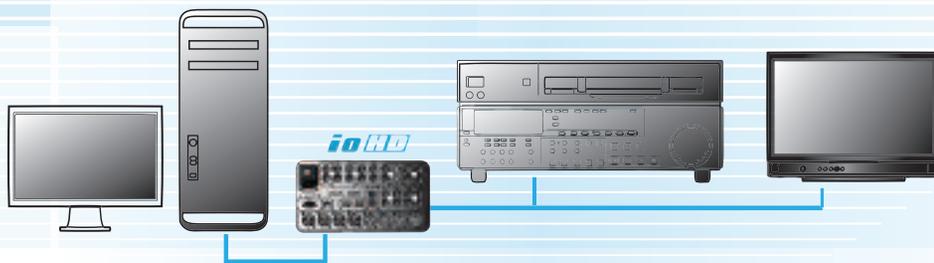# io HD™

AJA® VIDEO SYSTEMS

ProRes

10-BIT HD OVER FIREWIRE

Io HD is the only device in the world that supports Apple's ProRes 422 codec in hardware, enabling true 10-bit video editing with a MacPro desktop or a MacBook Pro laptop. With this high performance hardware from AJA and innovative codec from Apple, you can work anywhere in SD or HD—all in full-raster 10-bit 4:2:2 quality.

Workflow

APPLE PRORES 422 WORKFLOW—IN HARDWARE
- Allows ProRes 422 to move over FireWire 800 connectivity.
- Creates images visually indistinguishable from the source.
- 4:2:2 chroma sampling provides high-quality color definition.
- 10-bit sample depth produces images suitable
  for color correction and compositing.
- I-frame encoding results in easily computer-processed
  and edited media.

Use Io HD within your post production suite to connect to all of your professional devices
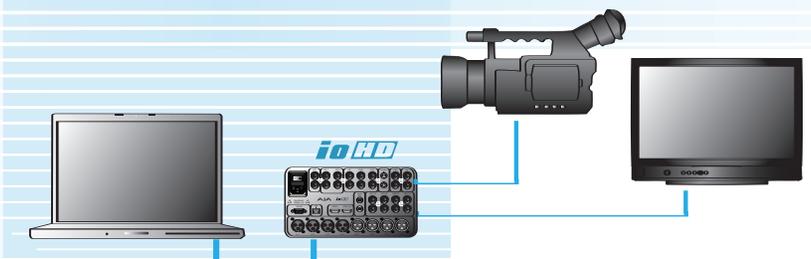
Use Io HD on set to capture from cameras with analog, SDI or HDMI outputs. Simultaneously monitor on set from any of Io HD's outputs in HD or SD.

HD...anywhere you want it.

AJA's Io HD is the latest in the award-winning Io family of products—an effortless to use, transportable plug-in solution for working with HD and SD in Apple Final Cut Studio 2. With a single FireWire 800 connection, Io HD can easily be connected to a Mac Pro desktop computer or a MacBook Pro laptop.

Io HD offers unparalleled video and audio connectivity. Within its portable and rugged form factor, Io HD offers SD/HD analog I/O, SD/HD digital I/O including HD-SDI and HDMI, Balanced analog and digital AES audio, as well as RS-422, Genlock, and even LTC timecode connections. Io HD also includes AJA's realtime hardware-based 10-bit up/down/cross conversions.

FEATURES:

- Apple ProRes 422 Codec— SD, HD 720/1080, full-raster 10 bit 4:2:2, supported in hardware
- Up/down/cross-conversion, 10-bit, realtime, in hardware
- SD-SDI and HD-SDI I/O (2)
- Component I/O (SD and HD)
- Composite and S-video I/O
- HDMI video w/8-channel audio I/O
- Embedded SDI 8-channel audio I/O
- AES/EBU 8-channel unbalanced audio I/O (BNC)
- Analog 4-channel balanced audio I/O (XLR)
- Analog 2-channel unbalanced audio output (RCA)
- Genlock with loopthrough
- RS-422 machine control
- LTC Timecode I/O
- Connects to a Mac via a single FireWire 800 cable
- For use with Apple Final Cut Studio 2 on Mac OS X
- 3-year International Warranty

Io FLEXIBILITY WITH KONA-LEVEL POWER

Io HD is a versatile powerhouse, bringing features pioneered on AJA's industry-leading KONA lineup – such as 10-bit hardware-based up-conversion, cross-conversion, and down-conversion—to the Io product line. Just tap into its flexibility, and you can configure a Mac as a professional HD or SD editing suite or a high-powered field-editing system. Both analog and digital ports are offered, allowing connection to virtually every kind of audio/video peripheral — from current HD digital VTRs and cameras to analog legacy devices.

Io HD SOFTWARE

Io HD runs on an AJA-built driver and features Core Audio support as well as integrated support from a number of software applications. In addition to Final Cut Studio applications like Final Cut Pro and Motion, the Io HD driver also provides video output from applications such as Adobe After Effects.™ The main application installed by the AJA driver is the AJA Control Panel, an application used to select the input audio/video source, configure up-, down-, cross-conversions and much more. Additional useful software included with the Io HD: the AJA Data Rate Calculator, useful for calculating storage and bandwidth requirements, the AJA System Test, useful for bench-marking storage such as disk arrays, and the AJA TV application, a simple to use QuickTime viewing application with video output. Io HD is a full-featured device delivering powerful audio and video ingest, editorial and post-production capabilities— all in an intuitive to use and integrated system.

BROADCAST-QUALITY CONVERSIONS

Io HD features full 10-bit, broadcast-quality, motion-adaptive SD to HD up-conversion, HD to HD cross-conversion, HD to SD down-conversion, and HD/SD 12-bit component analog output. That's the equivalent of rolling AJA's stand-alone HD D/A converter, HD to SD down-converter, and our SD to HD up-converter into one convenient, cost-efficient box. The quality of the AJA Io HD's conversions is identical to AJA's award-winning stand-alone products, and since all functionality is hardware-based, this means that it is available all the time, on digitize or playback without using CPU processing like software conversions would. Io HD will address your varied delivery needs with support for hardware-based 1080-to-720 or 720-to-1080 cross-conversion. The AJA Io HD conversion capabilities streamline dailies and deliverables creation at true broadcast picture quality in realtime - just another measure of the power and flexibility of the AJA Io HD.
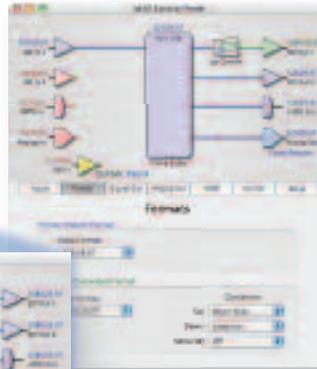
AUDIO CONNECTIVITY

Io HD's extensive audio support makes integration with professional audio gear a breeze; tie the Io HD to a digital audio mixer or DAW output with 8-channel 24-bit 48kHz AES audio via BNC connections. For multi-channel audio mastering, 8-channel SDI embedded 24-bit 48kHz audio is also provided. Io HD also features high-quality input sample-rate conversion on AES inputs, which eliminates the need for audio source synchronization. You can even input and output up to 8 embedded channels on the HDMI inputs and outputs. Balanced analog XLR connections are also provided along with two unbalanced RCA connectors for connection to consumer monitoring devices.
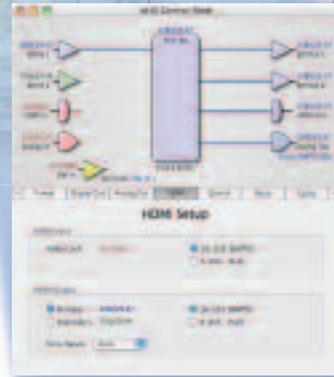
VIDEO CONNECTIVITY

Looking for unsurpassed video connectivity? Look no further. Io HD provides connectors on the rear panel to directly connect standard broadcast devices. For SDI video, the box features two HD/SD inputs and two outputs, one connection for Genlock input and a loop-through, and two groups of three BNCs which may be configured for component HD/SD analog video input and output. HDMI input and output allows interfacing with low-cost camcorders and HD monitors. Add to that S-Video, Composite video, LTC in and out—and a 9-pin connector for RS-422 machine control and you can connect to just about anything. Whether you're using BetacamSP, Digital Betacam, HDCAM, DVCPro50, DVCPro HD, D5 —or any other professional video device—you'll have the proper connections.

Apple Final Cut Pro™ and Io HD

Io HD control panel
with tabbed screens

LTC
Timecode I/O
SDI I/O
(SD and HD)
Component I/O
(SD and HD)
Composite I/O
S-video I/O
Reference
Video I/O

RS-422
machine control

Connects to Mac via a single
FireWire 800 cable

HDMI video
w/8-channel
audio I/O

Analog
2-channel
unbalanced audio
output (RCA)

Analog 4-channel
balanced audio I/O (XLR)

AES/EBU
8-channel
unbalanced audio I/O

Specifications

Video Input
Digital:
    SD and HD-SDI, SMPTE-259/292/296
    (2 inputs)
    HDMI
Analog:
    Composite and S-Video (Y/C):
    NTSC, NTSCJ, PAL 12-bit A/D,
    2x oversampling
    3 line adaptive comb filter decoding
    SD Component:
    SMPTE/EBU N10, Betacam 525 line,
    Betacam 525J, RGB 12-bit A/D,
    2x oversampling
    HD Component:
    YPbPr
    12-bit A/D

Video Output (all simultaneously active)
Digital:
    SD and HD-SDI, SMPTE-259/292/296
    (2 outputs)
    HDMI
Analog:
    Composite and S-Video (Y/C):
    NTSC, NTSCJ, PAL 12-bit D/A,
    8x oversampling

SD Component:
    SMPTE/EBU N10, Betacam 525 line,
    Betacam 525J, RGB 12-bit D/A,
    8x oversampling
HD Component:
    YPbPr, RGB12-bit D/A, 2x oversampling

Audio Input
Digital:
    24-bit SDI embedded audio, 8-channel, 48kHz
    24-bit AES audio, 8-channel, 48kHz
    HDMI embedded, 8-channel
Analog:
    24-bit A/D, 4-channel balanced XLR, 48kHz
    +15/18/24 dbu Full Scale Digital

Audio Output (all simultaneously active)
Digital:
    24-bit SDI embedded audio, 8-channel, 48kHz
    24-bit AES audio, 8-channel, 48kHz
    HDMI embedded, 2-channel
Analog:
    24-bit D/A, 4-channel balanced XLR, 48kHz
    +15/18/24 dbu Full Scale Digital
    2-channel unbalanced RCA (for monitoring)

Timecode
LTC timecode input and output via BNC

Reference Input
Analog Color Black, Composite Sync, or Tri-
    level Sync Terminated Input, buffered output

Machine Control
RS-422, 9-pin

Firewire
IEEE-1394b, FireWire™ 800Mb/s
Apple ProRes 422 support
    specially integrated into hardware

Hardware Up-conversion, 10-Bit
Anamorphic: full-screen
Pillar box 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: image zoomed to fill screen
Zoom Wide: combination of zoom and
    horizontal stretch to fill 16:9 screen;
    this setting can introduce a small aspect
    ratio change

Hardware Down-conversion, 10-Bit
Anamorphic: full-screen
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

Hardware Cross-conversion, 10-Bit
Hardware 10-bit
1080i to 720P
720P to 1080i
720P to 1080PsF

SD to SD Aspect Ratio Conversion
Letterbox: transforms SD anamorphic
    to a letterboxed image.
H Crop: produces a horiztontally stretched
    effect on the image; transforms
    anamorphic SD to full frame.
SD Pillarbox: produces image in screen cen-
    ter with black borders on left and right
    sides and an anamorphized image
    in the center.
V Crop; transforms SD letterbox material
    to an anamorphic image

Physical
Width: 8.2″ (208.3 mm)
Depth: 12″ (304.8 mm)
Height: 4.8″ with rubber feet (121.9 mm)
Power: 100-240VAC, 50/60Hz, 35 Watts

Incredible 3 Year Warranty
AJA Video warrants that Io HD products will
be free from defects in materials and work-
manship 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 conver-
sion solutions, bringing high-quality, cost-
effective digital video products to the profes-
sional broadcast and post-production mar-
kets. AJA offers the Io HD, Io, KONA and
XENA desktop video products, miniature
stand-alone converters, and a complete line
of rack mount interface and conversion
cards and frames. With a headquarters and
design center located in Grass Valley,
California, AJA Video offers its products
through an extensive sales channel of deal-
ers and systems integrators around the
world. For further information, please see
our website at www.aja.com

AJA VIDEO SYSTEMS

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