kHz sample rate, synchronous

### Audio Outputs Analog

- 8-Channel, 16- and 24-bit D/A analog audio, 48 kHz sample rate, balanced, using industry standard 8 x XLR on DB-25 breakout cable (Breakout cable not included)
- +24 dBu full scale digital (0dBFS)
- +/- 0.2 dB 20 to 20 kHz frequency response

### Downstream Keyer

- Supports graphics with alpha channel over video, matte or framebuffer, or framebuffer content over incoming video or matte

### Down-Conversion

- 4K/UltraHD
  - Real time, dedicated 4K down-conversion output (1 x BNC)
  - 4K to 2K down-conversion
  - UltraHD to HD down-conversion

### Reference and LTC I/O

- 1 x BNC LTC output
- 1 x BNC assignable to Reference video or LTC input

### Reference

- Analog Color Black (1V) or Composite Sync (2 or 4V)
- Nonterminating

### Electrical Interface

- Thunderbolt 2 (2 x)

### Machine Control

- RS-422, Sony 9-pin protocol
- 9-pin D-connector pinout is as follows:

1	GND
2	RX-
3	TX+
4	GND
5	No Connection
6	GND
7	RX+
8	TX-
9	GND
Shell	GND

### Size (w x d x h)

- 8.74" x 7.09" x 1.65" (222mm x 180mm x 42mm)

### Weight

- 3.1 lbs (1.5 kg)

### Power

- 10-20W, 23W typical, 28W max

### Environment

- Safe Operating Temperature Range: 0 to 35C (32F to 95F)
- Safe Storage Temperature (Power OFF): -40 to 60 degrees C (-40 to 140 degrees F)
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# Io<sup>®</sup> XT



\$1,495 US MSRP\*

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Turn any Thunderbolt enabled system into a professional editing station for uncompressed HD and SD 4:2:2 and 4:4:4 workflows.

## Power and Portability

Get desktop level performance and laptop portability without compromise.

Io XT is the ideal portable companion for professional video capture and playback for postproduction and on set applications.

Compact, portable and powerful, Io XT is loaded with features including 3G/Dual Link/HD/SD-SDI, Component Analog, and HDMI connectivity, to bring true desktop level power to any Thunderbolt enabled system, with full uncompressed HD and SD 4:2:2 and 4:4:4 capable video and audio connectivity.

Io XT connects with a single Thunderbolt cable and provides a second Thunderbolt connector for daisy chaining other Thunderbolt devices, such as storage, making it ideal for use on-set or in the edit suite.

Io XT provides complete compatibility with the most popular NLE programs, codecs, video formats, and more. Io XT also includes AJA's industry best drivers and application plug-ins for integrated workflows with software from Apple, Avid, Adobe, Autodesk, and many more.



## Professional Connectivity

Io XT can handle whatever equipment you are working with. With a full complement of 3G/HD/SD-SDI and HDMI I/O, HD/SD analog video output, reference and LTC inputs, and digital and analog audio, Io XT opens up new possibilities for what can be considered a professional editing system. No longer confined to desk-side tower systems, the combination of Io XT and any Thunderbolt enabled computer has all the capability and connectivity of a larger system but in a more portable size.



### Portable

The latest generation computers feature powerful Thunderbolt interfaces, offering 10Gbps and above in bandwidth. Taking advantage of this flexible interface, Io XT is the ideal portable companion for lightning fast video capture and playback for all post production and on-set applications.

Compact, portable and powerful, Io XT is loaded with high-end features including 3G/ Dual Link/HD/SD-SDI, Component Analog and HDMI connectivity, to bring true desktop level power to any Thunderbolt enabled system with full uncompressed HD and SD 4:2:2 and 4:4:4 capable video and audio connectivity.



### Versatile

Io XT connects to your computer with a single Thunderbolt cable and provides a second Thunderbolt connector for daisy chaining other devices, such as storage or displays, making it perfect for use on set, or in the edit suite.

Disconnecting a device in the middle of a Thunderbolt chain will disconnect all devices that come after it. On some jobs, the drive array may be moved frequently, so it would be best to have that at the end of the chain, while other times it may be a monitor that is being removed periodically. Io XT's dual Thunderbolt ports ensure that no matter what configuration you need, the system can continue to operate without interruption.



### High Quality

Io XT utilizes AJA's high quality up, down, cross-conversion hardware, the same found in our flagship F52 converter. Conversion can be done either on capture or on output. On capture, this allows you to take mismatched source media and bring it all to a common resolution so individual shots don't have to be scaled in the edit.

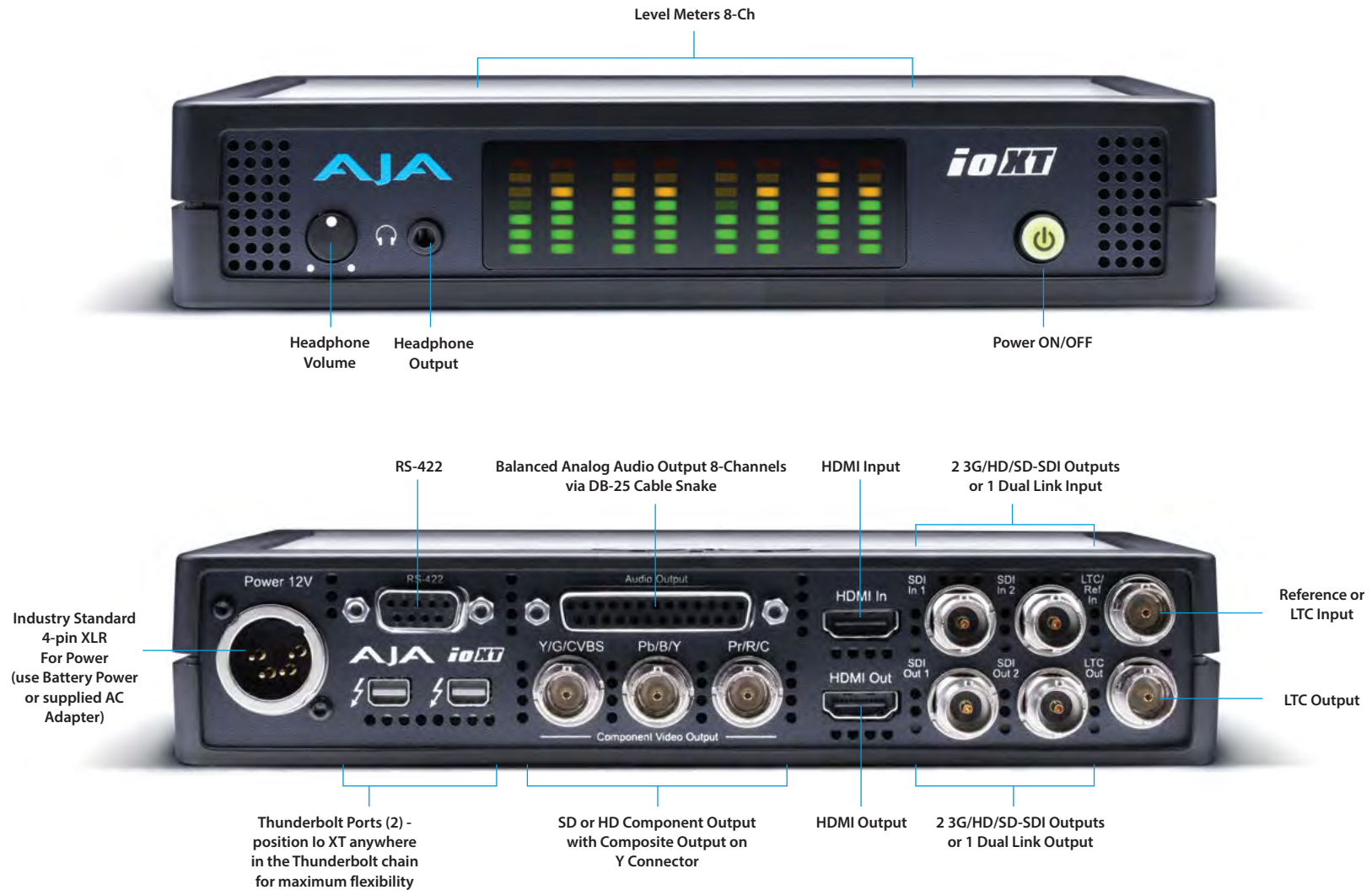
Likewise, Io XT can perform conversions during output to adapt to different monitoring or layout configurations without having to change the native editorial timeline.

Uniquely, the Io XT can cross-convert 720p 23.98 to 1080PsF 23.98, which is particularly valuable in today's multi-format HD post environment.



# Io<sup>®</sup> XT

## Connections

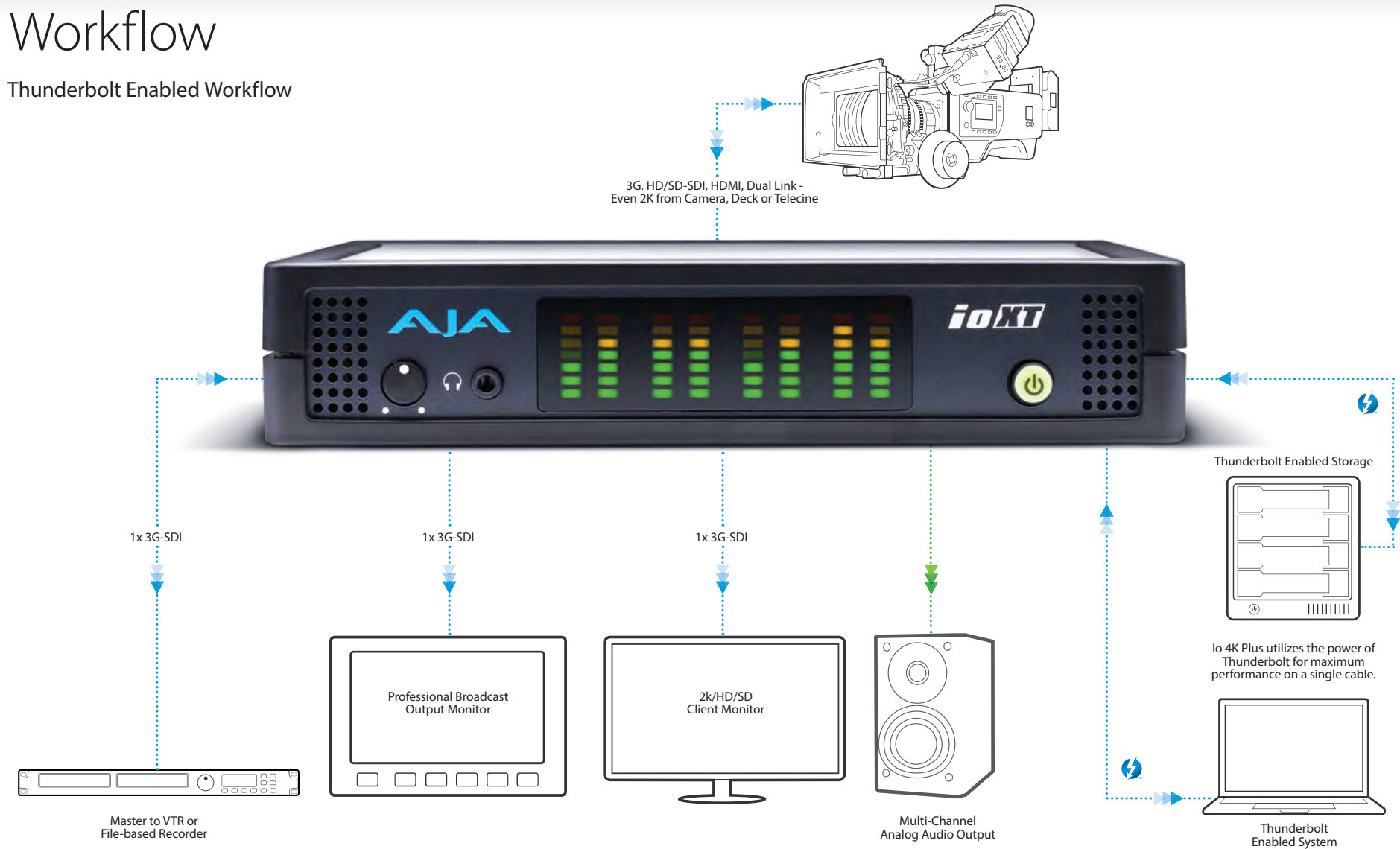


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## Workflow

### Thunderbolt Enabled Workflow



Connect your digital sources via SD/HD-SDI or HDMI for capture and editing via a wide variety of formats. Master to any digital or analog device through high quality professional SDI, HDMI or component outputs.



## Tech Specs

### Video Formats

- (2K) 1080p 23.98, 24, 25
- (2K) 1080PsF 23.98, 24, 25
- (HD) 1080i 25, 29.97, 30
- (HD) 1080PsF 23.98, 24, 25, 29.97, 30
- (HD) 1080p 23.98, 24, 25, 29.97, 30, 50, 59.94, 60
- (HD) 720p 23.98\*, 24\*, 25\*, 29.97\*, 30\*, 50, 59.94, 60
- (SD) 625i 25
- (SD) 525i 23.98\*, 29.97

\*These formats are dependent on specific software functionality and are not normal over the wire formats

### Video Input Digital

- 3G-SDI, SMPTE-259/292/296/424, 10-bits
- Dual Link HD 4:4:4, (2 x BNC)
- Single Link 4:2:2 or 4:4:4 (1 x 3G BNC)
- HDMI v1.3
- 1D LUT Support (Mac and PC)

### Video Output Digital

- 3G-SDI, SMPTE-259/292/296/424
- Dual Link HD 4:4:4, (2 x BNC)
- Single Link 4:2:2 or 4:4:4 (1 x BNC)
- HDMI v1.4, 30/36 bits/pixel, RGB or YUV, 2.25 Gbps

### Video Output Analog

- Composite/S-Video (Y/C) (1 x BNC/2 x BNC+adapter)
- NTSC, NTSCJ, PAL
- Component (3 x BNC)
- HD: YPbPr, RGB
- SD: YPbPr, RGB (component mode)
- SMPTE/EBU N10, Betacam 525 line, Betacam 525J, RGB
- 12-bit D/A, 8x oversampling
- +/- .2 dB to 5.0 MHz Y Frequency Response
- +/- .2 dB to 1 MHz C Frequency Response
- .5% 2T pulse response
- <1% Diff Phase
- <1% Diff Gain
- <1 ns Y/C delay inequity

### Audio Input Digital

- 16-Channel, 16- and 24-bit SMPTE-259 SDI embedded audio, 48 kHz sample rate, synchronous
- 8-Channel, 16- and 24-bit HDMI embedded audio, 48 kHz sample rate, synchronous

### Audio Output Digital

- 16-Channel, 16- and 24-bit SMPTE-259 SDI embedded audio, 48 kHz sample rate, synchronous
- 8-Channel, 16 and 24-bit HDMI embedded audio, 48 kHz sample rate, synchronous

### Audio Output Analog

- 8-Channel, 16 and 24-bit D/A analog audio, 48 kHz sample rate, balanced, using industry standard 8 x XLR on DB-25 breakout cable (Breakout cable NOT included)
- +24dbu Full Scale Digital (0dbFS)
- +/- 0.2db 20 to 20 kHz frequency response

### Downstream Keyer

- Supports graphics with alpha channel over video, matte or framebuffer, or framebuffer content over incoming video or matte

### Up-conversion

- Hardware 10-bit
- Anamorphic: fullscreen
- Pillarbox 4:3: results in a 4:3 image in center of screen with black sidebars
- Zoom 14:9: results in a 4:3 image zoomed slightly to fill a 14:9 image with black side bars
- Zoom Letterbox: results in image zoomed to fill full screen
- Zoom Wide: results in a combination of zoom and horizontal stretch to fill a 16:9 screen; this setting can introduce a small aspect ratio change

### Down-conversion

- Hardware 10-bit
- Anamorphic: fullscreen
- Letterbox: image is reduced with black top and bottom added to image area with the aspect ratio preserved
- Crop: image is cropped to fit new screen size

### Cross-conversion

- Hardware 10-bit
- 1080i to 720p
- 720p to 1080i
- 720p to 1080PsF

### SD to SD aspect ratio conversion

- Letterbox: This transforms SD anamorphic material to a letterboxed image
- H Crop: Will produce a horizontally stretched effect on the image; transforms anamorphic SD to full frame
- SD Pillarbox: Will produce an image in the center of the screen with black borders on the left and right sides and an anamorphized image in the center
- V Crop: Will transform SD letterbox material to an anamorphic image

### Reference Input or LTC Input

- 1 x BNC assignable to Reference video or LTC input

### Reference

- Analog Color Black (1V) or Composite Sync (2 or 4V)
- Nonterminating

### Electrical Interface

- Thunderbolt 1 (2 x)

### Machine Control

- RS-422, Sony 9-pin protocol
- 9-pin D-connector pinout is as follows:

1	GND
2	RX-
3	TX+
4	GND
5	No Connection
6	GND
7	RX+
8	TX-
9	GND
Shell	GND

### Size (w x d x h)

- 8.74" x 7.09" x 1.65" (222mm x 180mm x 42mm)

### Weight

- 1.75 lbs (0.9 kg)

### Power

- 10-20W, 18W typical, 22W max

### Environment

- Safe Operating Temperature: 0 to 40 degrees C (32 to 104 degrees F)
- Safe Storage Temperature (Power OFF): -40 to 60 degrees C (-40 to 140 degrees F)
- Operating Relative Humidity: 10-90% noncondensing
- Operating Altitude: <3,000 meters (<10,000 feet)

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# Io<sup>®</sup> Express

\$995 US MSRP\*

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Io Express delivers compact, powerful I/O for macOS and Windows, laptops or desktops.

## Cross-Platform HD/SD SDI and HDMI I/O

Bring the power of desktop I/O anywhere you go with Io Express.

Io Express is the perfect macOS<sup>®</sup> or Windows<sup>®</sup> interface for anyone who needs a quality portable monitoring and mastering solution when working with Final Cut Pro X, Avid Media Composer<sup>®</sup>, Symphony<sup>®</sup>, Newscutter<sup>®</sup>, Adobe Creative Cloud<sup>®</sup>, and more.

Featuring full 10-bit, broadcast quality HD to SD hardware down-conversion and automatic HD/SD 12-bit component analog output, Io Express offers conversion flexibility all the time - during ingest or playback. If you work with a wide variety of formats, frame rates and video/audio sources, Io Express provides the connectivity you need. With its small footprint it offers big features, like 10 or 8-bit uncompressed video, HDMI I/O, HD/SD-SDI I/O with 8-Channels of

embedded audio, analog component video (SD/HD) or composite output, 2-Channel unbalanced audio output, and broadcast quality hardware-based down-conversion for flexible post production. The HDMI I/O is v1.3a at 30 bits per pixel, providing ideal support for the very latest 10-bit monitors.

Io Express integrates with other equipment and software easily, regardless of platform. The same Io Express unit can be used with Windows, or Mac desktops or laptops - giving users the flexibility to choose how they want to work in each scenario. A rear panel PCIe connector enables use with laptops via an ExpressCard, or with a desktop workstation via a PCIe card.





# Io<sup>®</sup> Express

## Powerful Connectivity

Io Express provides a wide variety of formats, frame rates and video/audio sources for the connectivity you need. For digital video, Io Express features HDMI 1.3a I/O plus 3G/HD/SD-SDI I/O. In addition, there are connections for genlock or LTC input and a loop through output, and component SD/HD analog video output. The high quality deep color HDMI input and output provides complete color representation when you need it, while allowing you to interface with HDMI camcorders and HD monitors. Io Express also offers support for both 8-Channel HDMI and SDI embedded digital audio or 2 channels of unbalanced analog audio via two RCA connectors. For multi-channel audio mastering, the 8-Channel SDI embedded 16-bit or 24-bit 48 kHz audio provides pristine quality.



## Software Compatibility

Io Express gives creative professionals the freedom to work with the software of their choice.

For information on the latest Software Compatibility please visit: [www.aja.com/compatibility/io](http://www.aja.com/compatibility/io)



## Professional Connectivity

Many situations require the editing system to be locked in sync with other devices. Io Express can accept a reference signal, which ensures it is locked to any necessary devices for the best quality capture and output. This reference signal can then be passed on to other devices.

Users can select whether timecode is read off embedded signals or from an external input so that the proper timecode is always associated with any captured clips.



## Cross-Platform Flexibility

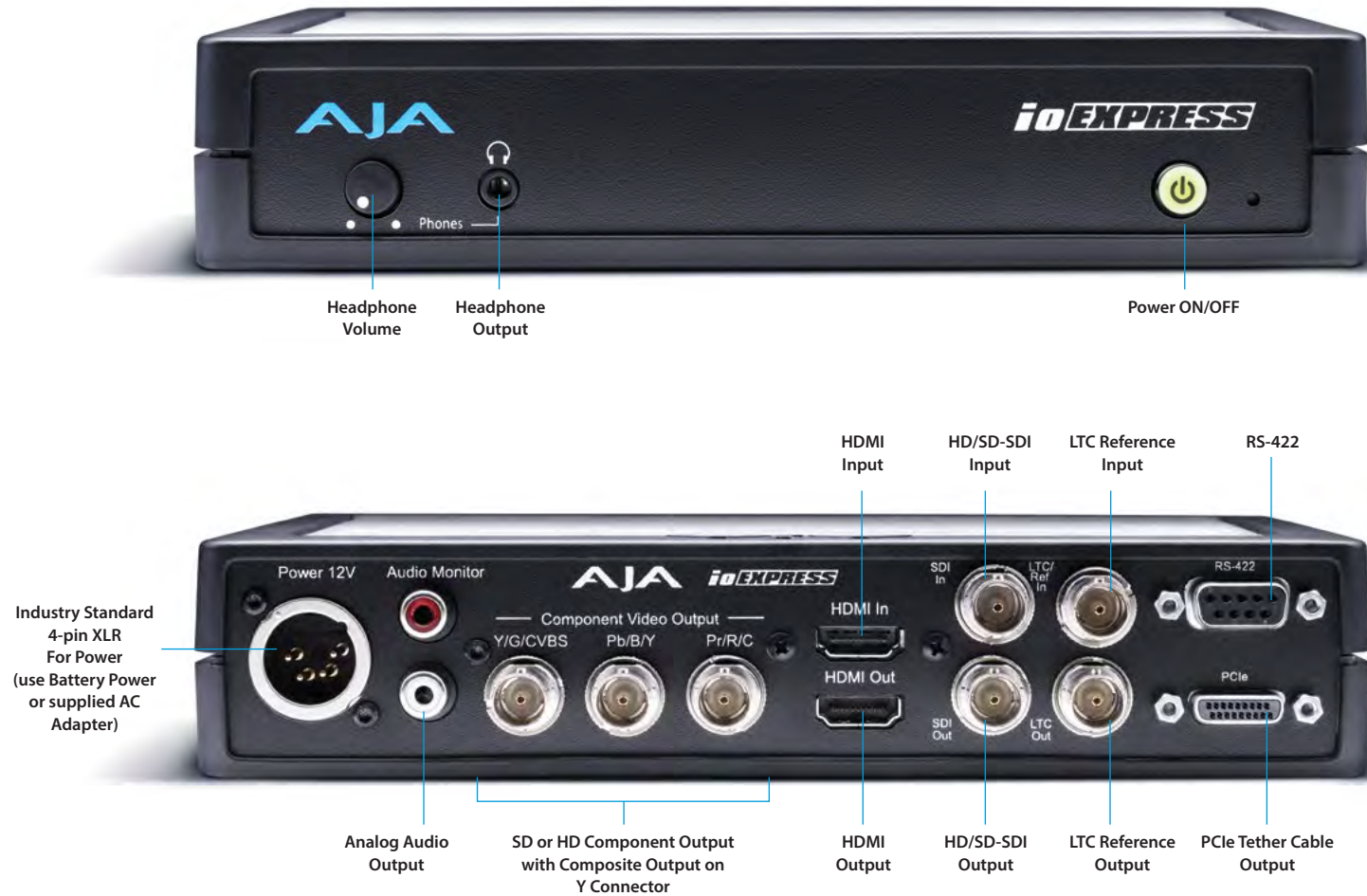
However you choose to work, Windows or Mac, laptop or desktop, Io Express can integrate seamlessly with your workflow.

The same Io Express unit can be used with either a desktop or laptop - giving users the flexibility to choose how they want to work in each scenario. A rear panel PCIe connector enables use with laptops via an ExpressCard, or with a traditional workstation via a PCIe card.

With the ability to rackmount two Io Express units in a single 1RU space, you can have a secure setup while still having the mobility to change locations quickly.

# Io<sup>®</sup> Express

## Connections



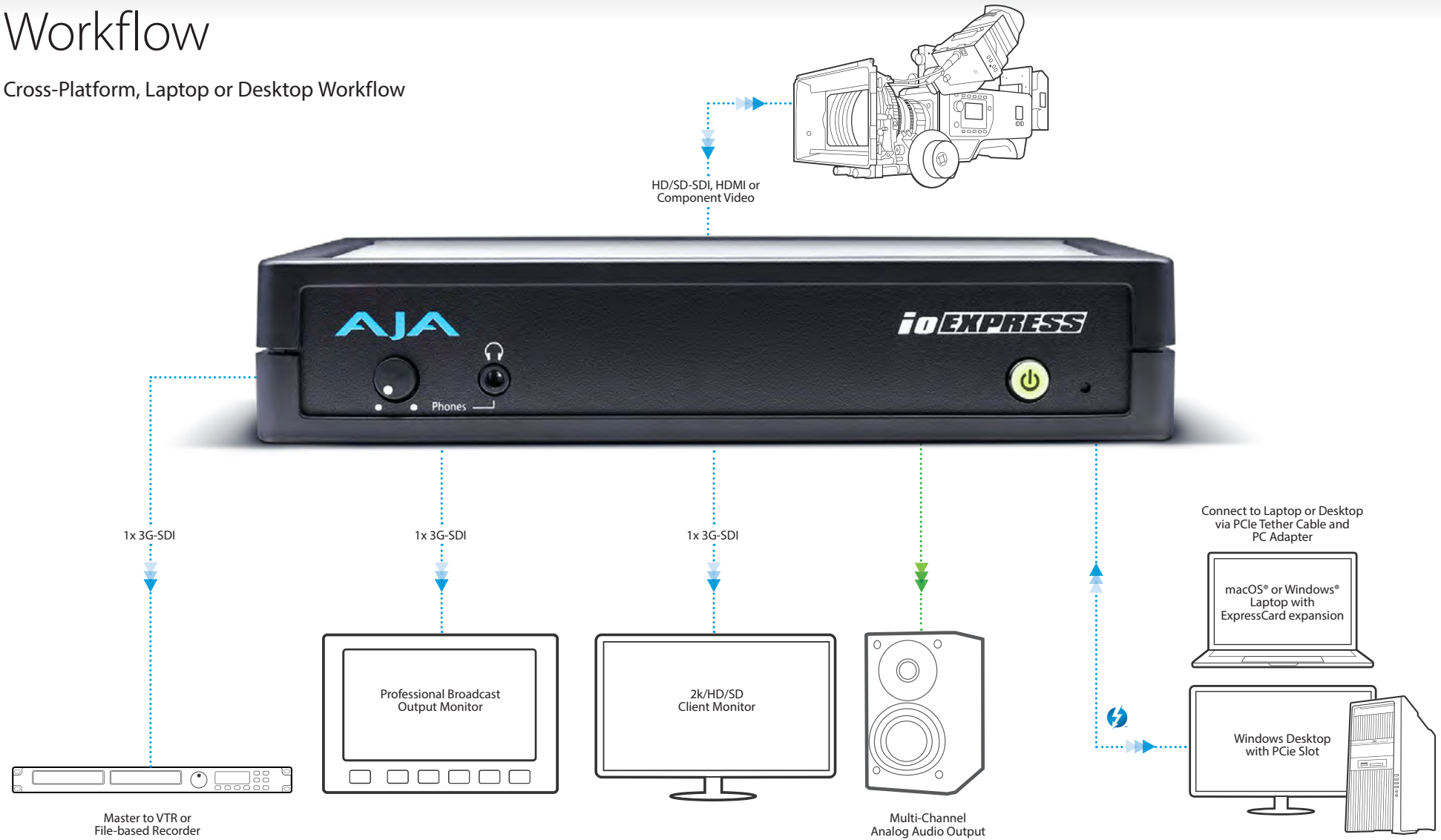
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# Io<sup>®</sup> Express

## Workflow

Cross-Platform, Laptop or Desktop Workflow



Connect your digital sources via SD/HD-SDI or HDMI for capture and editing via a wide variety of formats. Master to any digital or analog device through high quality professional SDI, HDMI or component outputs.



# Io<sup>®</sup> Express

## Tech Specs

### Video Formats

- (HD) 1080i 25, 29.97, 30
- (HD) 1080PsF 23.98, 24
- (HD) 1080p 23.98, 24, 25, 29.97, 30
- (HD) 720p 50, 59.94, 60
- (SD) 625i 25
- (SD) 525i 29.97

### Video Input

- SD/HD SDI, SMPTE-259/292/296/424, 8 or 10-bit
- Single Link 4:2:2 (1 x BNC)
- HDMI v1.3

### Video Output Digital

- SD/HD SDI, SMPTE-259/292/296/424, 8 or 10-bit
- Single Link 4:2:2 (1 x BNC)
- HDMI v1.3

### Video Output Analog

- Composite/S-Video (Y/C) (1 x BNC)
- NTSC, NTSCJ, PAL
- Component (3 x BNC)
- HD: YPbPr, RGB
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- 12-bit D/A, 8 x oversampling
- +/- .2 dB to 5.0 mHz Y frequency response
- +/- .2 dB to 1 mHz C frequency response
- .5% 2T pulse response
- <1% Diff Phase
- <1% Diff Gain
- <1 ns Y/C delay inequity

### Audio Input Digital

- 8-Channel, 16- and 24-bit SMPTE-259 SDI embedded audio, 48 kHz sample rate, synchronous
- 8-Channel, 16 and 24-bit HDMI embedded audio, 48 kHz sample rate, synchronous

### Audio Output Digital

- 8-Channel, 16 and 24-bit SMPTE-259 SDI embedded audio, 48 kHz sample rate, synchronous
- 8-Channel, 16 and 24-bit HDMI embedded audio, 48 kHz sample rate, synchronous

### Audio Output Analog

- 2-Channel 16- and 24-bit unbalanced audio (via RCA jack)

### Reference Input or LTC Input

- 1 x BNC assignable to Reference video or LTC input

### Reference

- Analog Color Black (1V) or Composite Sync (2 or 4V)
- Nonterminating

### Electrical Interface

- PCI Express x1
- ExpressCard/34

### Machine Control

- RS-422, Sony 9-pin protocol
- 9-pin D-connector pinout is as follows:

1	GND
2	RX-
3	TX+
4	GND
5	No Connection
6	GND
7	RX+
8	TX-
9	GND
Shell	GND

### Size (w x d x h)

- 8.74" x 7.09" x 1.65" (222mm x 180mm x 42mm)

### Weight

- 1.5 lbs (0.7 kg)

### Power

- 12-18V, 11-13W

### Environment

- Safe Operating Temperature: 0 to 40 degrees C (32 to 104 degrees F)
- Safe Storage Temperature (Power OFF): -40 to 60 degrees C (-40 to 140 degrees F)
- Operating Relative Humidity: 10-90% noncondensing
- Operating Altitude: <3,000 meters (<10,000 feet)

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## Three Year Warranty

AJA Video warrants that lo® products will be free from defects in materials and workmanship for a period of three years from the date of purchase.

## About AJA Video Systems, Inc.

Since 1993, AJA Video has been a leading manufacturer of video interface and conversion solutions, bringing high quality, cost effective digital video products to the professional, broadcast and postproduction markets.

AJA products are designed and manufactured at our facilities in Grass Valley, California, and sold through an extensive sales channel of resellers and systems integrators around the world. For further information, please see our website at [www.aja.com](http://www.aja.com)