KiPROquad

Installation & Operation Guide

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Chapter 1: Introduction

Overview

This manual covers Ki Pro Quad installation, operation and optional accessories.

Ki Pro Quad is a small portable field recorder capable of creating ready-to-edit professional digital video at HD, 2K, Quad HD, and 4K resolutions. Ki Pro Quad supports a file-based workflow by recording Apple ProRes 422 and Apple ProRes 444 QuickTime files on SSD media. The SSD media is used with a media reader; the media reader features Thunderbolt and USB 3.0 for connection to a host computer. Ki Pro Quad supports digital video I/O and analog audio input and analog audio monitoring.

Ki Pro Quad's light weight and small form factor allow it to be attached to cameras and production equipment in a wide variety of ways.

Internally, Ki Pro Quad natively supports the Apple ProRes 422 and Apple ProRes 444 codecs in hardware, allowing real time capture directly to QuickTime files. In fact, while the camera is recording to its own tape or file-based memory, Ki Pro Quad can simultaneously capture the media as ProRes so it's instantly ready to edit when the media is connected to a computer via the media reader. With this kind of flexibility, you can save time, steps, and get your project done more quickly and with the highest quality.

Within its portable and rugged form factor, Ki Pro Quad offers exceptional quality HD, 2K, Quad HD, or 4K digital I/O, including 3G-SDI BNC I/O connectors, an HDMI 1.4 type A connector, two balanced analog audio XLR connectors with independent line/mic/phantom selectors, an LTC timecode BNC input connector, and a reference/genlock BNC input connector.

Control options are flexible, with easy-to-use interfaces available via the front panel or via an Ethernet 10/100/1000 RJ45 LAN connection. The Ethernet connection allows web browser remote control and configuration.

Features

Ki Pro Quad offers many unique features for optimum quality, ease of use, and support for a wide variety of workflows and environments. Ki Pro Quad provides flexible HD/2K/ Quad HD/4K recording, for versatile operation in mixed format environments, with a very small form factor and solid state storage.

Hardware

- Thunderbolt I/O (1x Thunderbolt connector)
- 3G-SDI input (4x BNC connectors)
- 3G-SDI output (4x BNC connectors)
- HD-SDI monitor output (1x BNC connector)
- HDMI v1.4a monitor output (1x HDMI Type A connector)
- 2-channel balanced analog audio input with independent line/mic/phantom (2x XLR connectors)
- LTC input (1x BNC connector)
- Reference/Genlock input (1x BNC connector)
- Headphone jack (1x mini TRS connector)
- 10/100/1000 Ethernet LAN (1x RJ45 connector)
- LCD display (for UI information and confidence monitoring)
- 12 Volt AC/DC power (1x 4-pin XLR connector)

Software

- Internal web server for remote control and configuration via LAN
- Thunderbolt I/O for connecting Ki Pro Quad to a host computer for RAW file transfers
- HFS+ file system
- Download and upload of QuickTime files via LAN
- 20 Preset registers for storing and recalling system preset configurations
- Alarms to alert users to conditions that may need attention

System Requirements

The Ki Pro Quad records and plays Apple ProRes 422 and Apple ProRes 444 QuickTime files to/from SSD media. Files are stored on the media using the HFS+ file system. This makes the media readable on any Mac OS computer natively (using the associated media reader) and PCs using 3rd-party software that can read HFS+ formatted drives (MediaFour's MacDrive for example).

Ki Pro Quad Options

Mounting Plate

Ki Pro Quad has exactly the same side dimensions as the Ki Pro Mini product which allows both models to share accessories such as the Mounting Plate. This optional plate allows you to mount Ki Pro Quad to 3rd-party devices. The plate is attached via 4 supplied 1/4-20 screws; plates can be attached to either or both sides of Ki Pro Quad. A large number of screw holes in the plate allows you to mate Ki Pro Quad to 3rd-party articulated arms, battery plates and other mounting applications.

Stand and Adapter Cable	This stand securely holds the Ki Pro Quad upright on a desk, shelf, or any flat surface. A right angle power cable is provided for easy connection between the standard Ki Pro power supply and the Ki Pro Quad.
Rod Accessory Plate	This option provides an accessory plate that can attach to a Mounting Plate (sold separately) so Ki Pro Quad can be attached to user-supplied 15mm camera accessory rods. The accessory plate includes knobs for adjusting the height of the rods relative to the Mounting Plate, as well as a set of knobs for securing the rods in the bracket.
AJA Pak Media	Ki Pro Quad lets you record edit-friendly 4K, 2K, or HD ProRes files directly to removable AJA Pak Media. Once removed from the Ki Pro Quad, the Pak can be inserted in the AJA Pak Dock which connects directly to your computer via Thunderbolt or USB 3.0, allowing you to rapidly transfer ProRes files that are ready for use immediately in your non-linear editing system.
AJA Pak Options	The Pak256, Pak512, and Pak1000 options are high-capacity Solid State Drives encased in a protective housing with rugged connection engineered to handle the rigors of repeated use in the field.
AJA Pak-Adapt-CFast	Pak-Adapt-CFast allows you to use CFast media you provide with Ki Pro Quad. Simply insert the CFast card and once the green LED is lit, your media is mounted and can be formatted. Formatting CFast media may take up to 60 seconds to complete. You're then able to record direct to your media. Pak-Adapt-CFast requires qualified media to ensure you get the best results.
	For long recording times, AJA recommends Pak512 and Pak1000 media.
Qualified CFast Media	Although most types of CFast media will mount, only qualified media will provide proven performance. AJA does not prevent the user from using unqualified media and as such does not recommend the usage of any other media than that listed below. AJA Video does not take any responsibility for any loss of data by using unqualified media.
	For a current listing of all CFast media qualified by AJA, see the *Qualified Media Guide* at: https://www.aja.com/en/products/pak#support
AJA Pak Dock	The AJA Pak Dock option is an external media reader with Thunderbolt™ and USB 3.0 connections for fast transfer of media to a host computer.

Apple ProRes 422 and Apple ProRes 444 Advantages

Captured media using Apple ProRes 422 or Apple ProRes 444 is virtually indistinguishable from uncompressed HD/2K/4K sources. Better yet, Apple ProRes maintains the quality during editing, surviving multiple encoding/decoding generations without degradation. It was designed by Apple specifically for editing. Some of the advantages include:

• Resolution support for 4096-by-2160 (4K), 3840-by-2160 (Quad HD), 2048-by-1080 (2K), 1920-by-1080 (HD), and 1280-by-720 (HD).

• 4:2:2 or 4:4:4 chroma sampling. Provides precise compositing and blending at sharp saturated-color boundaries.

- 10-bit sample depth. Preserves subtle gradients of 10-bit sources (perfect for green-screen compositing, graphics or color correction) with no visible banding artifacts.

NOTE: *Ki Pro Quad can accept 12-bit inputs but processes and encodes at 10-bit.*

- I frame-only encoding. Ensures consistent quality in every frame and no artifacts from complex motion.
- Variable bit-rate (VBR) encoding. "Smart" encoding analyzes the image and allocates more bits to complex frames.
- Low data rate requirements make for more storage options and require less drive space to store high quality video.
- Optimized for efficient real-time effects.

Workflow

The following illustration shows a typical workflow for Ki Pro Quad.

Figure 1. Ki Pro Quad Workflow—Ingest, Edit, Monitor, and Master in 4K, 2K, or HD
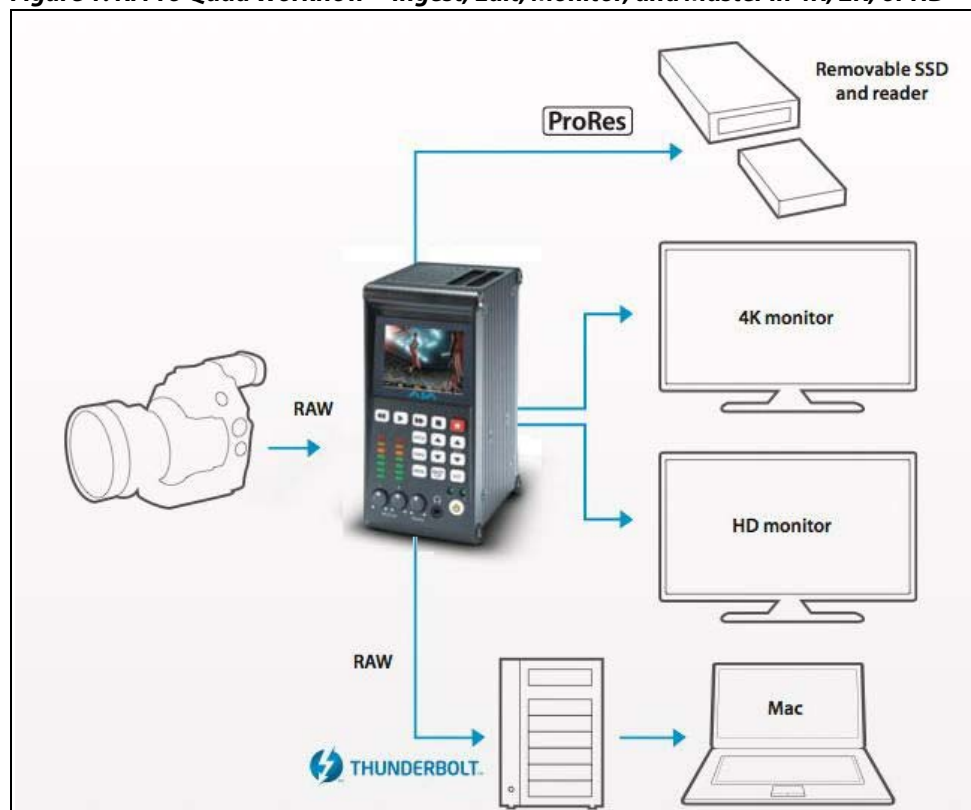
In This Manual

Chapter 1 is the introduction you're reading, listing features, box contents, and system requirements.

Chapter 2 gets you started with Ki Pro Quad, introducing the operator side controls and connector side features.

Chapter 3 provides complete instructions for operating the Ki Pro Quad from the Operator side controls and LCD display.

Chapter 4 discusses remote web browser control of Ki Pro Quad via Ethernet.

Appendix A lists specifications.

Appendix B provides safety and compliance information.

Warranty Information & Index

Chapter 2: Ki Pro Quad at a Glance

Overview

When using Ki Pro Quad, you'll make cable connections to a variety of equipment based on how it's being used. Chapters 2 and 3 discuss how to operate and use the Ki Pro Quad in its many configurations—this chapter introduces the operating configurations, power supply options, plus all indicators, controls, and connections so you'll have a working knowledge of how it can be used to tie together the worlds of acquiring media (production) and post-production.

Learning about the front panel indicators will be useful in selecting operational modes and monitoring what is happening on Ki Pro Quad as well as troubleshooting problems that can occur. Becoming familiar with the Ki Pro Quad operator-side and connectors will simplify installation, setup, and operation of the system.

On the following pages are front and rear panel illustrations with notations that summarize all of the connectors and indicators. Detailed descriptions of each of the connectors and indicators follow afterward.

	Caution!
⊗	The AJA Ki Pro Quad contains a lithium battery soldered in place permanently (it is not user replaceable). If you ever dispose of the Ki Pro Quad, ensure you follow local regulations for safe disposal. The lithium battery shall not be exposed to excessive heat, such as sunshine or fire.

Controls

Figure 2. Ki Pro Quad Operator Side Controls
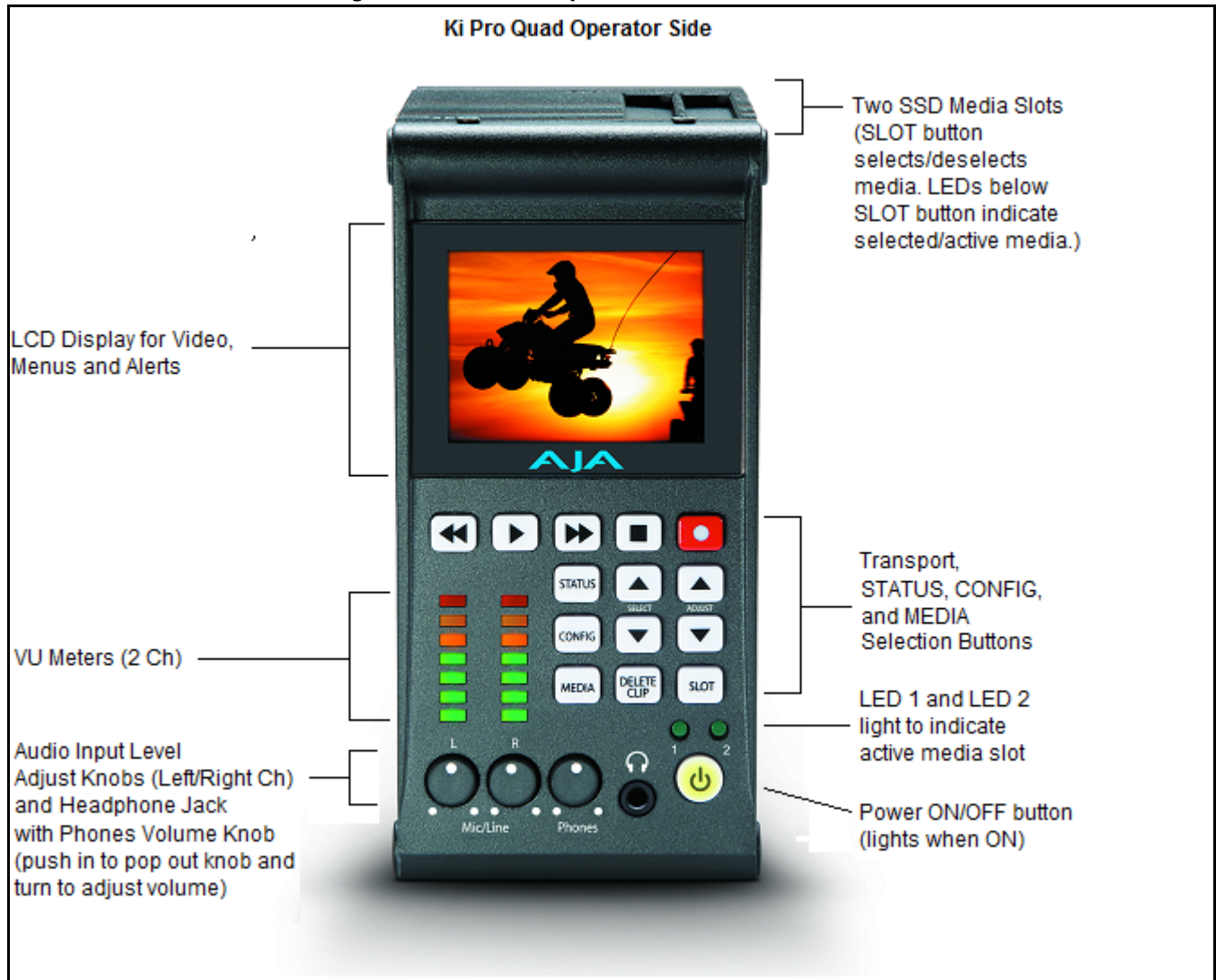
Operator Side

The Operator Side of Ki Pro Quad features a variety of buttons, knobs, jacks, and indicators for operating Ki Pro Quad directly. Each of the items found on the Operator Side are described here and on the following pages. This side is referred to as the "Operator Side" because when mounted to a camera, it matches the operator side of the camera. When controlling camera features, you'll also be looking at all the Ki Pro Quad control features.

The front panel of Ki Pro Quad operates in two modes: the "TRANSPORT" mode (default), and the "MENU" mode. Some controls have different functions in these two modes. The TRANSPORT mode controls basic play, record, clip selection, and other functions. The MENU mode is for setup and configuration of the Ki Pro Quad. There are three menu groups: STATUS, CONFIG, and MEDIA. These menus are accessed by pressing the corresponding front panel Menu buttons.

Buttons

Power ON/OFF Button: Controls system power ON/OFF and shows whether power is ON (when illuminated) or OFF. To turn power on, press the button once. It isn't necessary to press hard—it's a "soft" button sensed by the processor inside. When OFF, and the button is touched, it will begin powering up and display start-up progress on the alphanumeric display.

     To power down, you must press and hold the power button down for 3 seconds while the display counts down. This action prevents accidental power-off during normal operation. When the unit is powering down you can abort the power-down process by simply removing your finger from the power button before 3 seconds have elapsed.

STATUS Button: Pressing the STATUS button, when not lit, enters the Status menu and displays an Idle, Record or Play display. Pressing STATUS when it is lit turns off the Status menu and returns you to Transport mode. STATUS menus can be accessed at any time—including when the machine is in an active transport mode. The ALARM state displayed on the display shares functionality with STATUS. The Select buttons can be used to cycle through alarms and I/O status. All menus and front panel operations are described in Chapter 3.

CONFIG Button: Pressing CONFIG when not lit, enters the CONFIG menu. Pressing CONFIG when it is lit turns Off the CONFIG menu (returning you to the default TRANSPORT menu). The CONFIG menu can only be entered from the STOP mode. The CONFIG menu remembers which parameter it is set to when exited, and will return to that same parameter when the menu is re-entered.

MEDIA Button: Pressing MEDIA when not lit, enters the MEDIA menu. Pressing MEDIA when it is lit will turn Off the MEDIA menu (returning to the default TRANSPORT menu). The MEDIA menu can only be entered from the STOP mode. The MEDIA menu remembers which parameter it is set to when exited and will return to that same parameter when the menu is re-entered.

Transport Control Buttons: The transport buttons are always active.

     STOP ■ : The STOP button has a dual function. When playing back a clip (PLAY, FF, or REV) the first push of STOP acts as a "pause" mode: the playback is paused, the current point of the clip is displayed, and the STOP button flashes. A second push of STOP completely stops the playback and directs Ki Pro Quad's outputs into an "E to E" mode (the currently selected inputs bypass to the outputs). To determine at a glance if the STOP button is in a "pause" mode, note that the stop button will flash if media playback is paused. The STOP button is fully illuminated in "stop" mode.

     PLAY >: Press PLAY to begin forward playback of the current clip at normal speed.

     RECORD ● : Press the red RECORD button to begin recording. Once in RECORD mode, all other transport buttons are locked-out except the STOP button.

     FFWD >>: Press this button to begin fast playback of the current clip at 2x speed. Successive pushes increase the speed to 4x, 8x, and 16x. (Pushing the button after 16x speed is reached has no further effect.) When fast-forwarding, audio is muted.

     REV <<: Pressing REV when not lit begins playback of the current clip in reverse at 1x speed. Successive pushes increase the speed to 2x, 4x, 8x, and 16x. (Pushing the button after 16x speed is reached has no further effect.) When playing in reverse, audio is muted for all speeds.

SELECT (up/down)::   The SELECT up/down buttons operate differently depending on whether Ki Pro Quad is in the TRANSPORT mode or the MENU mode. In the TRANSPORT mode, the SELECT buttons select clips and operate like "previous" and "next" keys. When a clip is selected, Ki Pro Quad "cues" it to the beginning. Note that ordering and playback of clips is based on timestamp order (creation date), not clip name. However, in a playlist, ordering and playback is determined by playlist order. In the MENU mode, the SELECT buttons select parameters for adjustment. Holding down either of the SELECT buttons causes them to repeat.

ADJUST (up/down):   The ADJUST up/down buttons operate differently depending on whether Ki Pro Quad is in TRANSPORT mode or MENU mode. In TRANSPORT mode, and in the "Pause" mode (single push of STOP from PLAY mode), the ADJUST buttons "single step" the current clip at a rate of one frame per button push (up=forward, down=reverse). In the MENU mode, the ADJUST buttons adjust the selected parameter. Holding down either of the ADJUST buttons causes them to repeat

DELETE CLIP Button: This is a dedicated button that when pressed, deletes the currently selected clip. When pressed, the system displays a precautionary "ARE YOU SURE?" prompt. Press the up-arrow ADJUST button to say "Yes" and delete the clip, or the down-arrow ADJUST button to abort the deletion. When a clip is deleted, the next clip is then cued for deletion. Pressing DELETE CLIP, STOP or any other button—while the "ARE YOU SURE" prompt is displayed—cancels the delete operation. Pressing any button other than up-arrow ADJUST always aborts deletion.

DELETE CLIP can be used in either the TRANSPORT menu or the MEDIA menu. When pressed in the TRANSPORT menu with a current clip active (PLAY, REV, FF, RECORD), the active mode will continue until the DELETE CLIP is confirmed.

SLOT Button: The SLOT button serves two purposes. First, it selects which media slot is accessed by the system—either Slot 1 or 2. Second, the SLOT button is used to unmount the currently selected media.

Caution!

Not using the SLOT button to unmount media can damage the media.

Pushing the slot button cycles between unmounting media and selecting media. This function is only active when in the "STOP" mode and requires a "PRESS STOP" if not stopped. After you select a slot, the system returns to the last selected clip and timecode for that slot. If the media has been changed since the slot was last selected (media physically removed or replaced), the "first" clip on the media will be "cued" to its start point. If inserted media has any issues, additional prompts may be displayed as appropriate such as: "WARNING Backup and Reformat" or "WARNING Media Unformatted."

Caution!

Removing media with the Slot LED lit, or while flashing, can result in corrupted media or potential damage to the media.

NOTE: *On power up, Slot 1 is the initial storage system accessed by Ki Pro Quad.*

Analog Audio Input Level Adjust Knobs: These knobs underneath the VU meters allow you to adjust the analog input levels for each of the two audio channels.

NOTE: *Digital audio via embedded SDI is not affected by the adjustment knobs.*

To adjust an analog audio level, press the knob inward and the knob will then pop out for easy adjustment. This feature allows the knobs to be recessed, preventing accidental changes in a production environment.

Head Phone Volume Knob: To adjust headphone listening level, press the knob inward and the knob will then pop out for easy adjustment—just like the audio input level knobs.

Displays and Indicators

Alphanumeric and Graphics LCD Display: Shows menus, status, alerts and other information. Some words in the menus may be truncated to fit the display limits. The LCD displays not only UI information, but also a scaled version of the incoming signal or playback of recordings. When the monitoring outputs are set to crop a signal to 1920x1080, a graticule is applied to the scaled image on the LCD to alert the user.

VU Meters and knobs: 7-segment LEDs show audio input levels for the 2 analog audio channels (respectively). Knobs underneath the VU meters allow you to adjust the input levels independently to prevent clipping and ensure proper signal amplitude.

Green—audio source signal level is in the "safe" area (no clipping). Vertically, the green LEDs also show the signal strength, so you can see if the signal level is low. Generally, it's preferred to have the signal near the top of the green or even occasionally peaking into the yellow LEDs.

Yellow—audio source signal levels are at the peak edge of the safe area before clipping will occur.

Red—audio source amplitude is too hot and the signal is clipping at its signal peaks. You should reduce the input gain at its source (camera, mixer or source equipment supplying the signal).

Slot LED Status Indicator: These LED 1 and 2 states indicate the status of the media slots, S1 and S2:
- LED lit/on: selected media
- LED unlit/off: inactive media, okay to eject or no media inserted
- LED flashing: recording in progress
- On power up, slot S1 is the initial selection.

Head Phone Jack: 1/8" (3.5mm) miniature stereo TRS connection for standard stereo headphones.

Connectors

Connect any SDI-equipped digital camera or A/V source, regardless of brand or format, to Ki Pro Quad's SDI connectors. The connector side of Ki Pro Quad contains all the connectors except for power. On the bottom of the unit is a single power connector for supplying the 12-Volt DC operating voltage (see *Installation* later in this chapter).

The functions of Ki Pro Quad's inputs and outputs depend on the operational mode. Ki Pro Quad's active input (the one to be recorded) is selected by front panel or web browser control. Ki Pro Quad's outputs are active all the time.

Figure 3. Ki Pro Quad Connectors
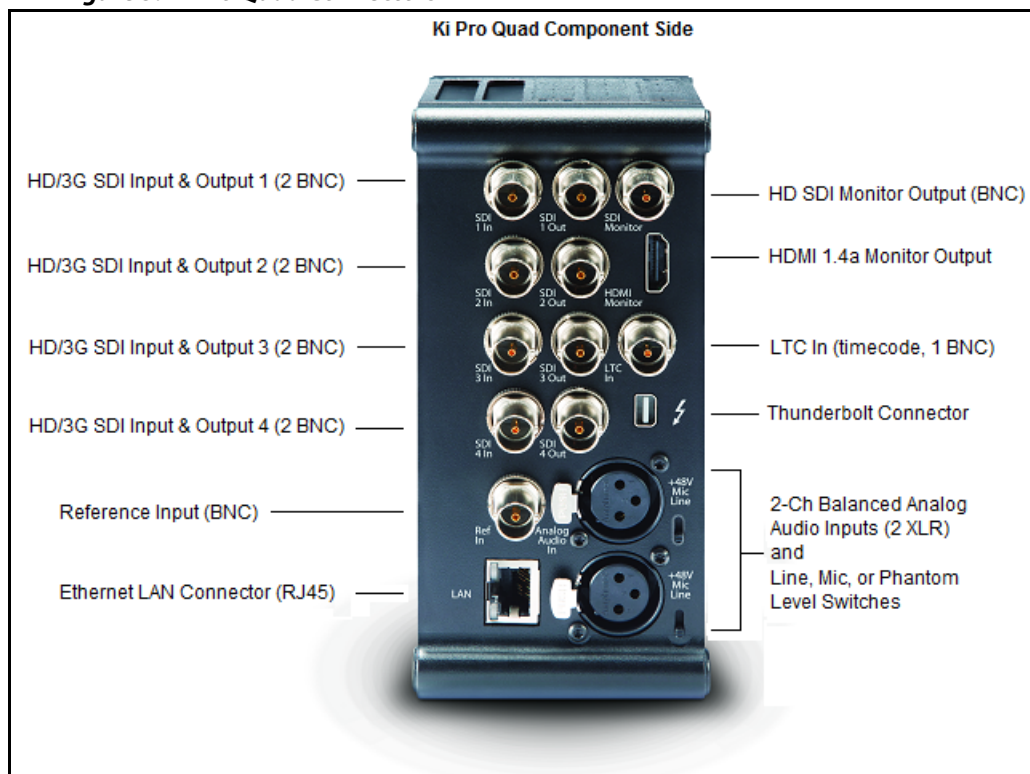
Connections

- HD/3G-SDI Inputs and Outputs 1-4, with 8-channel embedded audio (8x BNC)
- HD-SDI Monitor Output (1 BNC) with embedded audio.
- HDMI v1.4a Monitor Output for monitoring video with embedded audio
- LTC Input (BNC)
- Reference Input for connection to a stable source of genlock video or sync.
- 2 channel balanced analog audio Inputs (2x XLR)
- Line/Mic Level Switch (analog XLR audio input level)
- 10/100/1000 Ethernet LAN

LTC Timecode Input

One BNC provides connection to the house LTC timecode generator or source. This connection is high impedance.

SDI Input and Outputs

Eight BNC connectors are provided for inputs and outputs supporting HD/3G-SDI video and embedded 24-bit digital audio.

HDMI

One HDMI connector provides for monitor output of HDMI compatible video (version 1.4a) and multi-channel embedded audio. HDCP is not supported on the output. The HDMI output supports standard HDMI cables only.

HDMI formats supported:

    720p 50, 720p 59.94, 720p 60

    1080i 25, 1080i 29.97, 1080i 30

    1080p 23.98, 1080p 24, 1080p 25, 1080p 29.97, 1080p 50, 1080p 59.94

2Kx1080p 23.98, 2Kx1080p 24, 2Kx1080p 25, 2Kx1080p 29.97, 2Kx1080p 50, 2Kx1080p 59.94

NOTE: *When using the Ki Pro Quad HDMI connection and attaching it to any HDMI audio or video accessory, you must use a ferrite-beaded HDMI cable, HH-28F-06, between the HDMI output port of the Ki Pro Quad and the HDMI accessory to maintain regulatory compliance.*

Analog 2-Channel Balanced Audio Input   Two XLRs, (female), provide two channels of balanced audio. Audio is high-quality 24-bit A/D input at 48kHz. Level adjustments are made via software and a switch for line-level inputs. Software level adjustments for analog audio (parameter 4.1) apply to balanced audio (XLR) using the "Line" setting on the switch. The Mic and Mic +48 settings offer a lower input level suitable for microphones and their associated input impedance:

- Use *Mic +48* for microphones with phantom power (condenser mic.)
- Use *Mic* for microphones without phantom power (dynamic microphones)

Ethernet   An RJ45 connector provides a 10/100/1000 Ethernet port for connecting Ki Pro Quad directly to a computer or Ethernet hub or switch for connecting to a LAN. Ki Pro Quad is compatible with CAT-5 straight-through or cross-over Ethernet cables, automatically detecting which is used. Once connected and properly configured, Ki Pro Quad can then be controlled by a web browser on the LAN.

Power Connector

On the underside of Ki Pro Quad is a standard 4-pin male XLR connector for supplying 12-Volt DC power to the unit. You can use either the supplied AC Adapter or furnish your own battery source. Since the connector is an industry standard pinout, choices are varied and flexible. Many 3rd party vendors offer products using this standardized power connector.

> Pin 1: -
> Pin 4: +
> Pins 2 and 3: not used

⚠️ **Warning!**

Ki Pro Quad has no user-serviceable parts. To remove power from the unit, remove the 4-pin XLR power connector to ensure disconnection. Refer all servicing to qualified service personnel. Servicing is required when the device has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the device, the device has been exposed to rain or moisture, does not operate normally, or has been dropped.

⚠️ **Warning!**

Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

⚠️	**Warning!** Since the Mains plug is used as the disconnection for the device, it must remain readily accessible and operable.

⚠️	**Warning!** Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the device.

Storage

Record to Pak media, a form of removable SSD media. The media is formatted as HFS+ and is native to the Mac OS file system. Media can be mounted on the Mac OSX desktop for immediate editing and file access when used with the Pak Dock. To work with media on Windows OS systems, third-party software such as Mediafour's MacDrive is recommended.

❌	**Caution!** Failure to properly mount or dismount media, or an unexpected loss of power while recording, can result in an unrecoverable data loss.

Formatting Media

To format SSD media, the media must first be inserted into an empty slot on Ki Pro Quad and/or selected using the SLOT button. Once the media is selected, follow these steps:

1. For media that has never been used in a Ki Pro Quad before, the "Warning *Media Unformatted*" prompt may appear.

2. Press the STOP button

3. Press the MEDIA button

4. Press SELECT (up or down) repeatedly until you see the menu *16.1 Format Media*.

5. Press ADJUST up arrow. Ki Pro Quad will display "*FORMAT*".

6. Press the ADJUST up arrow button. Ki Pro Quad will display *"ERASE S1" (or S2)*.

7. Press and hold the ADJUST up arrow button for 2 seconds or longer and then formatting will begin. (Select any other key to abort the format operation.)

   Ki Pro Quad will display formatting progress, and when done, will display a completion confirmation.

8. Press STOP to return to regular operation and use the newly formatted media.

Using Ki Pro Quad Media with Non-linear Editors

When Ki Pro Quad media is removed and connected to a computer via the AJA Pak Dock, the media will mount as a normal HFS+ file system. The REEL NAME parameter is the name of the media that will appear when the media is mounted.

Once the media is mounted, each clip recorded by Ki Pro Quad will be a file on its file system, which can be opened in non-linear editors such as Final Cut Pro, Adobe Premiere Pro, etc. The clips will be instantly ready to edit because they were recorded as one of the following formats:

- Apple ProRes 422
- Apple ProRes 422 (HQ)
- Apple ProRes 422 (LT)
- Apple ProRes 422 (Proxy)
- Apple ProRes 4444

Chapter 3: Ki Pro Quad Installation

Installation

This section describes set up and installation of Ki Pro Quad. Choices you will make include how Ki Pro Quad will be controlled (front panel or Ethernet and web-browser) and the physical system requirements for your application.

⚠	**Warning!** Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

⚠	**Warning!** Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.

⚠	**Warning!** Unplug this device during lightning storms or when unused for long periods of time.

⚠	**Warning!** Refer all servicing to qualified service personnel. Servicing is required when the device has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the device, the device has been exposed to rain or moisture, does not operate normally, or has been dropped.

⚠	**Warning!** Only use attachments and accessories specified and/or sold by the manufacturer.

⚠	**Warning!** Read and follow all warning notices and instructions marked on the product or included in the documentation.

⚠	**Warning!** Do not use this device near water and clean only with a dry cloth.

What's In The Box?

When you unpack your Ki Pro Quad, you'll find the following components:

• Ki Pro Quad Recorder.
• AC Adapter 110/220 with industry standard 4-pin XLR connector for powering the Ki Pro Quad. A standard North American line cord with 3-prong plug is included.
• Registration Sheet—allows you to register by mail or online (details provided).

Please save all packaging for shipping the Ki Pro Quad should you need to do so.

Figure 4. Ki Pro Quad Shipping Box Contents

Desktop Mounting

When using Ki Pro Quad on a desktop or flat surface a Ki Pro Quad Stand may be used. The stand comes with a power adapter cable having a 90-degree connector so the power cord can run underneath the Ki Pro Quad, exiting to the rear of the stand. The optional stand comes with 2 mounting screws as well as the 90-degree power cord adapter.

Figure 5. Optional Ki Pro Quad Stand Kit

Camera Mounting

Camera mounting is made possible by using one or more of AJA's optional Ki Pro Quad mounting plates. The AJA mounting plate option is a single aluminum plate with recessed mounting holes that have been matched for mating with a wide array of 3rd-party mounts, battery plates, and accessories.

To extend your mounting options and use the Ki Pro Quad itself as a mounting point for other devices like batteries or wireless mics, simply order a second Ki Pro Quad mounting plate and attach your third party device to it. (The plate shown below has the Ki Pro side facing down, the screw insertion side facing up.)

Figure 6. Optional Ki Pro Quad Mounting Plate, with Screws (supplied)

Figure 7. Camera Mounting Example Using Optional Mounting Plate

Applying Power

The following Warnings are provided as good practices and should always be considered when Ki Pro Quad is used in a desktop application.

⚠	**Warning!** Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the device.

⚠	**Warning!** Unplug this device during lightning storms or when unused for long periods of time.

⚠	**Warning!** Do not open the chassis. There are no user-serviceable parts inside. Opening the chassis will void the warranty unless performed by an AJA service center or licensed facility. Remove the supplied AC line cord from mains power when moving the unit. Do not defeat the safety purpose of the grounding-type plug.

Using AC Power To begin using Ki Pro Quad, plug the 4-pin XLR on the supplied AC adapter into the XLR power socket on the back of Ki Pro Quad. Then plug the AC adapter line cord into 110 VAC or 230 VAC (the supply is autosensing). As mentioned earlier, if you're using the optional desktop mounting stand, you'll also use the supplied 90 degree power cable adapter with the Ki Pro Quad AC adapter.

Plug 4-pin XLR into 12Vdc   DC supply   Line Cord
Ki Pro Quad power socket.

Using DC Power To run Ki Pro Quad on DC power, simply plug a 3rd-party industry standard 12 volt battery pack with a 4-pin female XLR connector into the power connector on Ki Pro Quad (underneath unit). The battery should be capable of supplying a sustained 3.3 A (just like the supplied AC Adapter provides). Such battery packs are available from a variety of sources.

NOTE: *To operate Ki Pro Quad properly, batteries should not have voltage lower than 12 volts and should not have voltage that exceeds 18 volts.*

Ki Pro Quad is a low-wattage device so many batteries can power Ki Pro Quad for several hours at a time.

In the event of sudden power loss, recordings that are in progress will not be written properly to the media. Note that there is a "Low Battery" warning prompt that users should take note of and stop recordings in progress if at all possible before battery failure. Ki Pro Quad can sometimes manage to close the file before the battery stops providing sufficient power, but this is not always possible due to the nature of some batteries and the duration of some recordings. It is best to be mindful of remaining battery life. The use of batteries with metering or remaining power indications is highly recommended. For very long recordings, it is advisable to use the supplied AC power supply instead of battery power.

Remote Network Control

Figure 8. Ki Pro Quad Networking Examples

LAN Connection
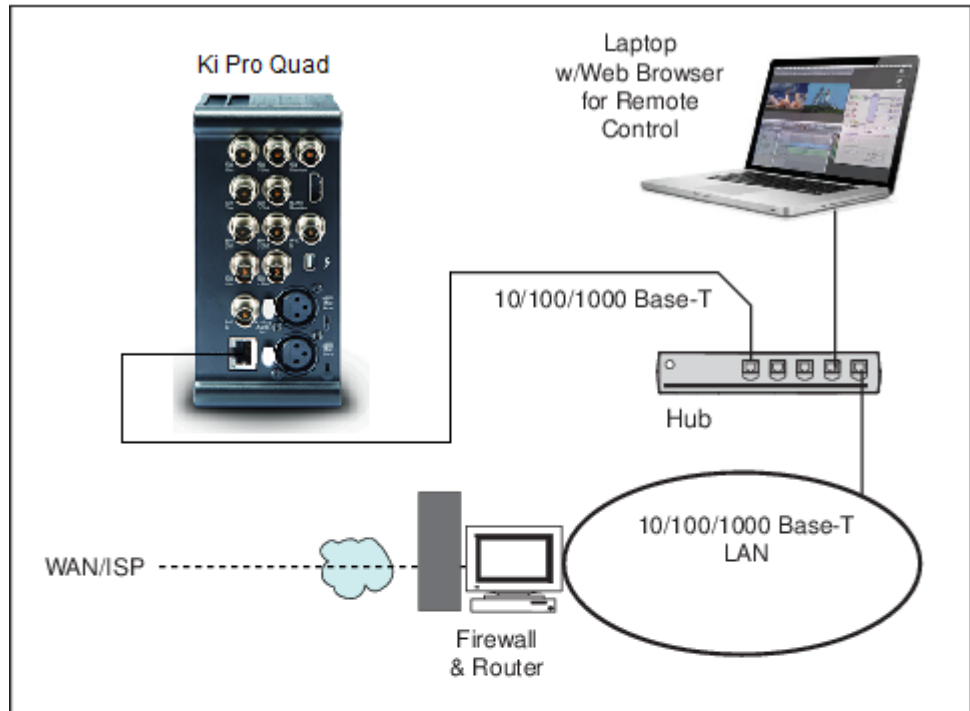
Direct Ethernet Connection
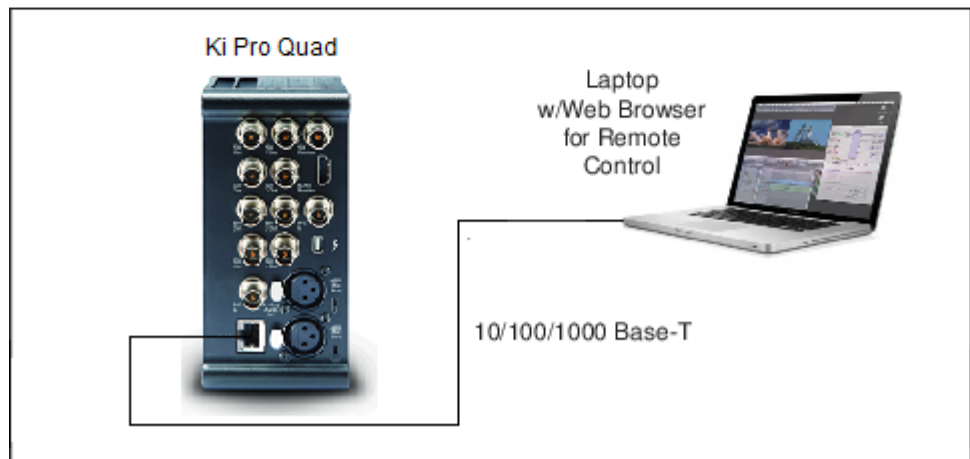
Network Connections

Ki Pro Quad can be networked to a computer using a single CAT-5 Ethernet cable (straight or cross-over) or using an Ethernet 10/100/1000 local area network (LAN) connection to the Ethernet RJ45 connector.

If connecting via a LAN, connect the Ki Pro Quad's Ethernet connector to a LAN hub or switch. A LAN is a shared network that includes other Ethernet devices all attached via a hub or digital switch. LANs may be divided into zones, and devices on a LAN may have

fixed or dynamically assigned (DHCP) IP addresses. Before connecting Ki Pro Quad to the LAN, talk to your network administrator to find out how they want it connected (static IP or DHCP).

TCP/IP Information You'll Need

If your LAN has a DHCP server that assigns IP addresses dynamically, you don't have to configure anything (Ki Pro Quad defaults to DHCP). If for some reason your IT administrator prefers an assigned IP address that is fixed (called a "static IP"), get the IP address—you'll be entering it in the "IP CONFIG parameter." If your LAN requires static IP addresses, also ask your IT administrator for the *Subnet Mask* and *default gateway* IP address (your LAN's internet router). The following two topics discuss two different ways to set up Ki Pro Quad: via DHCP or via a static IP address.

Networking via DHCP

The default configuration (from the factory) automatically looks for a DHCP server to issue an IP address. So, as long as your network has a DHCP server (usually part of your router), you need to do nothing other than plugging the Ki Pro Quad into the net. To manually select DHCP: use the Select buttons to navigate to the parameter "50.1 IP CONFIG", and then use the Adjust buttons to select "DHCP". That's it!
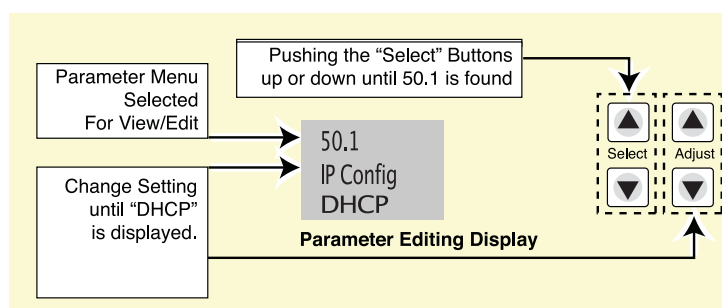
Here are the steps to communicate with Ki Pro Quad after choosing the DHCP selection:

1. Use the Select buttons to navigate to parameter 50.2. Note on a piece of paper the DHCP supplied IP address shown.

2. With your laptop or desktop computer connected to the same LAN and DHCP enabled, type the IP address you noted in step 1 into the browser address bar. You should now see Ki Pro Quad's browser status screen.

If Ki Pro Quad cannot get an address from the DHCP server on the LAN while Ki Pro Quad is set to DHCP via parameter 50.1, it will then automatically drop back to a preset factory IP address of 192.168.0.2. In this instance you can follow these alternate steps to communicate with Ki Pro Quad:

1. Set the computer's Ethernet IP address to 192.168.0.n (where n is not 2).

2. Set the computer's Subnet mask to 255.255.255.0 (most computers default to the proper netmask when the address is set).

3. Run a browser on the computer and type "192.168.0.2" (the factory fallback IP address). You should now see Ki Pro Quad's browser status screen.

NOTE: *If Ki Pro Quad fails to find a DHCP server via its network connection, it will fall back to using the factory default static IP of 192.168.0.2—or whatever IP address you've previously defined. AJA recommends you define a Static IP address with parameter 50.2 so you'll be prepared in the event your DHCP server fails.*

Networking Ki Pro Quad using a Static IP Address

To set a static IP address for Ki Pro Quad, you'll have to make some simple Parameter menu selections. The illustration below shows the four menu selections you need to make, while entering the information provided to you by your IT administrator (as discussed earlier).

Figure 9. Configuring Ki Pro Quad with a Static IP Address
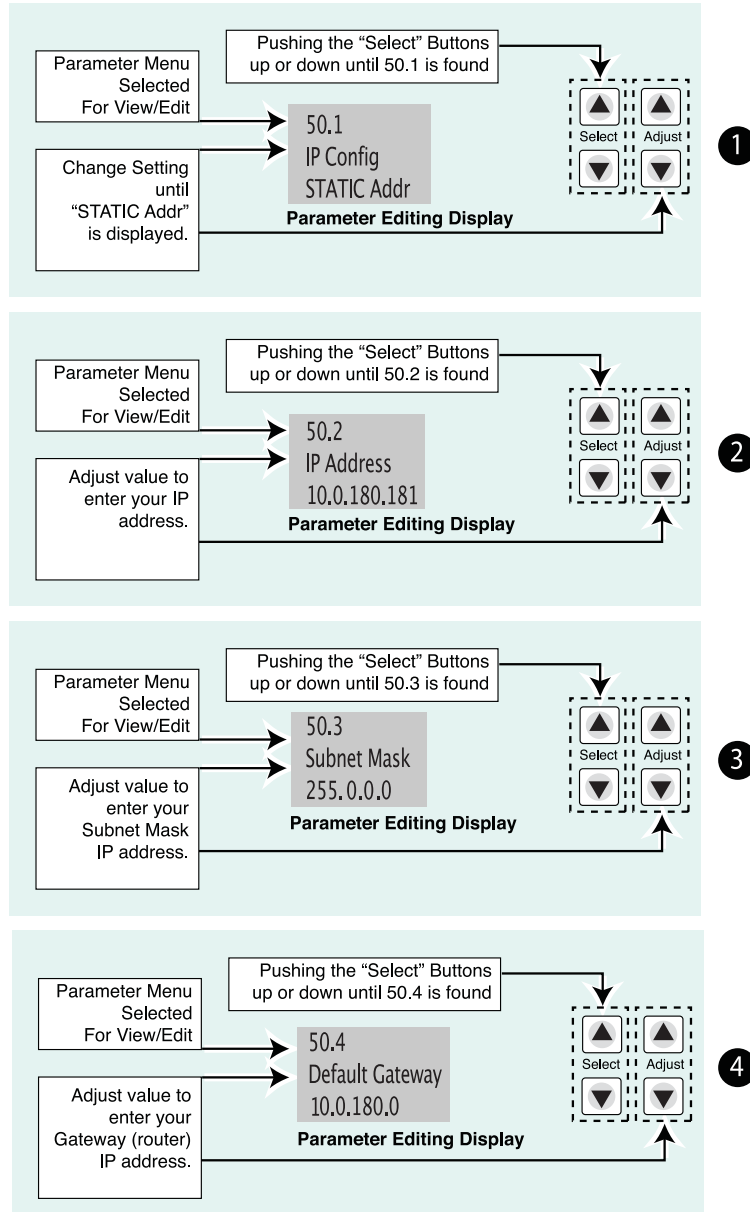
NOTE: For parameters 50.2, 50.3, and 50.4, you will be setting IP addresses that consist of "octets" separated by a period (i.e., 10.0.180.0). The Select button selects the octet and then the Adjust buttons select the desired number. Pressing Select again advances to the next octet. At the final octet, the address will flash—pressing Select at that point confirms the setting.

Networking Ki Pro Quad using the Factory Default IP

If you don't want to use DHCP to network Ki Pro Quad and also don't want to set your own static IP address, you can simply use a Default setting to use a factory setting of 10.65.74.65. This might be useful for an application where you directly connect a laptop or computer to Ki Pro Quad and want to get networking quickly. Here are the steps to set up this method of communication:

1. Use the Select buttons to navigate to parameter "50.1 IP CONFIG", and then use the Adjust buttons to select "Default".

2. Set your laptop or desktop computer Ethernet IP address to 10.m.n.m (where m is not 65 and n is not 74).

3. Also on the computer, set the Subnet mask to 255.0.0.0 (most PCs default to the proper netmask when the address is set—so you may not have to do anything here).

4. Run a browser on the computer and type "10.65.74.65" (the *Default* factory IP address). You should now see Ki Pro Quad's browser status screen.

Controlling Ki Pro Quad from a web-browser

To control Ki Pro Quad from a web browser on a network attached computer, you must enter Ki Pro Quad's IP address as a URL in the browser. For example, if Ki Pro Quad's IP address were "10.0.6.31", you would then type into the web browser: http://10.0.6.31

This topic is explained in greater detail in *"Browser Remote Control" on page 59*.

Chapter 4: Front Panel Operation

Overview

There are two ways to control Ki Pro Quad: from the front panel or remotely from a web browser connected via the Quad's Ethernet RJ45 connector. This chapter discusses controlling and using Ki Pro Quad from its front panel. (See *"Browser Remote Control" on page 59*.)

In Chapter 2 we discussed the panel controls overall, so you may want to read and understand that material first. In this Chapter we introduce each of the front panel's modes and the various menu parameters.

First we introduce the two basic front panel modes, TRANSPORT and MENU, followed by how the SELECT and ADJUST buttons operate in each of these two panel modes.
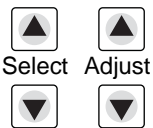
Select   Adjust

The TRANSPORT mode is the default mode—it controls basic PLAY, STOP, FF, REV, etc. functions. In the TRANSPORT mode, the Select buttons (up or down) cycle through the clips in the currently selected storage slot (like previous/next), and the Adjust buttons allow single-stepping, frame forward or backward.

Line 1: Displays the current clip on the left side and the current slot and percentage of the media capacity remaining on the right side.

Line 2: Displays the current reel number on the left side and the timecode for the clip being recorded or played on the right side.

An example display for the TRANSPORT mode (default screen) is shown below:

Clip SC26ATK1	S1 47%
Reel 001	01:00:23:14

TRANSPORT Mode

For the MENU mode, depressing one of the 3 MENU buttons (STATUS, CONFIG, or MEDIA) will enter the corresponding menu.

In the STATUS menu, the Select buttons will cycle through the various STATUS screens. The Adjust buttons have no effect on the STATUS menu.

The first STATUS page shows the status of recording or playing. The second page shows the timecode settings for recording as set in CONFIG parameter 8.0. The third Status page shows Interval Recording status. The following shows the display for the STATUS menu:

Input Format	Input selected
Recording Format	Audio input selected

STATUS Menu (Record Mode)

Media Format
Output Conversion

STATUS Menu (Play Mode)

Interval Record Enabled	
Interval Frames: 1	Time: Second

STATUS Menu (Interval Record))

In the CONFIG or MEDIA menus, the Select buttons select various adjustable parameters, and the Adjust buttons adjust the selected parameter. When entering a menu, the system remembers and returns to the last selected parameter. The following shows the displays for the CONFIG and MEDIA menus

Parameter number	Parameter Name
Parameter setting	(chosen by Adjust buttons)

CONFIG Menu

Parameter number	Parameter Name
Parameter setting	(chosen by Adjust buttons)

MEDIA Menu (like CONFIG)

TRANSPORT Mode (default)

TRANSPORT mode is the default mode for Ki Pro Quad operation. When you power up Ki Pro Quad, the first display you'll see is TRANSPORT mode menu. Any clip that previously was recorded is referenced in the display and can be played.

If the screen saver is on, pushing one of the transport buttons in the middle of the front panel (PLAY, STOP, FF, REV, REC) dismisses the screen saver and returns to the current display. A second press, or a first press if the screen saver is already off, immediately takes action and causes the display to change to the TRANSPORT mode if it is not already

displayed. Settings you've made in the MEDIA menus are observed (more on that later). You'll always know you are in TRANSPORT mode as long as one of the MENU buttons aren't lit (STATUS, MENU, or MEDIA)—if one is lit, then you are in a "menu".

When in the "Idle" mode, the CONFIG and MEDIA set-up menus can be accessed to adjust various parameters that control Ki Pro Quad's operation.

Note that you must be in STOP, not PAUSE to access these menus—if you try to access these menus without first having stopped playback, a "PRESS STOP" prompt will appear on the LCD display. You can tell if the STOP button is in "pause" if the button is flashing.

There are certain times when transport controls are locked out. For example, when ejecting media, or entering an IP address, the transport controls are locked out until the operation is completed. Most other menu functions do not lock out the transport controls.

At any time you only need to hit any transport button to exit (or "exit" a STATUS, CONFIG, or MEDIA menu by pushing its button). Pressing a transport button sends the display into the TRANSPORT default menu.

Several operations may result in an "ARE YOU SURE" interaction; for example, FORMAT MEDIA. This protects you from inadvertent actions and ensures that accidental button presses don't have negative repercussions. When you answer yes to an ARE YOU SURE prompt, the display then changes to an "in progress display", and automatically returns to the menu when the operation is complete.

When recording, Ki Pro Quad is in an E-to-E state.

Certain parameters are stored in non-volatile memory so that the parameter is remembered between power cycles, for example: system name and date/time.

Recording a Clip

There is more than one way to record a clip since you can control Ki Pro Quad in numerous ways. The MEDIA and CONFIG menus presented later in this chapter detail the parameters available to control recording. Before we get into that level of detail, here's an example of just how simple recording can be:

1. Press the STATUS button. You'll see the currently selected input and input format (line 1) and the chosen recording format and audio input (line 2).
2. If these settings are acceptable, then push the red RECORD button below the display.
3. The green LED slot indicator (and the green LED on the Pak media) will begin blinking indicating a recording is in progress. You will also see the timecode changing on the UI display.
4. When you've finished recording, press the STOP button.

You can, of course, customize your configuration via the CONFIG and MEDIA menu parameters.

NOTE: *To change Apple ProRes settings prior to recording, Press MEDIA, and then repeatedly press SELECT until you see 14.1 Encode Type. Then press ADJUST up or down to select:*

- ProRes 444
- ProRes 422LT
- ProRes 422PX
- ProRes 422HQ
- or ProRes 422

Press MEDIA or STOP to exit the menu.

To select a different video input, press CONFIG, then repeatedly press SELECT until you see 2.1 Video Input—then press ADJUST up or down to choose a desired video input connector. To select a different audio input, use the SELECT up arrow button and you will see 2.2 Audio Input. Press ADJUST up or down to chose a desired audio input connector.

These are just a few menu parameters that you might wish to change before you make your recordings. To learn all the ways to convert formats on input or output read the CONFIG menu and MEDIA menu parameter topics later in this chapter.

Recording Notes   Ki Pro Quad alerts you when the media is nearly full with a "Media Low" prompt at 15% of the remaining capacity. At 10% of the total capacity of the media, the "Media Full" prompt will appear. Any recordings that have been started will stop once 10% is reached and no further recordings can be performed using this media until it is formatted again or a MEDIA>Delete Clips>DELETE ALL has been performed. Deleting clips to produce more than 10% free space will allow recording to resume.

Playing Back a Clip

To playback recorded media, select a clip and press PLAY. If the clip you wish to playback is not currently selected, use the SELECT up/down buttons until the clip name appears on the display. Like recording, there is more than one way to initiate playback (front panel or web browser). From the front panel these are the basic steps:

1. Press the STOP button to get to the TRANSPORT mode (if not already there). Find the clip name in the display (it shows the current clip/reel).
2. Press the SELECT up or down arrow button repeatedly until you find the clip you are looking for.
3. Press the PLAY (>) button.
4. When playing back a clip (PLAY, FF, or REV) the first push of STOP acts as a "Pause" mode: the playback is paused, the current point of the clip is displayed, and the STOP button will flash. A second push of STOP will completely stop the playback and Ki Pro Quad's outputs will go into an "E to E" mode (the currently selected inputs will be bypassed to the outputs). When a playback reaches the end of a clip, it will automatically pause on the last frame of the clip.

Transport Buttons   During playback you can use the FFWD, REV, SELECT, or ADJUST buttons as follows:

FFWD >>:   Press button to begin fast playback of the current clip at 2x speed. Successive pushes increase the speed to 4x, 8x, and 16x. (Pushing the button after 16x speed is reached has no further effect.) When fast-forwarding, audio is muted.

REV <<:   Pressing REV when not lit, begins playback of the current clip in reverse at 1x speed. Successive pushes increase the speed to 2x, 4x, 8x, and 16x. (Pushing the button after 16x speed is reached has no further effect.) When playing in reverse, audio is muted for all speeds.

SELECT (up/down):   While in TRANSPORT mode, the SELECT buttons select clips and operate like "previous" and "next" keys. When a clip is selected it is "cued" to the beginning of the clip. Note that ordering and playback of clips is based on timestamp order, not clip name. If you have paused playback (the STOP button is flashing), you can use the SELECT down button to jump back to the beginning of the clip. If the STOP button is not flashing, depressing the SELECT down button will select the previous clip.

ADJUST (up/down):   While in TRANSPORT mode, and in either a "STOP" or "pause" state, the ADJUST buttons will "single step" the current clip at a rate of one frame per button push (up=forward, down=reverse).

Deleting Clips　　　　To delete a previously recorded clip:

1. In TRANSPORT mode, use the SELECT up and down arrow buttons to browse through the clips on the current media. When a clip is on another media you will press SLOT repeatedly until it's selected.
2. When you find a clip you want to delete, press the DELETE CLIP button.
3. Ki Pro Quad asks, "Are you sure." Press the ADJUST up arrow button to confirm deletion. Pressing the down arrow, or any other button, will abort the deletion.

STATUS menus

The STATUS menus display I/O status and Alarm information. The STATUS menu can be accessed almost anytime and will not change any active transport modes. Like the CONFIG and MEDIA menus, STATUS display screens can be viewed by pushing the SELECT up or down buttons. Pressing STATUS will exit the screens and return to TRANSPORT mode, where an action could still be occurring (like playback or even recording).

Record Mode　　As mentioned earlier in this chapter:

Line 1: Displays the current clip on the left side and the current slot and percentage of the media capacity remaining on the right side.

Line 2: Displays the current reel number on the left side and the timecode for the clip being recorded or played on the right side.

Alarm Status　　The Alarm menu displays warnings and alarms. Some alarms will automatically be shown on the display. Others will only be seen by checking the STATUS displays (press Select up/down to cycle through them). If everything is OK, then a "SYSTEM NORMAL" message will be seen when you cycle through the STATUS displays.

Examples of ALARM displays are shown below. WARNING appears on the first line and the prompted action item on the second line.

Figure 10. Warning Examples

```
WARNINGS

No Media
```

```
WARNINGS

Media Removed
```

```
WARNINGS

Media Low
```

```
WARNINGS

No Video Input
```
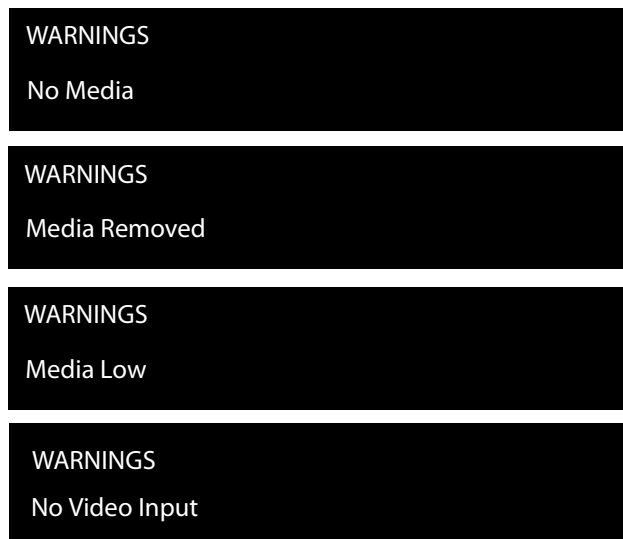
You will be alerted to an alarm condition by having all backlit keys and the display flash to full intensity for 2 seconds. If more than one alarm state is active, then the display will hold each alarm notification for 3 seconds before cycling to the next alarm. These alarm notifications override whatever the display is currently showing for the TRANSPORT or STATUS menus.

Once there is a Ki Pro Quad alarm active, the STATUS button light will blink for as long as the alarm is present. This alerts you so you'll know the reasons for the alarm condition are still active—you can then press the STATUS button to determine what the alarm condition is.

CONFIG and MEDIA menus, once entered after an alarm notification, will cause the alarm display to go away. Pushing any button always returns Ki Pro Quad to its pre-alarm state—however, if the alarm condition still exists after this initial button push (i.e., the reason for the alarm), the alarm notification will reappear on the display. Note: the STATUS button will blink if there is an active alarm condition.

Ki Pro Quad features a variety of alarms to help you diagnose the condition of the unit, possible configuration issues, or possible signal issues. Here is a list of warning messages and their meaning:

"WARNING Input Format Changed" prompt appears if a recording is started and the signal is lost or changed. If this occurs, Ki Pro Quad stops the recording that is in progress (unless the Loss of Video CONFIG menu parameter is set to continue recording.)

"WARNING No Video Input" may appear if there is no video input to Ki Pro Quad. No recording will be performed in this state.

"WARNING Input Error" may appear if a format or frame rate that is not supported is supplied to the Ki Pro Quad or a link of a multi-link signal (dual link or quad link) is missing; no recordings will be produced if this alarm appears.

"WARNING Dropped Frames" may appear if media is under-performing and cannot keep up with the data rate required to make a recording or perform a playback. If you see this prompt during recording, recordings will stop. If this prompt appears, you might consider backing up your current recordings and formatting the media. For playback, you might simply re-attempt playback.

"WARNING Media Low" will appear when the media only has 15% of capacity remaining. Media must be switched out when it reaches 10% of capacity. With 10% of media remaining, the "WARNING Media Full" prompt will appear.

"WARNING Media in Use" may appear if you try to use media while another operation is still taking place. Wait for the operation to finish and then try again or press STOP.

"WARNING Media Not Present" may appear if media has been physically removed and the user hits the slot button.

"WARNING Media Unformatted" may appear if Ki Pro Quad does not recognize the file system on the SSD media or the media has never been formatted.

"WARNING Storage Removed" will appear if the media is removed without first hitting the SLOT button to properly unmount it. In the event this happens, media immediately re-inserted into the Ki Pro Quad may show clips as "N/A" and subsequent recordings may not be possible. To resolve this issue, mount the media on an Apple computer under Mac OSX, then remove and re-insert the media into your Ki Pro Quad. If the media does not read properly, you will need to format it. Additionally, this alarm will lead to the "Please Reboot" prompt.

"WARNING Please Reboot" appears if media was removed without the use of the slot button and the Ki Pro cannot continue operating and must be rebooted.

"WARNING Backup and Reformat" may appear if the media has issues being mounted by the Ki Pro Quad. As the prompt indicates, it is best to back up the media by copying it to another hard drive or disk array and then reformat the media. Some signs that the media is in a read-only state: even though clips have been recorded to the media, "N/A" appears in the clip area of the UI, "Loading" appears in the clip area of the UI but does not eventually load a clip, or hitting the record button with all settings correctly configured for the Ki Pro Quad does not result in a recording.

"WARNING Rollover Media Full" appears if media for a rollover is not empty and contains existing recordings; the rollover feature requires empty media to operate.

"WARNING Rollover Media Unformatted" appears if media for a rollover is not formatted or recognized.

"WARNING No Rollover" may appear if rollover is enabled, but no rollover media is inserted or media that is not empty is present.

"WARNING Name in Use" appears if the clip name specified in the naming parameters already exists on the media; this happens when take 999 is reached and no more take numbers are available. Ki Pro Quad will refuse to overwrite the clip; you will have to delete the clip or select a new name.

"WARNING No Clip Name" appears if you attempt to record in gang mode using a non-existent custom clip name.

"WARNING Genlock Missing" appears if you choose "Input" or "Ref In" for 6.1 Genlock and you attempt to play a clip and no genlock is detected on the selected input.

"WARNING 2 Channel Format" appears if the number of channels selected in 2.3 Audio Channels is eight, but the selected audio input only supports two channels. Only SDI supports eight channels.

"WARNING Non VFR Format" appears if 1.1 Record type is set to VFR (variable frame rate), but the input video is not a valid VFR type. This can happen because the video format on the selected video input doesn't support or isn't carrying VFR ancillary data, or the video signal generator is enabled in 41.2 VIDEO SG.

"WARNING Turn Off Camera Data" appears if a camera selection has been made in the 13.1 Camera Data menu parameter, but a recording is attempted via the physical record button on the front panel or via the record button in the web UI. To perform manually initiated recordings, enter 13.1 Camera Data and select "None."

"WARNING LUT Error" appears if a LUT file type that is not supported or a LUT file type that is supported but is not formatted correctly is loaded using the web UI.

"WARNING Invalid Selection" may appear if unsupported menu selections are made for video input, record type, encode type, etc.

MEDIA menus

As the name implies, these menu parameters display choices related to media storage and the type of encoding to be used. There are also menus for naming reels, clips and takes.

Media Menu Parameters

12.1 Media State   This parameter applies to using the Ki Pro Quad to transfer data.These are the options:

Record-Play (default)	Use media to record and play video.
Data-LAN	LAN data may be uploaded/downloaded to/from Ki Pro Quad.

For normal video operation, select *Record-Play*. For data transfer using an Ethernet LAN, choose *Data-LAN*. The Data Media State allows valid media to be copied to or from the Ki Pro Quad. Valid media files for copy to Ki Pro Quad are the following:

- QuickTime files that are full raster—4096-by-2160 (4K), 3840-by-2160 (Quad HD), 2048-by-1080 (2K), 1920-by-1080 (HD), and 1280-by-720 (HD).

- QuickTime files that are encoded as:

    Apple ProRes 444

    Apple ProRes 422

    Apple ProRes 422 (Proxy)

    Apple ProRes 422 (LT)

    Apple ProRes422 (HQ)

Files must be Ki Pro Quad supported frame rates and must use 24-bit 48kHz audio (2 or 8 channel), if audio is included. Files copied to Ki Pro Quad that do not meet these criteria may not appear in the web UI or front panel UI when you review clips.

If the state is designated as Data, the Transport functions are locked; in other words, media cannot be recorded or played back as video. You can still access MEDIA menu parameters, however, so you can reset the parameter. If the you attempt to playback or record while in the Data mode, a "CHANGE MEDIA STATE" prompt alerts you that you cannot use the transport functions. Additionally, the front panel UI states that the unit is in a "DATA MEDIA STATE" in an obvious way as opposed to presenting the typical clip, reel, timecode, etc. usually seen on the front panel.

After you select the Data state, you can connect the Ki Pro Quad to a host computer via the Ethernet connection. The Ki Pro Quad will allow access to the selected media designated by the lit LED. In other words, if the #2 media module is selected on the Ki Pro Quad, that would be the volume mounted by the host computer operating system.

The DATA MEDIA STATE does not survive reboots or power cycles of the device. After such an event, it returns to the default *Record-Play* mode.

IMPORTANT: *When the Ki Pro Quad is in the Media State and the Data - LAN selection is used, only the web UI for control and configuration of the Ki Pro Quad may be used for data transfer. The web UI will present "Upload+" and "Download+" buttons in the All Clips portion of the UI. If the Data-LAN state is not active, these buttons do not appear in the web UI.*

12.2 ROLLOVER   This parameter determines whether the Ki Pro Quad is configured to support recordings that continue when the selected Pak media becomes full.

OFF: When the Rollover parameter is set to OFF, the Ki Pro Quad performs recordings normally and when the Pak media reaches the 10% of capacity "Media Full" point, recordings do not continue onto additional media.

ON: When the Rollover parameter is set to ON recordings create "appended" files on additional Pak media.

Example: a recording is begun on the first piece of Pak media, S1, and is called "SC1ATK1". When this piece of Pak media reaches capacity, the second piece of Pak media (S2) is seamlessly engaged and begins an appended recording, "SC1ATK1+1". This can continue until this piece of media reaches capacity.

IMPORTANT: *If a piece of media is inserted for a rollover and it does not meet the following criteria, rollover recordings will not be possible:*

- The rollover media needs to have already been formatted in the Ki Pro Quad

- The rollover media needs to be completely empty; no clips can already be on the media

If the Rollover parameter is set to ON and rollover media does not meet the criteria noted, warning alarms may appear such as:

- WARNING Media Unformatted

- WARNING Rollover Media Not Empty

14.1 ENCODE TYPE

This parameter defines the Apple ProRes encoding method. These are the options:

ProRes 444 (default)	Record media as Apple ProRes 444 files.
ProRes 422	Record media as Apple ProRes 422 files.
ProRes 422HQ	Record media as Apple ProRes 422 (HQ) files.
ProRes 422LT	Record media as Apple ProRes 422 (LT) files.
ProRes 422PX	Record media as Apple ProRes 422 (Proxy) files.

15.1 PLAY MEDIA

This parameter determines behavior during playback. These are the options:

One (default) All Playlist	Plays one clip and then stops playback All/Playlist—Plays the current clip and then continues playing the next clip on the Ki Pro Quad media or the playlist. Note that with this setting, Ki Pro Quad will play all clips back regardless of format or framerate—but you may notice the video monitor reset for format/framerate changes. If all clips are the same format and framerate or conversion is applied to the output for clips with the same Hz, then clips play out smoothly one after another.

15.2 LOOP PLAY

This parameter turns looped playback on and off. These are the options:

OFF (default)	Play clip(s) and then stop playback when complete
ON	Play clip(s) and then loop back and repeat playback

15.3 PLAYLIST

This parameter displays the name of the selected playlist. These are the options:

variable	The name of the selected playlist appears. If no playlist is selected via the web UI controls, then no name appears. The user cannot select or create playlists from the front panel UI; these tasks are handled using the web UI.

15.4 DROPPED FRAMES   This parameter determines how playback handles dropped frames. These are the options:

CONTINUE STOP	In the unlikely event that the playback of a clip(s) begins to drop frames, this parameter allows users to define whether the playback continues or stops.

16.1 FORMAT MEDIA   This parameter is used to format the currently selected media. These are the options:

KEEP MEDIA (default) FORMAT MEDIA	No action (do not format the media selected) Format the selected media (you will be prompted Confirm Erase S1? or Confirm Erase S2?—Hold up Adjust button to confirm))

16.2 DELETE CLIPS   This parameter can be used to delete all of the clips on the media. These are the options:

KEEP CLIPS (default) DELETE ALL	No action (do not delete clips) Delete all clips on the storage device when DELETE CLIPS is pressed or Adjust up arrow is pressed and held for 2 seconds

Ki Pro Quad media can be used to hold data other than Apple ProRes QuickTime recordings. If other files are saved to the PAK media, they should be placed outside of the "AJA" folder. Any material inside of the "AJA" folder will be erased if a MEDIA>Delete Clips>DELETE ALL is performed.

17.0 REEL NAME   This parameter determines the reel name associated with all clips generated while using this setting. These are the options:

001 to 999 (default = 001)	Press ADJUST button up or down to change the REEL NAME value from 001 to 999.

The reel name is a number between 001 and 999. It is historically linked to the naming conventions used for film and tape-based media. The REEL NAME is an incrementing three digit value that works with EDLs. For this reason, the parameter does not have a "NONE" selection—all clips will be associated with a REEL NAME. The REEL NAME parameter determines the name that the media will have if it is formatted and will appear when the media is mounted on a computer.

17.2 CLIP NAME   This parameter determines the clip name associated with all clips generated while using this setting. The clip name is either "Clip" or "SC". These are the options:

SC (default) Clip	Clips generated will have filenames beginning with "SC" Clips generated will have filenames beginning with "Clip"

Clip Naming—Two Examples   The following two examples show how clip names are generated. Each example is based on the collective settings for these parameters:

- REEL NAME
- CLIP NAME
- CLIP NUMBER
- CLIP NUMBER APPEND

• ALPHA APPEND VALUE

In both examples that follow, "TK" is a default append to the naming convention just prior to the auto-incrementing TK value (which can be manually overridden via parameter 17.8 Take).

Ki Pro Quad offers these parameter choices for easy identification of the QuickTime files, so that the names can logically match the shooting script, and are acceptable when imported into various non-linear editors such as Final Cut Pro 7's Browser window, Final Cut Pro X's Events, Avid Media Composer's Bins, etc. The Final Cut Pro 7 Browser window provides columns of data used to describe the media. In the most minimal form, "Name", "Media Start", "Media End" and "Reel" are the required pieces of information for a Final Cut Pro clip to be properly perceived as "valid" media. Additional information or "QuickTime metadata" is useful and can be mapped into the myriad choices provided in the Final Cut Pro Browser column headings. Final Cut Pro X also uses such information and can provide even more support for QuickTime file metadata

Example 1   Using the factory default AJA parameter settings:

REEL NAME	001
CLIP NAME	SC
CLIP NUMBER	1
CLIP APPEND	ALPHA
ALPHA APPEND	A
TAKE	1

The resulting clip would be named and displayed as: "SC1ATK1". The media would be named "001" if mounted on the OS X desktop as a volume.

Example 2   Using customized settings:

REEL NAME	002
CLIP NAME	Clip
CLIP NUMBER	12
CLIP APPEND	NONE
ALPHA APPEND	B
TAKE	1

The resulting clip would have the following naming convention: "CLIP12TK1". The media would be named "002" if mounted on a desktop as a volume.

17.3 CLIP NUMBER   This parameter determines the clip number, from 1 to 999, that follows the CLIP NAME, and is associated with all clips generated while using this setting. These are the options:

1 to 999 (default = 1)	Press ADJUST button up or down to change the CLIP NUMBER value from 1 to 999.

17.4 CLIP APPEND This parameter is used with parameter 17.5 ALPHA APPEND to append a text value after the CLIP NUMBER or have no text appended. These are the options:

ALPHA (default)	The text value entered in ALPHA APPEND is appended to the CLIP NAME and CLIP NUMBER
NONE	No text is appended to the CLIP NAME and CLIP NUMBER

17.5 ALPHA APPEND This parameter is used with parameter 17.4 CLIP APPEND to append a text value after the CLIP NUMBER. These are the options:

A to Z (default = A)	Press ADJUST button up or down to change the ALPHA APPEND value from A to Z. Alphabetic values increment with A and Z wrapping around.

17.8 TAKE This parameter determines the TAKE number, from 1 to 999, that follows the CLIP NAME and CLIP NUMBER, followed by any ALPHA APPEND (if selected), generated for all clips while using this setting. These are the options:

1 to 999 (default = 1)	Ki Pro Quad automatically generates a TAKE number. Press ADJUST button up or down to change the TAKE value from 1 to 999, if a value other than the automatically generated value is desired.

Ki Pro Quad follows these Clip and Take rules when using standard naming conventions:

1. Ki Pro Quad will not overwrite an existing clip.
2. The Take number will auto-increment past existing numbers for the "prefix" as defined by the Reel Name, Clip Name, Clip Number, Clip Append, Alpha Append, and Take settings.
3. If the number is at "999", Ki Pro Quad will record a clip with take 999, but then cannot auto advance so the second attempt to record will generate a "Name In Use" alarm. This prompts you to select a new Clip Name, Clip Number, Clip Append, Alpha Append, and/or Take settings so that a new unique "prefix" is created. This action ensures files are unique and understandable, and that clips are never overwritten.

Custom Clip Naming

Users can elect to give their clips names other than the standard criteria provided by AJA. IMPORTANT: Certain characters may not be allowed or supported if entered for a clip name. Examples include: punctuation marks (other than internal spaces or periods), special characters (like @), and non-ASCII UTF-8 characters are rejected outright. Note: non-UTF-8 characters appear in some languages, like Chinese and Japanese, and are not supported.

Custom clip names can be created via the front panel UI menu parameters (19.1, 19.2, and 19.4) through the use of the SELECT and ADJUST up/down arrows. Users may find that the more efficient method to perform custom clip naming is via the web UI entry fields.

NOTE: *When entering characters for a custom clip name, you must scroll through all characters using the Adjust buttons until you reach the end of the name space before the name is accepted.*

19.1 CUSTOM CLIP   This parameter enables or disables whether a custom clip name can be used via menu parameters 19.1, 19.2, and 19.4, or via the web UI. These are the options:

OFF (default)	Enable defining of custom clip name
ON	Disable defining of custom clip name

19.2 CUSTOM NAME   This parameter defines a custom clip name. The custom name is defined via the front panel select and adjust up/down arrows. The default is "CUSTOM". These are the options:

variable	Using the adjust buttons, enter a custom clip name. Using the adjust buttons and the top Select button, select the characters for the name. The adjust buttons scroll through the choices and the top Select button advances to the next character. While selecting characters, the character being changed will flash to show its position. Certain characters may not be allowed or supported if entered for a clip name. Examples include: punctuation marks (other than internal spaces or periods), special characters (like @), and non-ASCII UTF-8 characters are rejected outright. Note: non-UTF-8 characters appear in some languages, like Chinese and Japanese, and are not supported. Default: CUSTOM

19.4 CUSTOM TAKE   This parameter defines a custom take. The custom take number is defined via the front panel select and adjust up/down arrows. These are the options:

1 to 999 (default = 1)	Press ADJUST button up or down to change the TAKE value from 1 to 999, if a value other than the automatically generated value is desired.

22.1 GANG CLIP NAME   This parameter is used when performing gang recording via multiple Ki Pros and/or Ki Pro Quads (refer to Controlling Multiple Ki Pros later in this manual). If the desire is to have clips named the same across all Ki Pro ganged units' recordings, then use the "Master Name" selection in this parameter. If the desire is to have clips named independently on Ki Pro units, then "Slave Name" should be selected. Selecting "Slave Name" means that the recording will take its name from the individual Ki Pro's parameters and not accept the value pushed to the Slave by the Master Ki Pro. These are the options:

Master Name (default)	Enable clips to be named the same across all Ki Pro ganged units
Slave Name	Name clips independently on Ki Pro units

NOTE: *Most gang controls are only available in the web user interface.*

CONFIG menus

When we talk about menus, we discuss the Parameter Number and Name on the top line of the display and the Parameter Setting(s) possible as shown on the bottom line of the display; remember, the current setting is what is shown.

As in the MEDIA menus already presented, pressing one of the parameter *Adjust* buttons changes the current CONFIG parameter's value to a new one from the Ki Pro Quad's list of choices—repeating the list if you continue to press *Adjust*—or adjusting a numerical value up or down.

The exact choices displayed will vary depending on the parameter. Most adjustment choices made with the Adjust buttons take effect immediately and will be subsequently stored into the Ki Pro Quad's non-volatile memory if they remain unchanged for 3 seconds.

If a Select or Adjust button is held down continuously, the changes will begin to happen automatically - with acceleration if applicable.

Holding down both the Adjust (up) and Adjust (down) buttons—*at the same time* —will set that parameter back to its factory default value.

The CONFIG menu is for system set-up and configuration. Each parameter is numbered, just like the MEDIA menus.

CONFIG Menu Parameters

Many of the CONFIG menu parameters are used together to configure the type of Ki Pro Quad recording and associated conversion formats used on the input or output for a particular workflow.

1.1 RECORD TYPE

This parameter defines the frame recording method. RECORD TYPE can be configured to record the incoming video signal in a "NORMAL" manner, "PsF" signal if the incoming source is 1080psf 29.97 (for example), or variable frame rate (VFR).

NORMAL (default)	Record standard format as input
PsF	Record progressive segmented frame
VFR	Record variable frame rate

NOTE: *A 23.98Hz source is automatically treated as PsF, regardless of this setting. For 29.97 Hz or 25 Hz, "NORMAL" means encode as interlaced and "PSF" means encode as progressive. This only applies to 1080 formats. The following details clarify each case:*

- 1080PsF 23.98 incoming video > Normal selected > 1080p 23.98 recorded to disk.
- 1080i 25 incoming video > PsF selected > 1080p 25 recorded to disk.
- 1080i 29.97 incoming video > PsF selected > 1080p 29.97 recorded to disk.
- 1080PsF signal is recorded to disk as progressive; progressive material on disk may be played back as PsF or progressive on the video outputs; this selection can be made in parameter 1.3 Progressive Playback.

NOTE: VFR (Variable Frame Rate) recording makes use of meta data embedded in the RP188 data stream on the SD-SDI/HD-SDI input, allowing for the frame rate to change actively. Examples of cameras offering variable frame rate include Panasonic AJ-HDC27 and several cameras from the Panasonic HPX line.

Select cameras that output 1080p within a 1080i signal are also supported by the VFR selection. For the Canon EOS C300, 1080p 23.98 may be extracted from the 1080i 29.97 signal and 1080p 24 may be extracted from the 1080i 30 signal. For the Canon EOS C300 formats of 1080p 25 and 1080p 29.97, set the Record Type to PsF to produce progressive frame recordings.

1.3 PROGRESSIVE PLAYBACK   This parameter defines the format applied when progressive media is played from storage. These are the options:

Progressive (default)	Playback as standard progressive frame
PsF	Playback as progressive segmented frame (regardless of what was recorded when input)

NOTE: *HDMI output of progressive material requires the use of 1080p Playback set to Progressive; HDMI only tends to support true progressive or interlace video, not PsF.*

1.4 IN CONVERT   This parameter sets input conversion to one of the available selections. These are the options:.

None (default)	The input is not converted
4K Crop to Quad HD	Converts and crops 4K input to Quad HD
4K/Quad HD to 2K/1080	Converts 4K input to 2K or Quad HD input to HD

Note that the 4K Crop to Quad HD selection and the 4K /Quad HD to 2K/1080 selections have no impact if 2K or 1080 video is input. By default, the Ki Pro Quad will output 2K on the SDI monitor and HDMI monitor outputs if the incoming signal is 4K (4096x2160) or 2K (2048x1080) and no "IN CONVERT" is applied. Also by default, if the incoming signal is Quad HD (3840x2160) or HD 1920x1080P, the Ki Pro Quad outputs 1080 HD on the SDI and HDMI Monitor outputs.

Also, if the 4K Crop to Quad HD "IN CONVERT" selection is used, the Ki Pro Quad will output 1080 HD on the SDI and HDMI Monitor outputs.

1.5 OUT CONVERT   This parameter sets output conversion to one of the available selections. These are the options:

None (default)	The output is not converted
2K Crop to 1080	Converts and crops 2K output to 1080 HD
4K Crop to Quad HD	Converts and crops 4K output to Quad HD

NOTE: *The 4K Crop to Quad HD selection has no impact if a 2K or 1080 video source is used. Also, the 2K Crop to 1080 has no impact if a Quad HD or 1080 video source is used.*

By default, the Ki Pro Quad outputs 2K on the SDI and HDMI Monitor outputs if the incoming signal is 4K (4096x2160) or 2K (2048x1080) and no "OUT CONVERT" is applied. Also by default, the Ki Pro Quad outputs 1080 HD on the SDI and HDMI Monitor outputs if the incoming signal is Quad HD (3840x2160) or HD (1920x1080).

1.6 SDI OUT   This parameter sets the SDI output format.These are the options:

SDI 1-4 RGB (default)	Sets SDI 1-4 outputs to RGB (supports up to 4K 29.97fps)
SDI 1-4 YCbCr	Sets SDI 1-4 outputs to YCbCr (supports up to 4K 59.94fps)
SDI 1-2 RGB	Sets SDI 1-2 outputs to RGB (supports up to 2K 29.97fps)
SDI 1-2 YCbCr	Sets SDI 1-2 outputs to YCbCr (supports up to 2K 59.94fps)
SDI 1 RGB	Sets SDI 1 to RGB (supports up to 2K 29.97fps)
SDI 1 YCbCr	Sets SDI 1 to YCbCr (supports up to 2K 59.94fps)

NOTE: *While the Ki Pro Quad can accept input signals of up to 4K (4096x2160) 59.94fps, 4K and Quad HD recordings are limited to frame rates of 29.97fps or lower. The Ki Pro Quad can be used as a pass-through or "debayer converter" device for 4K or Quad HD 50fps and 59.94fps signals.*

NOTE: *The Ki Pro Quad can perform RGB to YCbCr color space conversions, but it cannot perform YCbCr to RGB color space conversions. This means that if the input signal is YCbCr, you cannot select an RGB output and produce a proper output.*

NOTE: *SDI 1 RGB and SDI 1 YCbCr high frame rates (in excess of 29.97fps) are supported by 3G-SDI. Be sure to connect the AJA Ki Pro Quad to a 3G-SDI capable device in these cases. If a 3G-SDI capable device is not available, RGB and high frame rate YCbCr may be output via SDI 1 and SDI 2 as "dual link" 1.485Gbps."*

1.64 3G SDI Level   This parameter allows the 3G SDI output to be configured for either Level A or Level B. While many 3G SDI devices will support both Level A and Level B, some devices may need a specific 3G SDI selection to operate as expected.

Level B (default)	For use with devices that accept or require Level B.
Level A	For use with devices that accept or require Level A.

1.66 HDMI Out   This parameter determines whether scaled or full raster video will be output.

NOTE: *The Full Raster selection only has an impact on the output when a 4K or Quad HD video source is used.*

Scaled (Default)	The HDMI output is limited to 2K or HD.
Full Raster	The HDMI output may produce 4K or Quad HD.

Limitations to be aware of when Full Raster is selected and a 4K or Quad HD video source is used:

- HDMI full raster output is disabled when the video source is a 4K RAW signal that must be debayered. For example, when the Ki Pro Quad is used with the Canon C500, 4K or Quad HD HDMI output during E-to-E or recording is not supported. If realtime debayer, recording and 4K or Quad HD HDMI monitoring is needed, consider the use of the AJA Ki Pro Quad 4x SDI outputs connected to an AJA Hi5-4K Mini-Converter. Note: 4K or Quad HD HDMI output is possible during playback when Full Raster is selected because debayer processing is no longer required.

- If Full Raster is selected and the video source is 4096x2160 at any frame rates other than 23.98 or 24 fps, then the output is disabled. HDMI 1.4 only provides support for 4K 4096x2160 at 24Hz. However, the Ki Pro Quad may be configured for an In Convert>4K Crop to Quad HD or an Out Convert>4K Crop to Quad HD so that 4096x2160 signals greater than 24Hz may be output as Quad HD 3840x2160.

- The maximum supported frame rate for 3840x2160 is 30Hz as specified by HDMI 1.4.

- Full Raster output disables the Super Out feature; superimposed timecode and transport state is not possible with a 4K or Quad HD HDMI output.

Helpful HDMI configuration guidelines:
- Determine your video source format and frame rate.
- Decide whether you want a Full Raster or Scaled output.
- Determine whether your connected device can support 4096x2160 or 3840x2160; remember that 4096x2160 is only supported for 24Hz.
- Remember that the Progressive Playback menu parameter needs to be configured for Progressive for HDMI output.

1.8 SDI/HDMI Monitor Output Sets the format of the SDI/HDMI Monitor outputs. These are the options:

Normal (default)	No conversion is applied to the monitoring output
Out Convert	Scaled video is additionally cropped to 1080 (if the source is not already 1080)

1.9 SUPER OUT This parameter provides superimposition of timecode and transport state (Record, Pause, etc.) onto the SDI or HDMI monitor outputs. Note that Super Out applies only to the 2K/1080 SDI/HDMI monitor outputs, not the 4x 3G-SDI outputs or 4K/Quad HD HDMI output. The 4x 3G-SDI outputs are always "clean" outputs. These are the options:

Off (default)	Superimposition is disabled
SDI Monitor	Superimposition is enabled for the SDI output
HDMI Monitor	Superimposition is enabled for the HDMI output
SDI/HDMI Monitor	Superimposition is enabled for the SDI/HDMI outputs

2.1 VIDEO INPUT This parameter selects a video input source from the video input connectors that are available. This selection impacts the type of video that can be recorded and/or passed through. These are the options:

SDI 1 RAW (default)	Sets SDI 1 to RAW input
SDI 1 RGB	Sets SDI 1 to RGB input
SDI 1 YCbCr	Sets SDI 1 to YCbCr input
SDI 1-2 RAW	Sets SDI 1-2 to RAW input
SDI 1-2 RGB	Sets SDI 1-2 to RGB input
SDI 1-2 YCbCr	Sets SDI 1-2 to YCbCr input
SDI 1-4 RAW	Sets SDI 1-4 to RAW input
SDI 1-4 RGB	Sets SDI 1-4 to RGB input
SDI 1-4 YCbCr	Sets SDI 1-4 to YCbCr input

NOTE: The only RAW input currently supported by the Ki Pro Quad is the output of the Canon C500 camera when using 4K or Quad HD modes.

NOTE: Choosing the correct video input is a key component of successfully using the AJA Ki Pro Quad. Be sure to determine the correct signal type being provided by your camera or video source before configuring the 2.1 Video Input selection; if an incorrect selection is made, unexpected or undesirable recordings may result. If you are unsure of your signal type, you may use the built-in confidence monitor and the STATUS menu to help determine the correct selection.

2.12 Ignore ANC This parameter need only be changed if the incoming signal supplied to the Ki Pro Quad is misidentified. Misidentified signal formats can be caused by inaccurate ancillary (ANC) data. Typically, the VPID (video payload identifier) information in ancillary (ANC) data being supplied by the video source is accurate, but when it is not, this menu parameter may be configured to ignore the inaccurate ancillary (ANC) data or VPID information. The Ki Pro Quad will then rely solely on the 2.1 Video Input selection to determine the correct video format.

| OFF (default) | The Ki Pro Quad uses VPID to determine the incoming video format. |
| ON | The Ki Pro Quad ignores VPID and instead uses the Video Input selection. |

2.2 AUDIO INPUT This parameter selects an audio input source from the audio input connections available, including embedded SDI audio (which requires an SDI video source) or analog audio (via the XLR connections).

| SDI (default) | Selects SDI embedded audio from the SDI input connector (if SDI video input is selected) |
| XLR | Selects the XLR input for audio input |

NOTE: *XLR input could be microphone level or line level, depending on the connector panel switch setting.*

2.3 AUDIO CHANNELS This parameter selects the use of either two or eight audio channels. Generally, when working with camera sources, there are only one or two audio tracks being produced, and therefore 2-channel would be the appropriate selection. In post production use, there are often more channels of audio required, so 8-channel audio may be the appropriate choice in such situations. Ki Pro Quad only allows for the selection of either 2 channels or 8 channels of audio to be written to the QuickTime file that is recorded. Therefore, if the source has more than 2 channels of audio, but less than 8 channels of audio that need to be preserved, the CONFIG Menu parameter 2.3 Audio Channels would need to be set to "8 Channels."

NOTE: *Not all devices support 8-channel audio. Ki Pro Quad does not provide a "mixdown" option for 8- channel recordings on output, so be sure to use devices that support 8-channel audio via SDI if the 8 channels recorded are desired.*

NOTE: *If 8 Channels are selected for 2.3 Audio Channels, but 2.2 Audio Input is set to XLR, a Warning prompt will appear on the display: "Warning 2 Channel Format." Clear this warning by selecting SDI audio as the input source in 2.2 Audio Input or by selecting 2-channel audio in 2.3 Audio Channels.*

| 2 Channels (default) | Selects recording of 2 audio channels |
| 8 Channels | Selects 8 audio channels (valid for SDI embedded audio only) |

4.1 ANALOG AUDIO This parameter configures the analog audio signal levels for input and output. These are the options:

+24dBu (default)	Selects pro-level USA signal levels of +24dBu
+18dBu	Selects pro-level Europe signal levels of +18dBu
+15dBu	Selects pro-level German signal levels of +15dBu
+12dBu	Selects consumer signal levels of +12dBu
	Note: Maximum amplitude (0 dBFS)

Professional audio equipment has much higher levels than consumer equipment: a 0 VU reading corresponds to +4 dBu. Connecting a professional +4 dBu device to a consumer audio input -10dBV (-7.8 dBu) may cause overloading, whereas the output of a consumer device probably does not have sufficient power to drive a professional audio input. With consumer and semi-professional audio equipment, a VU reading of 0 dB is typically referenced to -10 dBV. 0 dBu = 0.775 VRMS. These settings are valid with the panel Mic/Line switch set to "Line." (The Mic settings are lower input level settings for use with condenser and dynamic microphones—use Mic +48 for powered condenser mics and Mic for dynamic microphones.).

6.1 GENLOCK This parameter selects the source of reference to genlock to during playback.

NOTE: *Ki Pro Quad always genlocks to the selected video input during capture; genlock may only be needed during some playback configurations (such as in a facility with a variety of other equipment).*

For general monitoring purposes, genlock is not required. These are the options:

INPUT	Use the currently selected input as the Genlock source
FREERUN (default)	Free run mode: Ki Pro Quad syncs to its own timebase and is not locked to an external source
Ref In	Use the Ref Input as the Genlock source

8.0 TC IN This parameter selects the source of timecode from those available. These are the options:

TC VALUE (default)	Uses the value specified in parameter 8.1 TC Value
SDI RP188	Uses the value from the SDI input
LTC	Uses the value from the LTC input
TIME OF DAY	Sets timecode to the device clock value (55.6 Time Set)

8.1 TC VALUE This parameter selects an hour value from which timecode begins incrementing. These are the options:

00:00:00:00 to 23:00:00:00 (Default: 01:00:00:00)	Use the ADJUST buttons to select a timecode hour. For example: 01:00:00:00, 02:00:00:00, etc.

8.2 TC TYPE This parameter selects drop frame or non-drop frame timecode. These are the options:

NDF (default)	Selects Non-drop Frame timecode
DF	Selects Drop Frame timecode

NOTE: *If the menu parameter 8.0 TC In is set to SDI RP188 or LTC, the TC Type selection does not apply. TC Type only applies to the TC Value or the Time of Day value generated by the Ki Pro Quad.*

8.3 ARM RECORDING This parameter selects how recording may be initiated—either by pressing the physical record button or by incrementing ststop timecode values. These are the options:

REC KEY (default)	Start when Record button is pressed
TC/REC KEY	Start on Time Code or Record button

If arm recording on timecode, parameters 8.0, 8.1. and 8.2 must be set to a qualified source and type of timecode. You should use timecode that starts and stops, like that produced by record run timecode; freerun timecode is not viable for this feature since it does not produce start and stop values.

9.0 INTERVAL RECORD The Ki Pro Quad can be used to create timelapse recordings via the 9.0 Interval Record, 9.1 Interval Frames and 9.2 Interval Time selections. These are the options:

OFF (default)	Normal recordings are produced.
ON	Timelapse recordings are produced.

Example of timelapse recording selections:

The incoming video signal is 1080i 29.97 fps, the record button is depressed, and the recording is then stopped 90 seconds later with the following settings:

9.0 Interval Record > On
9.1 Interval Frames > 1
9.2 Interval Time > Second

The resulting recording would be 90 frames in duration, would have a frame rate of 29.97 fps, and would appear to be "undercranked" or "sped up" when compared to a normally created recording.

NOTE: *Selecting an interval frame number that exceeds the incoming video frames per second will result in normal video. "Overcranking" or "slow mo" is not supported by the interval recording feature.*

9.1 INTERVAL FRAMES Determines how many frames from the incoming video will be used for the recording. These are the options:

Incrementing Value	Sets number of frames to use for the recording.

9.2 INTERVAL TIME Determines the time period from which the interval frames are selected. These are the options:

Second	The second from which interval frames are selected.
Minute	The minute from which interval frames are selected.
Hour	The hour from which the interval frames are selected.

13.1 CAMERA DATA Some cameras produce SDI ancillary data, such as ststop commands, that may be useful when interfacing with the Ki Pro Quad. The CONFIG menu parameter 13.1 Camera Data is designed to address this use of SDI ancillary data. The default for this parameter is "None"; when this is selected, no camera metadata is passed to any of the Ki Pro parameters even if a camera with SDI ancillary data is connected to the Ki Pro Quad. If an appropriate camera is present and sending appropriate SDI ancillary data to the Ki Pro Quad and that camera manufacturer/model is selected from the list, the Ki Pro Quad will respond to as many parameters as are applicable.

These are the camera choices and the functionality they support:

NONE (default)	Camera metadata is not passed to any of the Ki Pro Quad parameters even if a camera with ancillary data is connected to the Ki Pro Quad.
Canon XF	Canon XF-series cameras with SDI outputs will provide ancillary data that produces ststop commands but not clip naming.
Canon C300	Canon C300 cameras provide ancillary data that produces ststop commands but not clip naming.
Canon C500	Canon C500 cameras provide ancillary data that produces ststop commands; at this time clip naming is not supported.
Pana AF100	Panasonic AG-AF100 series cameras provide ancillary data that produces ststop commands but not clip naming. If the camera is configured for 720p 23.98 (24), 720p 25 or 720p 29.97 (30) recording, this Camera Data setting will also allow the extraction of these frame rates for recording on the Ki Pro Quad.
Sony F3/F55	Sony PMW-F3 and Sony PMW-F55 SDI outputs will provide ancillary data that produces ststop commands; at this time clip naming is not supported.
ARRI Alexa	ARRI Alexa cameras provide ancillary data that produces ststop commands; at this time clip naming is not supported.

The Camera Data menu parameter has domain over an array of other Ki Pro Quad parameters; selecting Camera Data supersedes other parameter selections if valid ancillary data is present and the camera is selected from the menu parameter choices. Note that you may want to manually select 8.0 TC In>SDI RP188 when you wish to obtain timecode from an SDI camera source even if you use the Camera Data selection.

NOTE: *The initial firmware version for Ki Pro Quad does not offer support for RED cameras like other Ki Pro products; this support will be added in a later free firmware update for Ki Pro Quad.*

Important Notes About Cameras Supported by 13.1

The following notes describe the functionality of various cameras supported by Ki Pro Quad parameter 13.1.

Canon XF: Because the Camera Data parameter requires the use of SDI, only the XF series cameras that feature SDI outputs can be used with this feature. These cameras provide ancillary data that produces ststop commands but not clip naming.

Canon C300: These cameras provide ancillary data that produces ststop commands but not clip naming. The Canon EOS C300 outputs 1080i by default, but can produce true progressive video within this interlaced output. The extraction of 1080p 23.98 from within 1080i 29.97 and 1080p 24 from within 1080i 30 is automatic if the camera is properly configured and the Camera Data selection is set to Canon C300; users do not need to manually set the Record Type parameter separately. However, for 1080p 25 that is output as 1080i 25 and 1080p 29.97 that is output as 1080i 29.97 from the camera, users need to manually select "PsF:" in the Record Type (1.1) menu parameter even if they have selected the Canon C300 in the Camera Data parameter. This selection is required because there is no ancillary data indicating these frame rates within the SDI output of the camera.

13.3 LUT Enable
This parameter allows the use of an input or output lookup table (LUT) with RGB video. For details, see the explanation following tables 13.3 and 13.4 below. These are the options:

Off (default)	Disables use of LUTs.
Input	Enables use of an input LUT.
Output	Enables use of an output LUT.

13.4 LUT File
This parameter specifies the name of the LUT file, if used. These are the options:

None (default)	No LUT file used.
LUT Name	Shows the specified LUT file name. LUT files are loaded via the web browser user interface.

Since the Ki Pro Quad may work with log RGB video without a linear look applied, the use of LUTs may be desirable to either "bake in" a look or, more commonly, monitor material with a "normal" look.

Note that you may only enable either an Input LUT or an Output LUT; this is done so that two LUTs cannot be applied at the same time resulting in applying a "double LUT" to an image. When an Input LUT is applied, it impacts the encoded video and thereby all outputs. An Output LUT only impacts the video outputs, not the recordings. Additionally, a LUT can only actually be applied to an RGB or log RGB video source. If a LUT is loaded, but YCbCr video is used, there is no impact or effect on the YCbCr video; LUTs are ignored for YCbCr sources.

LUTs are not loaded via the front panel UI; LUTs may only be loaded via the web UI. Selections are provided in the web UI alongside the 13.4 LUT File parameter. "Choose File" appears when the LUT Enable selection is set to either Input or Output.

A Factory Reset re-sets both 13.3 and 13.4 menu parameters to *Off* and *None*, respectively. A LUT loaded to the Ki Pro Quad survives power cycling the unit though.

Only one LUT may be loaded to the Ki Pro Quad at a time. This single LUT may be used for either the input or output. If you do not wish to apply a LUT, simply don't select it with the 13.3 LUT Enable parameter.

The Ki Pro Quad supports the import of .txt and the .lut extension files.

NOTE: *The 1D LUTs should be formatted with the following conditions:*
1024 values (10-bit), 3-column tab delimited text file with either .txt or .lut file extensions.

32.0 Loss of Video

This parameter selects whether recording continues when valid video is not present. These are the options:

Stop Rec (default)	Recording stops when video is lost
Cont Rec	Recording continues when video is lost

NOTE: *If CONT Rec is selected, and a loss of video is encountered, a graphic with the text "LOSS OF VIDEO" superimposed over color bars will appear. Be sure to check your source and video connections if you are experiencing a loss of video.*

41.1 VIDEO SG FRMT

This parameter determines the video format output from Ki Pro Quad's internal test signal generator. This parameter is used with parameter 41.2 to determine the type of video test signal output by Ki Pro Quad.

NOTE: *While the Ki Pro Quad may be configured for a YCbCr or RGB signal generator, the output is ultimately determined by the selection made in the 1.6 SDI OUT menu parameter.*

Example: The 41.1 VIDEO SG FRMT is set to 1080p 23.98 RGB and the 1.6 SDI OUT is set to SDI 1 RGB, then the output will be RGB. If the 41.1 VIDEO SG FRMT is set to 1080p 23.98 RGB and the 1.6 SDI OUT is set to SDI 1 YCbCr, then the output will be YCbCr even though the signal generator was configured for RGB.

These are the options:

720p 50	2K PsF25	Select the video format desired
720p 59.94	2K PsF25 RGB	for test signal output.
1080p 23.98	2K PsF29.97	
1080i 25	2K PsF29.97 RGB	
1080i 29.97	QHD p23.98	
720p 60	QHD p23.98 RGB	
1080PsF 23.98	QHD p24	
1080PsF 24	QHD p24 RGB	
1080i 30	QHD p25	
1080p 24	QHD p25 RGB	
1080p 25	QHD p29.97	
1080p 29.97	QHD p29.97 RGB	
1080p 23.98 RGB	QHD PsF23.98	
1080p 24 RGB	QHD PsF23.98 RGB	
1080p 25 RGB	QHD PsF24	
1080p 29.97 RGB	QHD PsF24 RGB	
1080PsF 23.98 RGB	QHD PsF25	
1080PsF 24 RGB	QHD PsF25 RGB	
1080PsF 25 RGB	QHD PsF29.97	
1080PsF 29.97 RGB	QHD PsF29.97 RGB	
1080p 50	4K p23.98	
1080p 59.94	4K p23.98 RGB	
2K p23.98	4K p24	
2K p23.98 RGB	4K p24 RGB	
2K p24	4K p25	
2K p24 RGB	4K p25 RGB	
2K p25	4K p29.97	
2K p25 RGB	4K p29.97 RGB	
2K p29.97	4K PsF23.98	
2K p29.97 RGB	4K PsF23.98 RGB	
2K PsF 23.98	4K PsF24	
2K PsF 23.98 RGB	4K PsF24 RGB	
2K PsF24	4K PsF25	
2K PsF24 RGB	4K PsF25 RGB	
	4K PsF29.97	
	4K PsF29.97 RGB	

41.2 VIDEO SG This parameter determines the video signal output from Ki Pro Quad's internal test signal generator. This parameter is used with parameter 41.1 to determine the type of video test signal output by Ki Pro Quad. These are the options:

OFF (default)	Turn test signal output OFF.
Black	Video test signal output is color black.
75% Bars	Video test signal output is 75% color bars. This 75% amplitude,100% saturation test signal is useful to check low frequency response and video tilt as well as the performance of video clamping.
100% Bars	Video test signal output is 100% color bars. This 100% white full-field bars test signal is helpful to check chroma amplitude versus overall video level.

NOTE: The signal generator acts as a "substitute" for the video input. Because of this, if the Video SG is configured for Black, 75% Bars or 100% Bars, you may record these signal generators as a file. Additionally, if the 41.1 Video SG Frmt parameter is configured for an RGB format, then

the 1.6 SDI Out menu parameter should be set up for an RGB output if RGB is desired. Note that it is also possible to configure the SDI Out for YCbCr when the Video SG Frmt is configured for RGB, but a color space conversion will be applied to the video output.

41.3 AUDIO SG   This parameter determines the audio signal output from Ki Pro Quad's internal test signal generator. These are the options:

OFF (default)	Turn audio test signal output OFF.
Silence	Output an audio test signal containing silence only.
1 kHz	Output a standard 1 kHz test signal tone.

50.1 IP CONFIG   This parameter determines the type of TCP/IP network configuration used by Ki Pro Quad. These are the options:

STATIC ADDR	Assign a static IP address manually (parameters 50.2, 50.3, and 50.4 will have to be entered to accomplish this).
DEFAULT ADDR	Use the factory default static IP address: 10.65.74.65
DHCP (default)	Select automatic IP address assignment from DHCP server on LAN. NOTE: if Ki Pro Quad cannot find a DHCP server to communicate with, it will select the default factory IP address of 192.168.0.2.

NOTE: With parameters 50.1, 50.2 and 50.3, there is no timeout when editing—changes made while in these menus will be saved and activated when the menu is exited.

50.2 IP ADDRESS   This parameter determines the static IP address used by Ki Pro Quad for TCP/IP networking.

variable	Using the adjust buttons, enter an IP address compatible with your LAN (if you have one). If direct connecting to a computer, enter a legal IP address that you'll also enter in the computer's web browser. This is only needed for Static IP configurations. NOTE: If 50.1 is set to *DHCP* and there is a DHCP failure, then the default IP address is: 192.168.0.2 NOTE: If 50.1 is set to *Default Addr,* the default static IP address is: 10.65.74.65

NOTE: For parameters 50.2, 50.3, and 50.4, you will be setting IP addresses that consist of "octets" separated by a period (i.e., 10.0.181.0). When editing these, the Select button selects the octet and then the Adjust buttons select the desired number. Pressing Select Up again advances to the next octet. At the final octet, the address will flash—pressing Select Up at that point confirms the setting. When these parameters are edited, you can abort the editing process by backing out (press the Select down arrow button repeatedly until the edit passes the first octet). You'll notice that after completing the edit on the last octet, the display will blink—this is an indication that the edited IP address is about to be saved. You can save the edited IP address (press the Select arrow up to save) or choose not to save by pressing the Select arrow down button.

50.3 SUBNET MASK This parameter determines the subnet mask used by Ki Pro Quad for TCP/IP networking.

variable	Using the adjust buttons, enter a subnet mask compatible with your LAN (if you have one). This is only needed for Static IP configurations. NOTE: If 50.1 is set to *DHCP,* the default *Subnet Mask* will be assigned by the DHCP server NOTE: If 50.1 is set to *Default Addr,* the default *Subnet Mask* is: 255.0.0.0

Please read the "Note" about editing IP addresses in parameter 50.2 as it also applies to parameters 50.3 and 50.4.

50.4 STATIC GATEWAY This parameter determines the gateway or router used by Ki Pro Quad on your LAN for TCP/IP networking.

variable	Using the adjust buttons, enter a gateway compatible with your LAN (if you have one). This is only needed for Static IP configurations. NOTE: If 50.1 is set to *DHCP,* the default *gateway* will be assigned by the DHCP server NOTE: If 50.1 is set to *Default Addr,* the default gateway is: 10.0.0.1

NOTE: *Without a properly configured default gateway (whether you have a router/gateway or not), Ki Pro Quad will be unable to see other Ki Pros on the network, although you may still be able to control the Ki Pro Quad via a web browser. Also, without a proper gateway defined, the discovery feature "Available Ki Pros—Click to Refresh" on the Network web page will not work correctly and list other Ki Pros or FS1s on the network.*

50.5 SYSTEM NAME This parameter defines a name for Ki Pro Quad and gives it a unique identifier. This same name is used both when displaying systems via the web interface.

variable	Using the adjust buttons, enter a name for Ki Pro Quad. Using the adjust buttons and the top Select button, select the characters for each of the up to 20-character name. The adjust buttons scroll through the choices and the top Select button advances to the next character. While selecting characters, the character being changed will flash to show its position. The character set allowed is: 0 through 9, '-',', A through Z (uppercase) and a through z (lowercase). *Default:* Ki Pro Quad

50.6 MAC ADDRESS This parameter is an information only field showing the MAC address of the Ki Pro Quad's Ethernet adapter.

Information only display	Selecting this parameter allows you to view Ki Pro Quad's ethernet MAC address. The MAC address is a unique value associated with the internal ethernet network adapter. MAC addresses are also known as hardware addresses or physical addresses. MAC addresses uniquely identify an ethernet adapter on a LAN. MAC address format: MM:MM:MM:SS:SS:SS. The value is 12-digit hexadecimal, where the first half identifies the manufacturer and the second half identifies the unique serial number.

50.9 User Authentication This parameter enables or disables an authentication login requirement when using the web UI. By default this parameter is set to Disabled.

If you select Login via the front panel interface and then attempt to use the web UI interface, you will be asked for a login password. The web browser will present the login screen requesting that a password be entered before you can access any other parameter or configuration screen.

The password is initially set to the default value: password.

If you select Login for the User Authentication parameter via the web UI, you may enter a user selected password. As long as the menu parameter is not changed to Disabled, the password requirement will remain in effect. Any time the web UI is accessed, the login password will be requested before additional access to any other web UI parameter or configuration screen will be granted. If you enter a user selected password, be aware that this password will be retained and you will need to remember the password. If the user entered password is forgotten, you may clear it by performing a Hard Factory Reset.

NOTE: *A standard Factory Reset does not clear the user entered password. To perform a Hard Factory Reset, enter the 99.0 Factory Reset parameter, and unlike a typical Factory Reset where only the ADJUST (up) button is held for 2 seconds, hold both the ADJUST (up) and the ADJUST (down) buttons simultaneously for 2 seconds.*

55.4 DATE SET This parameter manually sets the calendar date of the internal Ki Pro Quad clock. The value is defined as YYYY/MM/DD (year/month/day).

variable	Using the adjust buttons, enter a calendar date for Ki Pro Quad. Using the adjust buttons and the top SELECT button, select the characters for each category (YYYY/MM/DD). The adjust buttons scroll through the choices and the top SELECT button advances to the next character. While selecting characters, the character being changed will flash to show its position. When finished, the final press of the SELECT up button will flash the whole value, hit SELECT once more to confirm and the next menu parameter will appear.

55.6 TIME SET   This parameter manually sets the calendar date of the internal Ki Pro Quad clock, when setting manually (NTP not used).

variable	Using the adjust buttons, enter a time for Ki Pro Quad's clock. Using the adjust buttons and the top Select button, select the characters for each digit (hours/minutes). The adjust buttons scroll through the choices and the top Select button advances to the next character. While selecting characters, the character being changed will flash to show its position. When finished, the final press of the SELECT up button will flash the whole value, hit SELECT once more to confirm and the next menu parameter will appear. Time is set using a 24 hour format (military) and must be set to GMT time. NOTE: there are many websites that will assist you in converting your local regional time to GMT (UTC). AJA does not endorse any particular one, but here are two examples: http://tycho.usno.navy.mil/zones.html http://hurricanes.noaa.gov/zulu-utc.html

70.2 DISPLAY INTENSITY   This parameter determines the brightness of the alphanumeric LCD display and front panel backlit buttons. A dimmer display uses less power.

variable	Using the adjust buttons, you can dim or brighten the alphanumeric display and activity indicator LEDs in steps from 1 (dim) to 8 (brightest) Default: 6

70.3 FAN SPEED   This parameter determines the speed of Ki Pro Quad's internal cooling fan. In some environments where audio recording is occurring close to the Ki Pro Quad unit, it may be desirable to set the fan speed to "QUIET AUTO" for optimum quiet operation during recording.

NORMAL (default)	Fan runs at normal fixed speed for optimum cooling.
QUIET AUTO	Fan runs at normal speed until recording begins; then the fan ramps down to a slower speed for optimum quiet.
NORMAL AUTO	Fan runs at variable speeds for optimum cooling.

80.1 SERIAL NUMBER   This parameter displays this Ki Pro Quad's unique serial number.

80.2 SW VERSION   This parameter displays Ki Pro Quad's software version level.

91.1 RECALL PRESET   This parameter recalls the Ki Pro Quad to a previously saved preset configuration stored using parameter 92.1. Use the ADJUST buttons to set the number of the Preset register you wish to recall. To recall, press the SELECT up (^) button, and then press the ADJUST up (^) button. The message *[COMPLETE]* is displayed after a successful recall.

92.1 STORE PRESET   This parameter saves a preset configuration to the selected storage register. Use the ADJUST buttons to set the number of the Preset register. To store, press the SELECT up (^) button, and then press the ADJUST up (^) button. The message *[COMPLETE]* is displayed after a successful store.

99.1 FACTORY RESET Selecting this parameter and then pressing the ADJUST (up) button for 2 seconds recalls Ki Pro Quad's factory default settings.

❌	**Caution!** Selecting this parameter and recalling factory defaults will overwrite the current settings (with the exception of network settings, which are retained).

Recalling factory defaults does not affect these settings: Encode Mode, Encode Type, IP Config, IP Address, Subnet Mask, Default Gateway, System Name, or Date and Time. To clear the network settings and recall factory defaults, hold down both the Adjust (up) and Adjust (down) buttons at the same time.

NOTE: *To set a single parameter to its factory default value, go to that parameter and hold down both the Adjust (up) and Adjust (down) buttons at the same time.*

Signal Routing Examples

Since the Ki Pro Quad can receive a variety of signals via quad, dual or single link SDI, what follows are examples of how the In Convert, Out Convert, SDI Output, Video Input, and LUT Enable work in combination with each other.

Example 1   A Canon EOS C500 is outputting 4K or Quad HD via SDI that is RAW (at up to 29.97fps). A 1x 3G-SDI connection is made between the camera and the Ki Pro Quad. The user wishes to encode the incoming material as Apple ProRes 444 at 4K. The incoming signal will be debayered and an RGB Apple ProRes 444 file will be created on the Ki Pro Quad recording media. At the same time, the RAW data without any changes in the RAW signal may be passed along the Thunderbolt connection to a Thunderbolt-equipped host computer for capture via the AJA CamXchange application). Additional color processing, scaling, etc. may be performed on the computer using third-party software from Canon or others.

These example menu parameters and settings would produce the desired result:

1.4	In Convert	None
1.5	Out Convert	None
1.6	SDI Out	SDI 1-4 RGB
1.8	SDI/HDMI Output	Normal
2.1	Video Input	SDI 1 RAW
13.3	LUT Enable	Off

Reviewing the Above Settings: No In Convert has been selected, so the signal is left at the 4K raster size that is presented on the 3G-SDI connection of the camera. No Out Convert selection has been made, so the SDI Monitor output and the HDMI Monitor output will both be 2K scaled and debayered monitoring versions of the 4K input source. The SDI Out is set to SDI 1-4 RGB so that the incoming signal is debayered and passed back out of the Ki Pro Quad as quad link HD-SDI with RGB values. As noted, the Video Input is set to SDI 1 RAW; therefore, the Ki Pro Quad performs the correct debayer processing before encoding the material to Apple ProRes 444 as RGB. Neither an Input LUT nor an Output LUT has been applied via

the LUT Enable menu parameter, so material may appear "washed out" in recordings as well as on monitors and may not represent the picture as it will finally be realized in post production after color correction has been applied.

Example 2 The camera is outputting quad link 3G-SDI at up to 29.97fps, and 4x 3G-SDI connections are made between the camera and the Ki Pro Quad. The user wishes to encode the incoming material as Apple ProRes 422 (HQ) at a 4K raster size. The incoming signal will be encoded to an Apple ProRes 422 (HQ) file on the Ki Pro Quad recording media. Note: No information will be passed along the Thunderbolt connection since the source baseband video is not from a RAW source.

These example menu parameters and settings would produce the desired result:

1.4	In Convert	None
1.5	Out Convert	2K Crop to 1080
1.6	SDI Out	SDI 1-4 YCbCr
1.8	SDI/HDMI Monitor Output	Out Convert
2.1	Video Input	SDI 1-4 YCbCr
13.3	LUT Enable	Off

Reviewing the Above Settings: No In Convert has been selected, so the signal that is recorded on the Ki Pro Quad media is at a 4K raster size. An Out Convert selection has been made, so the SDI Monitor output and the HDMI Monitor output are cropped to 1080. The SDI output is set to SDI 1-4 YCbCr so that the incoming signal is passed back out of the Ki Pro Quad as quad link SDI with YCbCr values. The Video Input is set to SDI 1-4 YCbCr and the encoding is set to Apple ProRes 422 (HQ). In this particular example, no LUT is applied since the source is YCbCr.

Example 3 The camera is outputting single link 3G SDI that is 4:2:2 1080p 59.94. A 1 x 3G SDI connection is made between the camera and the Ki Pro Quad. The user wishes to encode the incoming material as Apple ProRes 422(HQ).

These example menu parameters and settings would produce the desired result.

1.4	In Convert	None
1.5	Out Convert	None
1.6	SDI Out	SDI 1 YCbCr
1.8	SDI/HDMI Output	None
2.1	Video Input	SDI 1 YCbCr
13.3	LUT Enable	Off

Reviewing the Above Settings: No In Convert has been selected so the signal that is recorded on the Ki Pro Quad media is the same as what is output by the camera. An Out Convert selection has also not been made because the parameter does not allow conversion if the incoming video signal is 1080; if a conversion were selected, the output signal would not be affected. The SDI output is set to SDI 1 YCbCr. The only valid output selections would be SDI 1 YCbCr operating at 3G or SDI 1-2 YCbCr operating at dual link 1.485Gbps. In this particular example, no LUT is applied since the source is YCbCr.

Unique Workflow Support for the Canon C500

The Canon C500 camera can output HD or 2K video, but it can also be configured to output RAW when working with 4K (4096x2160) or Quad HD (3840x2160). In order to use the Canon C500 RAW output with the Ki Pro Quad, the camera must be configured for either 4K or Quad HD RAW output.

To configure the camera for RAW output, review the following settings on the Canon C500 camera:

1. Press the Menu button on the Canon C500 and navigate the menu structure using the joystick.
2. Navigate to the 4K/2K/MXF Setup menu.
3. Select System Priority>4K.
4. Select System Frequency>50 Hz or 59.94 Hz (depending on your region and desired Hz/frame rate).
5. Navigate to 4K (4096/3840).
6. Select Mode>RAW.
7. Select Resolution>4096x2160 or 3840x2160 (depending on your desired raster size).
8. Select Frame Rate>23.98 or 24 or 25 or 29.97 (depending on your desired frame rate).
9. Select 3G-SDI Output>On.
10. Select Rec Command>On.

Next, you will configure the settings of the AJA Ki Pro Quad:

1. Depress the CONFIG button on the AJA Ki Pro Quad.
2. Use the SELECT up/down buttons to navigate the menu parameters. Use the ADJUST up/down buttons to make choices within the menu parameters.
3. Select 1.1 Record Type>Normal.
4. Select 1.4 In Convert>None.
5. Select 2.1 Video Input>SDI 1 RAW.
6. Select 8.0 TC In>SDI RP188.
7. Select 13.1 Camera Data>Canon C500.
8. Exit the CONFIG menu by pressing the MEDIA button on the Ki Pro Quad.
9. Select 14.1 Encode Type - select the desired Apple ProRes codec.

The Ki Pro Quad can also be used, along with a Thunderbolt-equipped host computer, to capture Canon RAW via the Thunderbolt output on the Ki Pro Quad and the AJA CamXchange application. To learn about this workflow and details about the operation of the CamXchange application, please consult the AJA CamXchange documentation. The AJA CamXchange application is available as a free download from the AJA website at:

www.aja.com/en/support/kiproquad

Chapter 5: Browser Remote Control

Remote Control Overview

An optimized web server inside Ki Pro Quad allows you to remotely monitor and adjust parameter settings via a a browser client running on a network wired computer. The network can be a closed local area network, a straight computer-to-Ki Pro Quad cable, or even exposed through a firewall to a broadband WAN (not generally recommended since anyone on the internet can access the Ki Pro Quad).

The LAN connection on Ki Pro Quad uses a standard RJ45 connector, but internally it's intelligent and communicates via standard "straight-through" CAT 5 ethernet cables or null-modem (cross-over) cables without any configuration or strapping required.

NOTE: *Safari is the preferred web browser for Ki Pro Quad control on the Mac, and additionally Chrome and Firefox on Windows. Other web browsers may work, but AJA cannot guarantee consistent operation for all web browsers or web browser versions.*

Resetting Values To Factory Settings

Note that anytime you need to return to the factory Ki Pro Quad configuration, you can easily do so. To perform a global reset of Ki Pro Quad to factory settings, go to Ki Pro Quad front panel CONFIG parameter 99.0 for a reset to factory values. You can also recall factory settings by selecting the *Presets* browser menu, scrolling to the bottom of the list of presets, and clicking *Recall Factory Preset*.

Web Browser via Ethernet

To control Ki Pro Quad remotely, connect a computer to the Ki Pro Quad unit's LAN connector, an RJ45 socket, via a CAT5 ethernet cable.

To access the Ki Pro Quad, simply enter its URL in the web browser. The URL will be the IP address defined in Ki Pro Quad's Network parameter menus (50.2—please note also that 50.1 through 50.4 must all be configured correctly to access Ki Pro Quad on your network). If Ki Pro Quad is using DHCP (the default), the IP address can be found by going to parameter 50.2 and reading it there. When Ki Pro Quad is shipped from the AJA factory, it defaults to DHCP operation.

If 50.1 is set to *DHCP,* and the DHCP server on the network fails to grant an IP address, then Ki Pro Quad will fall back to the static IP address.

If 50.1 is set to *Default Addr,* the factory default static IP address is: 10.65.74.65.

So, if 50.1 is set to *Default Addr*, you would type the following in the web browser: *http://10.65.74.65* to see Ki Pro Quad's web interface *Main Status* screen.

General Screen Information

Figure 11. Ki Pro Quad Web Interface, Status Screen

Menu of Ki Pro Screens: Click one to Display that Screen

Selections and Information

S/N, software version and connection status

Alarms appear here

List of Ki Pros on the LAN: Click arrow icon to expand/collapse Click gear icon for settings
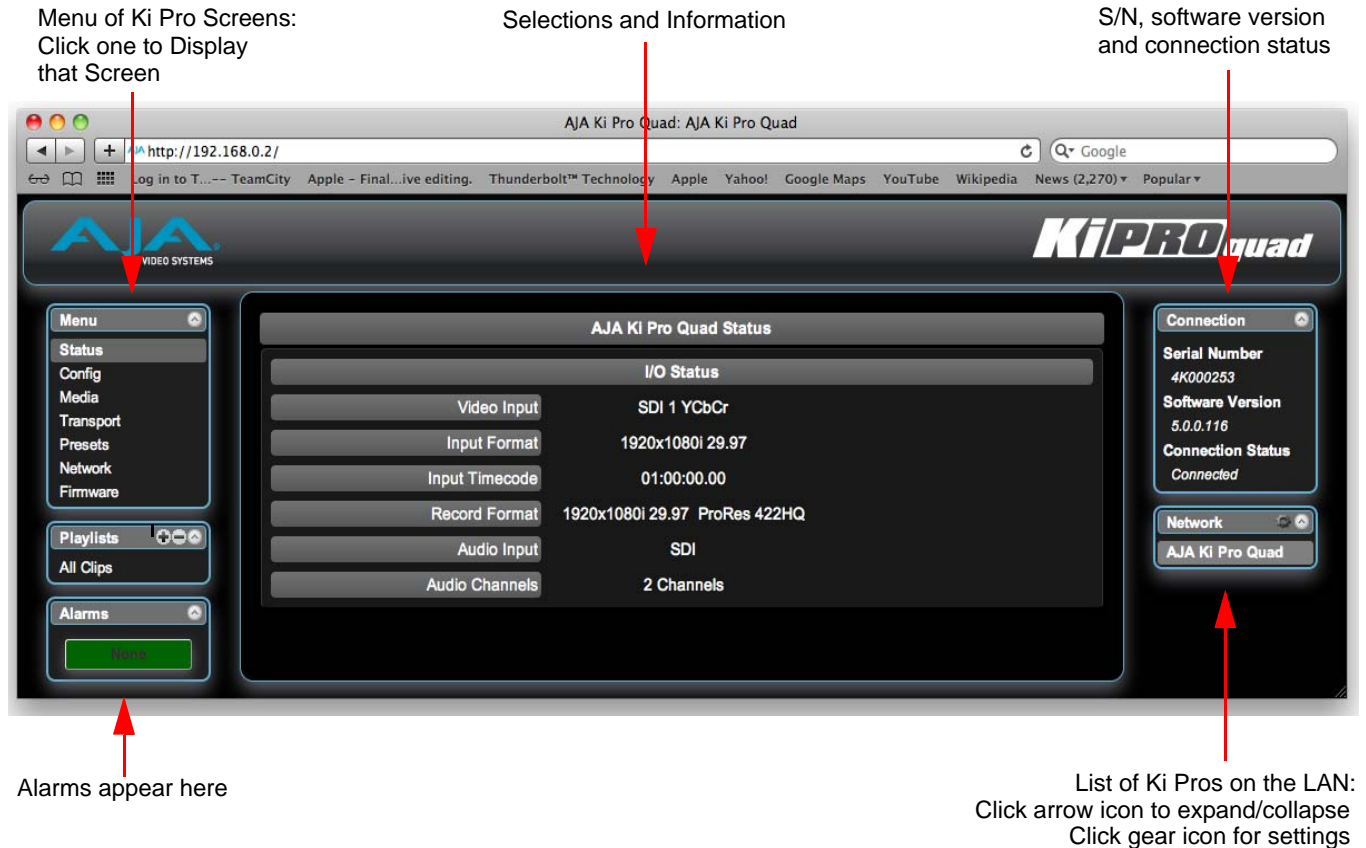
All Ki Pro Quad web screens have certain areas in common. On the left of each screen is a Menu panel listing all the available Ki Pro Quad screen choices. Click any of these items to jump to that screen. On the right side of each screen you'll also find a Connection panel. This area shows the connection status in addition to the Ki Pro Quad's serial number and software version. This latter information is useful if you ever have to call AJA Technical Support to discuss a problem or get help. Below the Connection panel, the Network panel shows the Ki Pro systems on the network and allows you to switch control between systems. See *"Controlling Multiple Ki Pro Quads" on page 73* at the end of this chapter for additional information on using multiple Ki Pros. In the middle of each screen are menu choices and information pertaining to the subject matter of that screen.

Ki Pro Quad web screens closely mirror the parameter menus displayed on its front panel. In each of the screens presented on the following pages, we'll list the parameter menu numbers that are related so you can read the full definitions. Additionally, the Status screen lets you change parameter settings right on the screen if you right-click the setting.

Config Screen

The Config screen is a general purpose screen used to configure Ki Pro Quad's I/O, and also set up Ki Pro Quad's environment (name, clock settings, display etc.)

Figure 12. Ki Pro Quad Web Interface, Config Screen
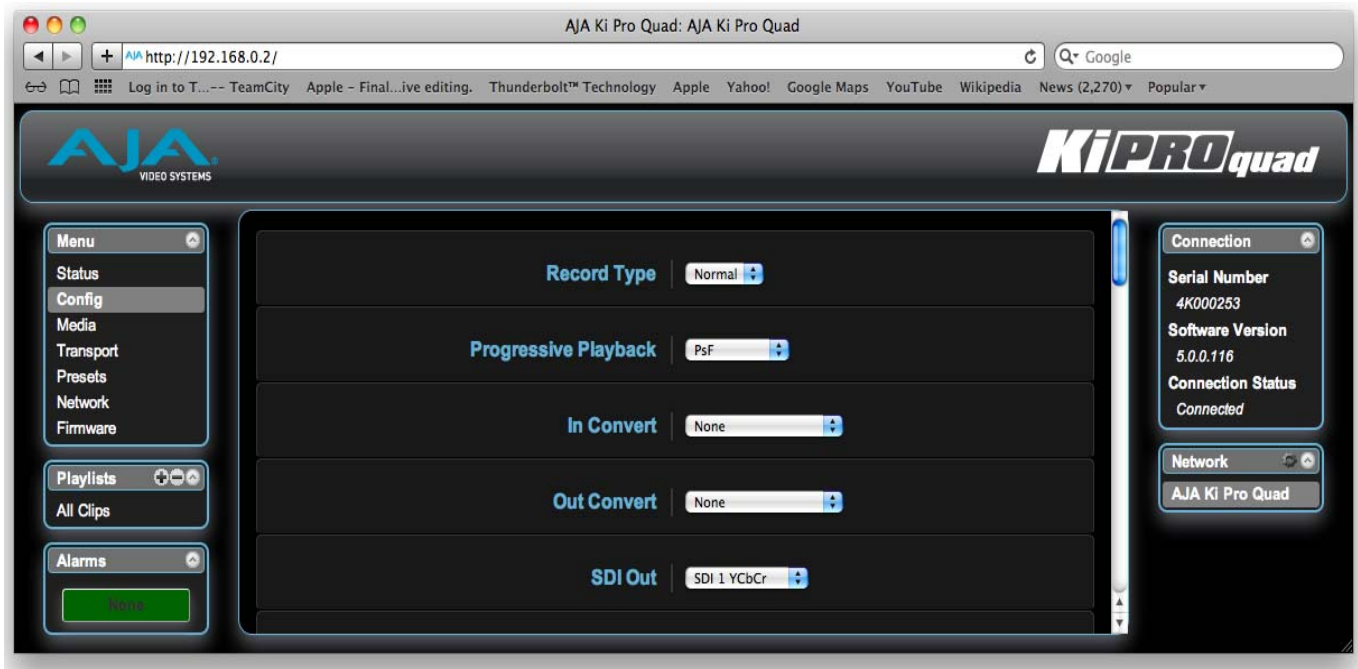
NOTE: In the following web screen control definitions, the number in parentheses refers to the Parameter descriptions in Chapter 2—you can read more information there about the choices and their meanings.

Record Type (1.1):   Record Type can be configured to record the incoming video signal in a "NORMAL" manner, as a "PsF" signal (if the incoming source is 1080psf 29.97 for example), or VFR for variable framerate recording of an applicable input (such as the output of Panasonic Varicam).

Progressive Playback (1.3):   This parameter defines whether progressive media is output as PsF or true progressive.

In Convert (1.4):   This parameter sets input conversion to one of the available selections. Note that the 4K Crop to Quad HD and 4K/Quad HD to 2K/1080 selections have no impact if 2K or 1080 video is input.

Out Convert (1.5):   This parameter sets output conversion to one of the available selections.

SDI Out (1.6):   This parameter sets the SDI output format.

3G SDI Level (1.64):   This parameter configures the SDI output for Level A or Level B.

HDMI Out (1.66):   This parameter whether scaled or full raster video will be output.

NOTE: The Full Raster selection only has an impact on the output when a 4K or Quad HD video source is used.

SDI/HDMI Monitor Output (1.8):   Sets the format of the SDI/HDMI Monitor outputs.

Super Out (1.9):   This parameter provides superimposition of timecode and transport state (Record, Pause, etc.) onto the SDI output. Note that Super Out applies only to the 2K/1080 SDI/HDMI Monitor outputs, not the 4x 3G-SDI outputs.

Video Input (2.1):   This parameter selects a video input source from the video input connections available.

Ignore ANC (2.12):   This parameter determines whether ancillary (ANC) data, specifically VPID, is used to determine the incoming video format.

Audio Input (2.2):   This parameter selects an audio input source from the audio input connections available.

Audio Channels (2.3):   This parameter selects the use of either two or eight audio channels via SDI embedded audio. Generally, when working with camera sources, there are only one or two audio tracks being produced, and therefore 2 channel would be the appropriate selection. In post production use, there are often more channels of audio required, so 8 channel audio may be the appropriate choice in such situations. Ki Pro Quad only allows for the selection of either 2 channels or 8 channels of audio to be written to the QuickTime file that is recorded. Therefore, if the source has more than 2 channels of audio, but less than 8 channels of audio that need to be preserved, the *CONFIG* Menu parameter *2.3 Audio Channels* would need to be set to *8 Channels*.

NOTE: *Not all devices support 8 channel audio. Ki Pro Quad does not provide a "mixdown" option for 8 channel recordings on output, so be sure to use devices that support 8 channel audio via SDI if the 8 channels recorded are desired.*

   If 8 Channels are selected for 2.3 Audio Channels, but 2.2 Audio Input is set to any selection other than SDI (such as XLR), a Warning prompt will appear on the display "Warning 2 Channel Format." Clear this warning by selecting SDI audio as the input source in 2.2 Audio Input or by selecting 2-channel audio in 2.3 Audio Channels.

Analog Audio (4.1):   This parameter configures the analog audio signal levels for input.

Genlock (6.1):   This parameter selects the source of reference to genlock to during playback. Note: Ki Pro Quad always genlocks to the selected video input during capture; genlock may only be needed during some playback configurations (such as in a facility with a variety of other equipment). For general monitoring purposes, genlock is not required.

TC In (8.0):   This parameter selects the source of timecode from those available.

TC Value (8.1):   This parameter selects an hour for timecode start.

TC Type (8.2):   This parameter selects drop frame or non-drop frame timecode.

Arm Recording (8.3):   This parameter selects how recording may be initiated: either by pressing the physical record button or via incrementing ststop timecode values.

Interval Record (9.0):   The Ki Pro Quad can be used to create timelapse recordings via the *9.0 Interval Record*, *9.1 Interval Frames* and *9.2 Interval Time* selections. Note that the 9.1 and 9.2 menu options will not appear unless 9.0 Interval Record is enabled.

Interval Frames (9.1):   This parameter determines how many frames from the incoming video will be used for the recording.

Interval Time (9.2):   This parameter determines the time period from which the interval frames are selected.

Camera Data (13.1):   This parameter controls the use of camera-generated ancillary data. Some cameras produce SDI ancillary data, such as ststop commands, that may be useful when interfacing with the Ki Pro Quad. 13.1 Camera Data is designed to address the use of SDI ancillary data. If an appropriate camera is present and sending appropriate SDI ancillary

data to the Ki Pro Quad and that camera manufacturer/model is selected from the list, the Ki Pro Quad will respond to as many parameters as are applicable. *Please read the discussion on Config Parameter 13.1 "Camera Data" in Chapter 4 for additional information.*

LUT Enable (13.3):   Allows the use of an input or output lookup table (LUT) with RGB video. *See Chapter 3 for details about this feature.*

LUT File (13.4):   This parameter allows the upload of a LUT file and specifies the name of the LUT file in use. *See Chapter 4 for details about this feature.*

Loss of Video (32.0):   This parameter selects whether recording continues when valid video is not present.

Video SG Format (41.1):   This parameter determines the video format and frame rate used by Ki Pro Quad's internal test signal generator.

Video SG (41.2):   This parameter determines whether test pattern or black is output from Ki Pro Quad's internal test signal generator. This parameter is used with parameter above (41.1) to determine the type of video test signal output by Ki Pro Quad.

Audio SG (41.3):   This parameter determines the audio signal output from Ki Pro Quad's internal test signal generator (OFF, silence, or 1 kHz tone).

System Name (50.5):   This parameter defines a name for Ki Pro Quad and gives it a unique identifier. This same name is used when displaying systems via the web interface.

User Authentication (50.9):   This parameter enables or disables an authentication login requirement when using the web UI

Date Set (55.4/55.6):   Use this parameter to manually set the calendar date and time of the internal Ki Pro Quad clock. Note: the Ki Pro Quad time should be set based on GMT.

Display Intensity (70.2):   This parameter determines the brightness of the alphanumeric display and the backlit buttons.

Fan Speed (70.3):   This parameter determines the speed of Ki Pro Quad's internal cooling fan. In some environments where audio recording is occurring close to the Ki Pro Quad unit, it may be desirable to set the fan speed to Quiet Record.

Media Screen

This screen offers settings for a variety of media-related functions, including formatting storage media, type of Apple ProRes encoding, and reel and clip definitions.

Figure 13. Ki Pro Quad Web Interface, Media Screen
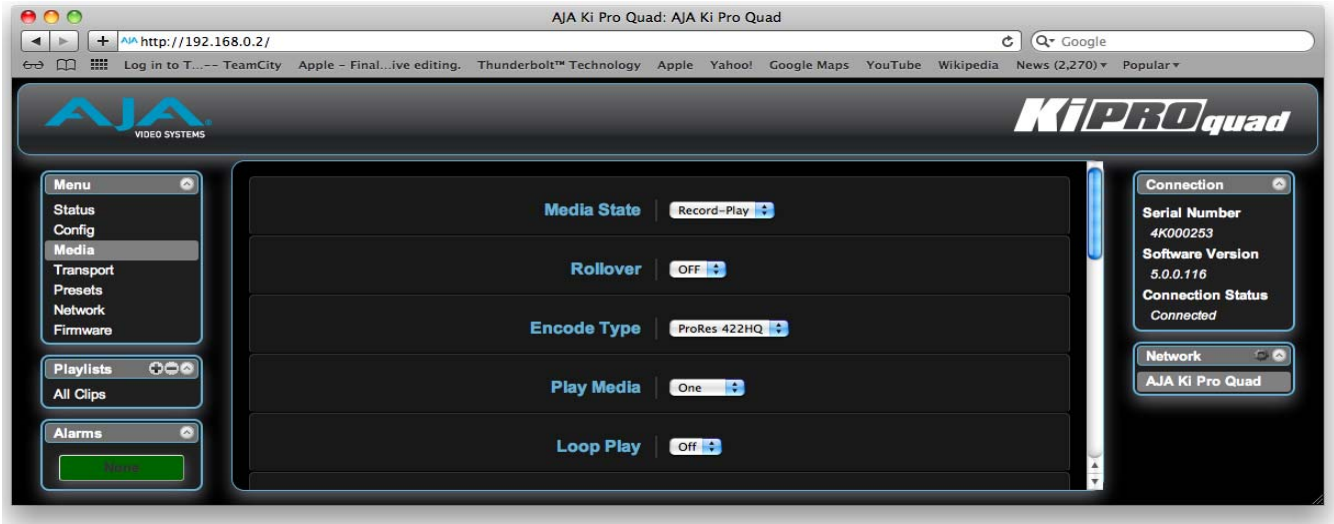
Media State (12.1):   This parameter defines whether the media is used for video/audio recording or data transfer using Ethernet LAN.

Rollover (12.2):   This parameter enables or disables rollover. Rollover allows media recording to continue onto a second piece of media. S*ee Chapter 4 for details about this feature.*

Encode Type (14.1):   This parameter defines the Apple ProRes encoding method.

Play Media (15.1):   This parameter determines behavior during playback: one clip will play when *Play* is selected, or all clips will be played, or the clips in the playlist will be played. *See parameter 15.1, Play Media, in Chapter 3 for more details about this feature.*

Loop Play (15.2):   This parameter turns looped playback on and off.

Playlist (15.3):   This parameter displays the name of the selected playlist (if any).

Dropped Frames (15.4):   This parameter determines how playback handles dropped frames.

Format Media (16.1):   This parameter is used to format the currently selected storage device.

Reel Name (17.0):   The reel name is a number between 1 and 999; it also determines the name of the media when formatting media. To enter a specific value, click on the number to highlight it, type in a value, and press Enter to confirm the new value. You may also click and drag on the slider to make adjustments. To increment by single values using the slider, click the slider to highlight it, and then press the "back" arrow or "forward" arrow on your keyboard.

Clip Name (17.2):   This parameter determines the clip name associated with all clips generated while using this setting. The clip name is either "Clip" or "SC".

Clip Number (17.3):   This parameter determines the clip number, from 1 to 999, that follows the CLIP NAME, and is associated with all clips generated while using this setting. To enter a specific value, click on the number to highlight it, type in a value, and press Enter to confirm the new value. You may also click and drag on the slider to make adjustments. To increment by single values using the slider, click the slider to highlight it, and then press the "back" arrow or "forward" arrow on your keyboard.

Clip Append (17.4): This parameter is used with parameter 17.5 ALPHA APPEND to append a text value after the CLIP NUMBER or have no text appended.

Alpha Append (17.5): This parameter is used with parameter 17.4 CLIP APPEND to append a text value after the CLIP NUMBER.

Take (17.8): This parameter determines the TAKE number, from 1 to 999, that follows the CLIP NAME and CLIP NUMBER, and ALPHA APPEND (if selected). To enter a specific value, click on the number to highlight it, type in a value, and press Enter to confirm the new value. You may also click and drag on the slider to make adjustments. To increment by single values using the slider, click the slider to highlight it, and then press the "back" arrow or "forward" arrow on your keyboard.

Custom Clip (19.1): This parameter enables or disables whether a custom clip name can be used. *Refer to "Custom Clip Naming" in Chapter 4 for greater detail.*

Use Custom Clip Name (19.2): This parameter allows you to enter a custom clip name. Once entered, you'll have to click the *Apply* button for it to take effect.

Use Custom Clip Take (19.3): Enables or disables whether a custom clip take name will be used. If enabled, takes increment sequentially from the first value selected.

NOTE: *The selection of Use Custom Clip Take is only available via the REST interface, not via the front panel UI or web UI, and it does not survive reboots.*

❌ **Caution!**

If a custom clip name is not changed and the *Use Custom Clip Take* parameter is not enabled, an existing clip can be overwritten on the disk. Example: the first recording made is called "Flying" and the *Custom Clip Take* parameter is not enabled; additionally, the user does not enter a new value for the custom clip name and leaves "Flying" entered. As a result, the first recording will be overwritten by the second recording. AJA does not typically recommend disabling the use of the custom clip take, but in some situations, overwriting an existing file may be desirable. Again, this menu parameter does not appear during regular operation via the front panel or the web UI.

Custom Take (19.4): This parameter allows you to define a custom take number. Once entered, you'll have to click the Apply button for it to take effect. To enter a specific value, click on the number to highlight it, type in a value, and press Enter to confirm the new value. You may also click and drag on the slider to make adjustments. To increment by single values using the slider, click the slider to highlight it, and then press the "back" arrow or "forward" arrow on your keyboard.

Gang Clip Name (22.1): This parameter is used when performing gang recording via multiple Ki Pro Quads (refer to *Controlling Multiple Ki Pro Quads* later in this Chapter). If you want to name clips the same way across all the recordings of all Ki Pro Quad ganged units, then use the *Master Name* pull down selection. If you want to name clips independently on Ki Pro Quad units, then select *Slave Name* from the pull down. Selecting *Slave Name* means that the recording will take it's name from the individual Ki Pro Quad's parameters and not accept the value pushed to the Slave by the Master Ki Pro Quad. Refer to "Custom Clip Naming" in Chapter 4 for greater detail.

Transport Screen

This screen offers record, playback, fast forward, rewind and stop controls, similar to those available on the operator-side of Ki Pro Quad. The screen also duplicates what is displayed on the Ki Pro Quad front visual display, so you can see exactly what the Ki Pro Quad operator/camera person is seeing.

Figure 14. Ki Pro Quad Web Interface, Transport Screen

STOP ■ : Press STOP to end playback or a media operation (PLAY, FF, REV, or RECORD). When stopped, Ki Pro Quad displays the current point in the stopped clip. STOP can also be considered a "pause" button. A double-press of the STOP button will return Ki Pro Quad to an
E-to-E state.

PLAY >: Press PLAY to begin forward playback of the current clip at normal speed.

RECORD ● : Press the red RECORD button to begin recording. Once in RECORD mode, all other transport buttons are locked-out except the STOP button.

FFWD >>: Press button to begin fast playback of the current clip at 2x speed. Successive pushes increase the speed to 4x, 8x, and 16x. (Pushing the button after 16x speed is reached has no further effect.) When fast-forwarding, audio is muted.

REV <<: Pressing REV when not lit, begins playback of the current clip in reverse at 1x speed. Successive pushes increase the speed to 2x, 4x, 8x, and 16x. (Pushing the button after 16x speed is reached has no further effect.) When playing in reverse, audio is muted.

SELECT (up/down): While in the TRANSPORT menu, the SELECT buttons select clips and operate like "previous" and "next" keys. When a clip is selected it is "cued" to the beginning of the clip. Note that ordering and playback of clips is based on timestamp order, not clip name.

ADJUST (up/down): While in the TRANSPORT menu, and in the "STOP" mode, the ADJUST buttons will "single step" the current clip at a rate of one frame per button push (up=forward, down=reverse).

DELETE CLIP: Dedicated button that when pressed, deletes the currently selected clip. When pressed, the system displays a precautionary "ARE YOU SURE?" prompt.
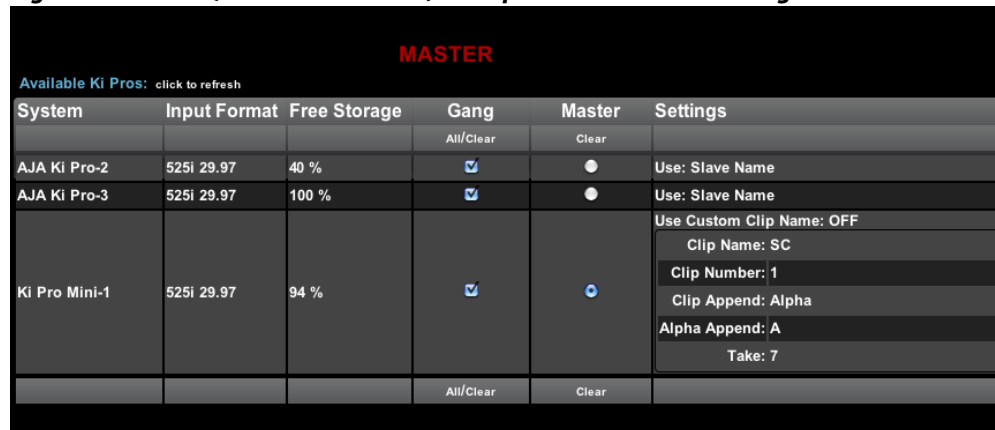
SLOT: This button serves two purposes. First, it selects which media is accessed by the system. Second, the SLOT button is used to unmount currently selected media.

⊗	**Caution!** Not using the SLOT button to unmount the media before removal can cause problems with the files stored on the media.

Pushing the SLOT button cycles between unmounting media and selecting media.   This function is only active when in the "STOP" mode and requires a "PRESS STOP TO CONFIRM" if not stopped. After you select a slot, the system returns to the last selected clip and timecode for that slot. If the media has been changed since the slot was last selected (physically removed/media replaced), then the "first" clip on the media will be "cued" to its start point. If inserted media has any issues, additional prompts may be displayed as appropriate such as: "WARNING FRMT MEDIA" or "WARNING MEDIA LOW."

Show Gang View: When clicked, the Transport screen will be expanded at the bottom to show additional controls for controlling multiple Ki Pros. See *"Gang Recording" on page 74* at the end of this chapter for an additional tutorial on using this feature.

Figure 15. Ki Pro Quad Web Interface, Transport Screen—Show Gang Control

Presets Screen

The Presets screen allows you to save Preset Configurations into 20 separate memory registers and recall the presets whenever needed. This screen also includes Export and Import functions that allow exporting one or all presets to your computer as files and importing exported preset files from your computer. A displayed message indicates successful or failed saves, recalls, exports, and imports.

Figure 16. Ki Pro Quad Web Interface, Presets Screen
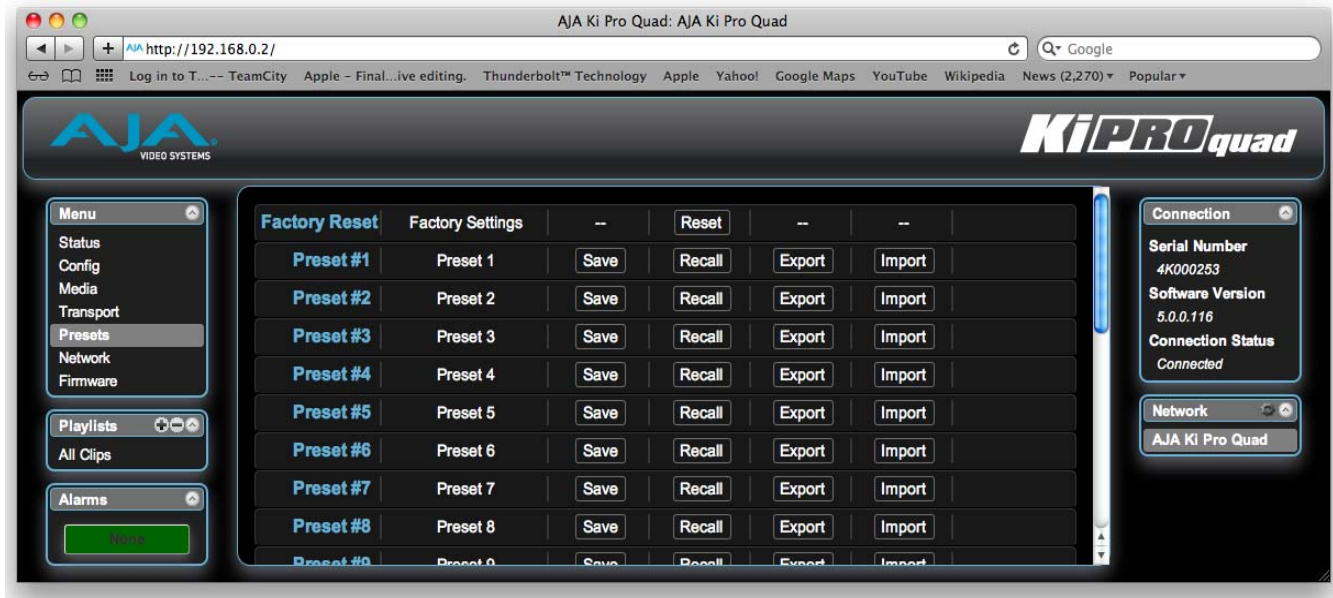
Recall (91.1): The Recall buttons recall saved preset configurations.

When you recall a Preset Configuration, the recalled preset immediately replaces the system's existing configuration. All previous settings are lost unless you have previously stored them in another preset configuration or an exported file.

Save: The Save buttons let you save the current configuration into the preset register with the associated name and number. A preset is a set of system parameters as they were set at the time the preset was stored. Only editable parameters are saved in the presets. Non-editable parameters are not saved.

To change a preset name, click in the name's text field and type a new name. Then press Enter.

Figure 17. Ki Pro Web Interface, Changing Preset Name
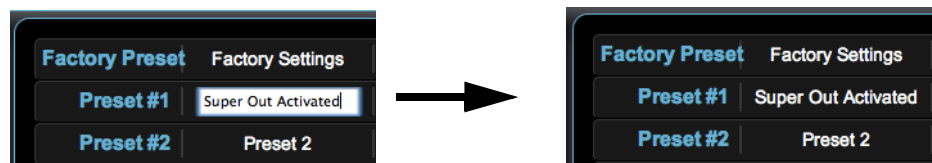
Export: The Export buttons save the associated preset contents to a file on your computer. The file gets exported to the default download location specified in your browser options. The file name is the same as the preset name with the suffix .presets. If you export multiple files for the same preset, a number gets appended to ensure a unique file name. The file size is small, usually less than 10 kilobytes.

Import: The Import buttons let you browse for and import a preset file on your computer into the preset register associated with the selected button. A dialog box warns you that the operation will overwrite the current preset contents with the contents stored in the file.

Export Presets 1-20: Lets you save the contents of all presets to a file on your computer.

The file gets exported to the default download location specified in your browser options with the name all.presets. If you export multiple files, a number gets appended to ensure a unique file name.

Import Presets 1-20: Lets you browse for and import a previously exported all.presets file from your computer. A dialog box warns you that the operation will overwrite all 20 current preset contents with the contents stored in the file.

Recall Factory Preset: Recall Factory Preset recalls all editable video and audio parameters to their factory default settings. Individual presets, user preferences, and Network settings, such as the IP Address, are not affected.

See *"Using Presets" on page 77* at the end of this chapter for an additional tutorial on working with presets.

Network Screen

This screen contains all of the information required to set up Ki Pro Quad TCP/IP networking. The screen also shows all Ki Pro Quads that are on the same LAN as the Ki Pro Quad the web browser is currently communicating with.

NOTE: *Ki Pro Quad IP Address and netmask fields filter keystrokes and only allow legal characters. The Ki Pro Quad also checks the format of the entry to ensure it is valid; if found to be invalid, the background of the IP Address or netmask will turn red. If you click the Update button while an invalid entry exists in one of the these fields, Ki Pro Quad will display an error dialog—you must correct the error before updating.*

Figure 18. Ki Pro Quad Web Interface, Network Screen
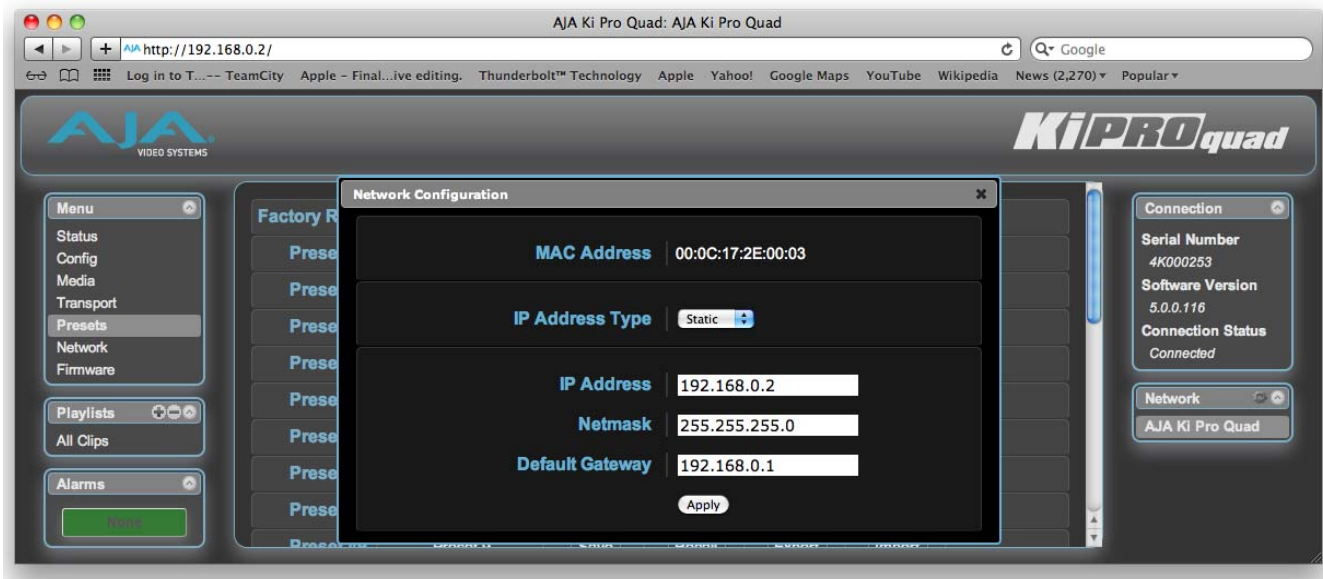
MAC Address (50.6): Enter the Media Access Control address of the network. A MAC address is also known as a hardware address or physical address and uniquely identifies the ethernet network adapter on the LAN.

IP Address Type (50.1): Use to change the IP address for Ki Pro Quad. When an IP address is entered and the Apply button is clicked, the IP address will change and the browser will display a "redirecting to…" page which should send the browser to the new IP address entered. (You can also click on a link on the redirect page.

IP Address (50.2): Enter an IP address compatible with your LAN (if you have one). When networking Ki Pro Quad to a computer, this is the IP address that you'll enter in the computer's web browser to bring up the Ki Pro Quad's web interface from its embedded web server. You must also click the "*Apply*" button to update Ki Pro Quad with the IP address entered here.

Netmask (50.3): Enter a subnet mask compatible with your LAN (if you have one). You must also click the "*Apply*" button to update Ki Pro Quad with the changed information entered here.

Default Gateway (50.4): Enter the IP address for your LAN's gateway/router (if you have one). You must also click the "*Apply*" button to update Ki Pro Quad with the changed information entered here.

Update Network Settings: Pressing this button requests Ki Pro Quad to update its IP information with that entered on this screen.

Available Ki Pros: The *Network* panel lists Ki Pro devices present on the same local LAN as the current Ki Pro Quad (see note below). The serial numbers of all Ki Pros on the LAN, or their defined "System Names" (see parameter 50.5) are listed—and clicking on any of these will bring up the Status screen of that Ki Pro device. The Ki Pros on the network may be running different software versions, so screens may look different. As a rule, it's wise to have all your Ki Pro devices running the most current software and the same version. Also, without a properly configured default gateway (whether you have a router/gateway or not), the discovery feature on the Network panel may not work.

NOTE: *Ki Pro devices shown are cached and may not reflect the realtime state of all Ki Pros on the LAN. As Ki Pros are added or removed from the network they may take awhile to appear in the Network listing. If, at any time you want a current view of the network (clearing the cache and showing the realtime state), click the up arrow in the top right corner of the Network panel twice to refresh (close and reopen) the list.*

Playlists Screen

The Playlists All Clips screen allows you to see at a glance all of the clips on the currently selected media. You can also create new playlists consisting only of the clips you choose:

1. Click add (+) below the Playlists heading and enter a name for the new playlist.
2. Next, to select a clip to be added to a playlist, double click the clip in the All Clips list to select it; you will know when it is selected as it will be highlighted in blue.
3. Next, click and drag the selected clip onto the playlist. You can also drag multiple clips by clicking the check boxes to the left of the names of the clips you want to copy before dragging them. Note that during the click and drag operation, a filmstrip icon will appear (only in some browsers) and it will disappear once you have added the clip to the list. You will also see the Playlist being added to highlighted in green when the addition is made.
4. After adding the clips you want, click the playlist name to open the playlist; the clips you added will be listed.

You can reorder the clips if you want by simply double -clicking to select them and then dragging them to the order you want. Note again that while clicking and dragging, the filmstrip icon will appear and the operation will highlight the order in green.

NOTE: *You can only bring clips up in order, not down in order. This means that if you want a clip to appear later in the order, you need to move the other clips before it.*

See *"Using Playlists" on page 76* at the end of this chapter for an additional tutorial on working with playlists.

Figure 19. Ki Pro Quad Web Interface, Playlists All Clips Screen
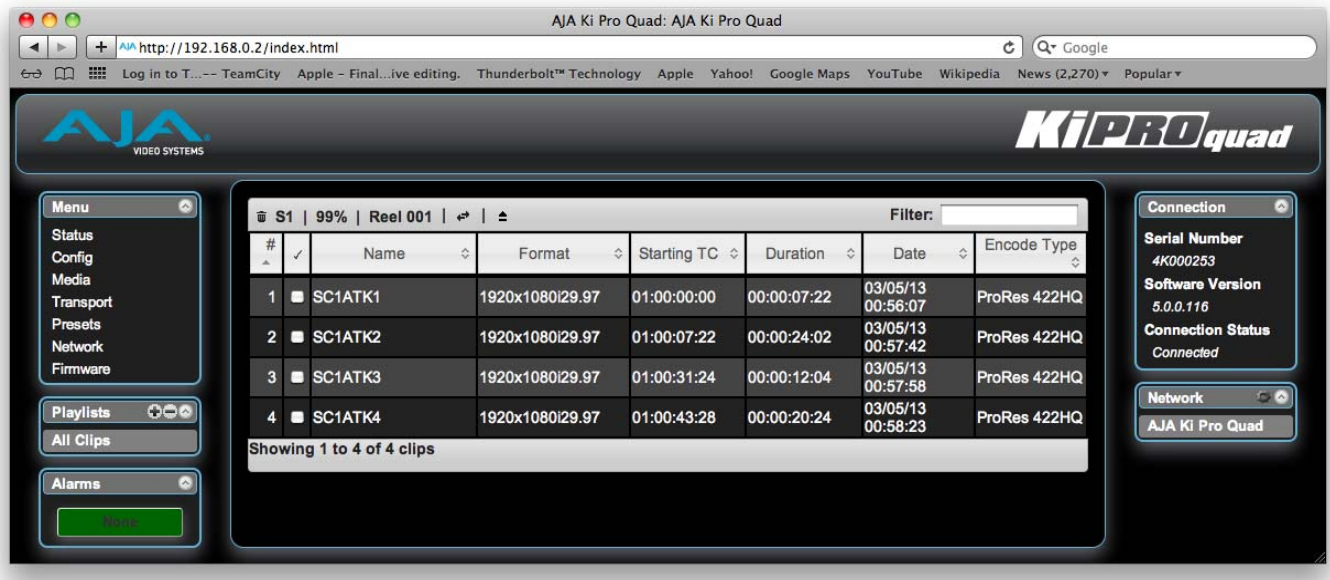
Alarms Screen

The Alarms display is present on each screen and constantly shows you the state of any alarms in the system. The Alarms area normally contains a green box displaying, "None" if there are no alarms. If an alarm is generated, the Alarms area displays a red or yellow box containing text describing the alarm. Red boxes represent alarms that will block recording while yellow boxes represent alarms that will not block recording. If multiple alarms are generated, they appear as multiple red or yellow boxes, each one containing text describing the associated alarm.

Figure 20. Ki Pro Quad Web Interface, Alarms Display
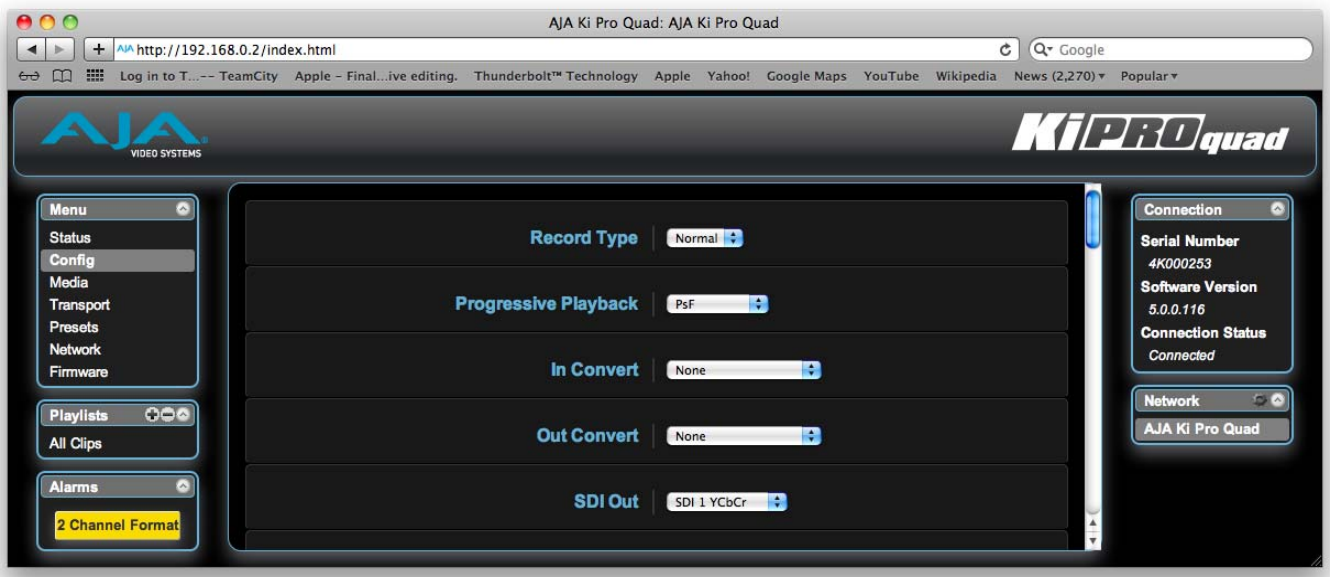
Update Firmware Screen

The Update Firmware screen allows you to update your Ki Pro Quad to later versions of software as they are issued by AJA and posted on the website. When software updates are released, they often contain new features, improvements, and bulletins that may be very useful. We suggest checking the website when you have time.

Figure 21. Ki Pro Quad Web Interface, Update Firmware Screen
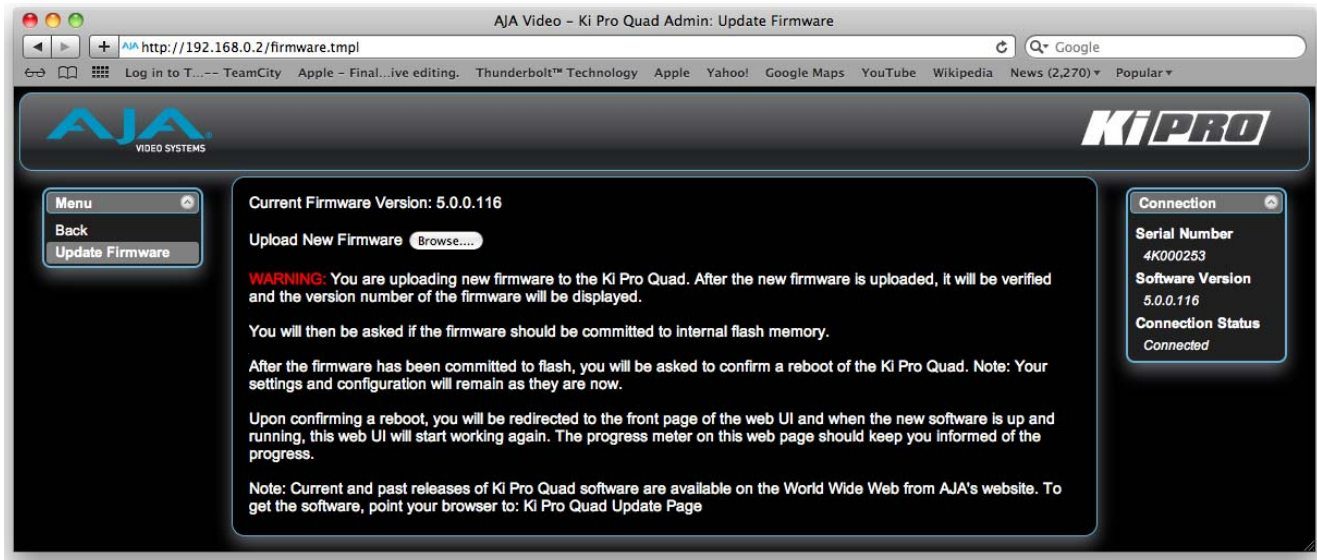
Preparing to Update Software

Although Ki Pro Quad comes from the factory pre-installed with software, it may not be as up-to-date as the software currently posted on the AJA website. This topic describes the steps required to upgrade the software in your Ki Pro Quad.

NOTE: *AJA recommends a Factory Reset under the CONFIG menu prior to updating firmware*

1. Download the Latest Ki Pro Quad Software

Current and past releases of Ki Pro Quad software are available from AJA's website. To get the software, point your browser to:

www.aja.com/en/support/kiproquad

Once you're at the update page, Ki Pro Quad software files can be selected to download to your Mac or PC for upgrading your Ki Pro Quad.

2. Unpack the Software

Ki Pro Quad software update files are "ZIP" files, which you can open with a number of standard and third party applications. In some cases, these files may even "decompress" automatically, such as when using Safari and Mac OS X. The software image that you'll install on a Ki Pro Quad is a file with a name like *kiproquad_ver_5.0.0.128.bin* or similar.

NOTE: *Depending on your PC or Mac operating system settings, the ".bin" extension may not be visible to you in a file directory.*

Upload and Install the Software on your Ki Pro Quad

Uploading and installing the software update only requires a PC or Mac that can "see" the Ki Pro Quad via its ethernet connection. Follow this procedure to install the software:

1. Be sure that you have configured your IP address information so that you can see the Ki Pro Quad with your web browser. (For details on this process, review the information contained in Chapter 5.

2. Once you have entered the Ki Pro Quad's IP address, choose the "Update Firmware" page link on the left side of any Ki Pro Quad web page.

3. Click the "Browse..." button to select the file you previously downloaded. For example: *kiproquad_ver_5.0.0.128.bin* file.

4. When you have selected a valid Ki Pro Quad .bin image file, click the "Upload" button in the web browser. The file you select will upload to the Ki Pro Quad and be tested for validity. Incomplete, corrupted, or non-Ki Pro Quad software files will be rejected.

5. Agree to the steps and confirmation prompts as they are presented. Wait for the procedure to complete—it will take only a few minutes. When done, Ki Pro Quad will prompt you to restart your machine. After restart, Ki Pro Quad will be running the new software. Progress is shown on the front panel.

6. Once these steps are complete, Ki Pro Quad will be running the software you just uploaded until the next time you upgrade it. The configuration of the Ki Pro Quad prior to the upgrade will be preserved.

Ensure the new software is running by bringing up the Ki Pro Quad web page again; the software version is displayed at the top of all web screens. If for some rare reason it didn't update, you can then run through the update steps again.

NOTE: *On some browsers, the Retry page may appear even though the software upgrade was successful. If this occurs, before clicking on retry, refresh the web page and check the version number. If the new version number appears at the top of the page, the software upgrade was successful. If the old version appears, click Retry.*

If there is a power outage or glitch during the software download, Ki Pro Quad will boot the older software version and the upgrade process can then be re-started by the user. This happens because Ki Pro Quad has been designed with a safety feature where an internal "safe" copy of the previous software is retained in the event the updating process fails.

✖	**Caution!** AJA recommends you only update the Ki Pro Quad when on mains power, or with a fully charged battery.

Advanced Features

A few notes and instructions about selected features may help you get more value out of your Ki Pro Quad. The following topics expand on the information presented earlier in this chapter.

Controlling Multiple Ki Pro Quads

From the *Status* screen and the other top five screens of the Menu, you can see at-a-glance all of the Ki Pro Quad systems that are present on the same local LAN. Their system names are shown in the *Network* panel on the right side of the screen. Click a system name to switch the browser to the *Status* screen of that Ki Pro Quad system.

NOTE: *The screens of the Ki Pro Quad system you control may look different if the software version is different. As a rule, it's wise to run the most current software on all your Ki Pro Quads. Also, you must have a properly configured default gateway to see the Ki Pro Quads. If the Default Gateway (parameter 50.4) is not configured properly, other Ki Pros will not be listed. If the display shows "No Ki Pros found" then check the gateway setting.*

Gang Recording

Multiple Ki Pro Quad units can be used in unison to produce recordings via the Gang Control feature. This feature is only available via the web UI when Ki Pro Quad units have IP addresses configured under a common network and subnet mask and are connected via their LAN connections to an ethernet switch or hub to a host computer. AJA recommends that all Ki Pro Quad units in a gang use the same firmware version.

Example: You have a Ki Pro Quad "Master" a Ki Pro Quad "Slave" both attached on a network where their static IP addresses are 192.168.0.2 and 192.168.0.3, both with a subnet mask value of 255.255.255.0. They are connected to a host computer with IP address 192.168.0.1 and subnet mask 255.255.255.0. The host computer uses a web browser, like Apple's Safari, to access the "Master" Ki Pro Quad by entering 192.168.0.2 in the URL field of the browser. The
Ki Pro Quad "Master" unit web UI should appear.

How to Use Gang Recording

Navigating to the Transport screen, a *Show Gang Controls* button appears on the left hand side of the screen. If *Show Gang Controls* is clicked, a list of "Available Ki Pros" is presented. If Ki Pro Quad units that were expected to appear do not appear, click on *Hide Gang View* then click on *Show Gang View* again to refresh. Ki Pro Quad information can take up to a few seconds to be displayed. Finally, if Ki Pro Quads are not listed after refreshing, confirm that the Ki Pro Quads are on the network, have the appropriate IP address, etc.

Parameters for each available Ki Pro Quad will appear in the Gang Controls area. These include: *System, Input Format, Free Storage, Gang, Master* and *Settings. K*i Pro Quad units that may be added to a gang will appear under the System column. The *Input Format* column gives information on what type of video format/framerate each system is receiving. F*ree Storage* allows for an at-a-glance view of the capacity of the media in each unit. G*ang* is where the units can be added or removed from the gang. M*aster* allows the promotion of a Ki Pro Quad unit to the controlling role in the gang. S*ettings* allows for the configuration of clip names on the Master and Slave Ki Pro Quad units.
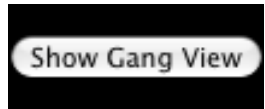
Figure 22. Ki Pro Quad Web Interface, Transport Screen—Show Gang Control

To add a Ki Pro Quad to a gang, simply select the check box for the unit in the Gang column. As a shortcut, if all available Ki Pro Quad units are desired for a gang, select the *All* item below *Gang*. If you want to clear units from a gang, deselect them or use the *Clear* option.

IMPORTANT:	There can be only one Master in a gang; typically, the IP address for the Ki Pro Quad unit you entered and are viewing the web UI on is the one which should be promoted to the controlling role. If the unit with the IP address that is currently being viewed via the web UI is selected, a red capitalized MASTER text will appear on the webpage above the columns.

A Master Ki Pro Quad unit can send three items to the slave Ki Pro Quad units within a gang; a record start command, a stop command, and clip naming. The record start and stop commands are controlled from the web UI Transport area above the gang information on the Master Ki Pro Quad unit.

The Settings area is where the Ki Pro Quad clip name for each unit is decided.

By default, the Ki Pro Quad is configured to use the standard clip naming conventions, not the custom clip naming conventions. The first user selection is *Use Custom Clip Name*; if the user wants to use the standard clip naming convention, leave this set to *OFF*, but if the user wants to create a custom clip name, mouse click on the *OFF* to reveal a pulldown for *OFF/ON* selection, then click *OK*.

If *OFF* was selected, the next parameter would be *Clip Name*, again, clicking on the *SC* or *Clip* presented brings up the pulldown and the *OK* box. *Clip Number* must be entered manually with a valid value for Ki Pro of 1 through 999 and then the enter/return key must be hit.

NOTE:	If the enter/return key is not entered after the selection, the value will revert to whatever was previously shown.

Clicking on the value next to Clip Append and Alpha Append both bring up a pulldown and an OK button. Take operates like the Clip Number, where a valid value of 1 to 999 can be entered and the enter/return key needs to be hit for confirmation of the value.

For custom clip naming considerations, see "Custom Clip Naming" in this manual.

Note that for Slave Ki Pro Quad units, the Settings column provides a selection of either *Use: Master Name* or *Slave Name*. Clicking on the default value of *Master Name* pulls up a pulldown selection of *Master Name* or *Slave Name* with an *OK* confirmation button. If the desire is to have clips named the same across all Ki Pro Quad units' recordings, then select *Use: Master Name*. If the desire is to have clips named independently on Ki Pro units, then select *Slave Name*. Selecting *Slave Name* means that the recording will take it's name from the individual Ki Pro Quad's parameters and not accept the value pushed to the Slave by the Master Ki Pro Quad.

Note that Ki Pro Quad can initiate recordings among units quickly, but not all units will begin or end recordings precisely at the same time or the same frame. This is not really an issue if matching timecode via SDI embedded RP-188 or LTC is sent to each unit from a timecode generator via discrete outputs on the timecode generator or via a distribution amplifier for the timecode. Note that many non-linear edit systems, like Final Cut Pro, can sync clips based on timecode values for multi-clip editorial. Also note that Ki Pro Quad does not provide simultaneous playback of media; only record start and stop functions are available.

Gang Recording Summary

These steps summarize gang recording. For details, see the previous discussion.

1. In the browser menus, select *Transport* to Navigate to the Transport screen.

2. Click *Show Gang View* on the Transport screen to see the Gang controls. This view shows available Ki Pro Quad systems.

3. To gang systems together, click the check boxes in the *Gang* column.

4. Select control of clip naming in the *Settings* column for each system, either *Slave Name* or *Master Name*. For details, see the previous discussion.

5. Select one master system by clicking the desired system in the *Master* column.

6. For the master system, set the clip naming in the *Settings* column.

7. Use the master system to control record start and stop and clip naming.

Using Playlists

AJA provides tools for reviewing clips and creating playlists of clips. These clip playlists can be managed on the web browser Playlists screen, which includes a default All Clips playlist showing all clips on the Ki Pro Quad unit.

Working with the All Clips Playlist

The default state of the Playlists is to list All Clips available. All Clips represents all of the recordings made on the Ki Pro Quad or valid files transferred to the Ki Pro Quad.

Figure 23. Ki Pro Quad Web Interface, All Clips Playlist
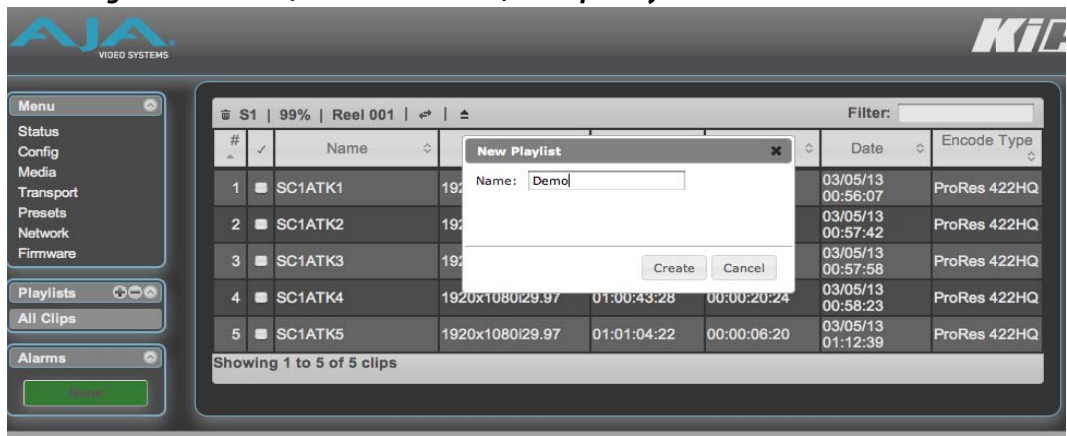
You can cue up a clip quickly for review by simply double-clicking the clip in the list. Note that once you've double-clicked a clip to select it, it will be highlighted in blue in the list and the first frame of video from that clip will appear on the output of the Ki Pro. Quad. To play back the clip, simply open the Transport page of the web UI and begin playback with the Play button. Or you can use the "mini-player" from within the playlist. You can also quickly scan material by setting the Media>Play Media>All selection so that as you highlight clips for review, they will continue playing out of the Ki Pro outputs.

Creating a Playlist

In the Playlists portion of the web UI, there is a "+" symbol and a "−" symbol above the lists. The "+" symbol can be used to add a playlist. Simply click on this symbol and, when prompted, enter a name for the playlist you wish to create.

To add clips to a playlist, select a blue highlighted clip from the All Clips list and click and drag the clip onto the name of the playlist you created. Note that when you select a clip and click and drag it, a filmstrip icon will appear. If you do not see this icon, then you have not selected a clip. You can tell that a clip will be added to a playlist because the list you drag the clip to will be highlighted in green and the filmstrip icon will appear with a "+" symbol on the left side. When you release the mouse, the clip will be added to the playlist. You may select additional clips using the same method and add them to the playlist.

To move a number of clips to a playlist at once, use the column with the checkmark and tick the checkboxes of the clips prior to performing the click and drag to the list.

To review your playlist, click on the list in the Playlists area of the web UI.

To reorder clips within a list, just click and drag them. You will notice that the clip is selected because the filmstrip icon will appear and you will know that a reorder is happening when you see the green highlight appear.

IMPORTANT: *A clip cannot be moved to the last position of the playlist. To move a clip to the last position in the playlist, move it to the next to last position in the list and move the last clip in the list above it.*

You may create multiple playlists. Playlists are stored as a simple file on the Ki Pro media alongside the clips.

Playback of a Playlist   If you want to play a playlist you have created, first select Play Media>Playlist in the Media menu parameters. (**Note:** depending on whether you have been reviewing clips, you may first be prompted to "Press Stop" prior to entering the *Media* page to make Playlist selections; if this prompt appears, you will be led to the Transport page where you can depress stop and then enter the Media page.)
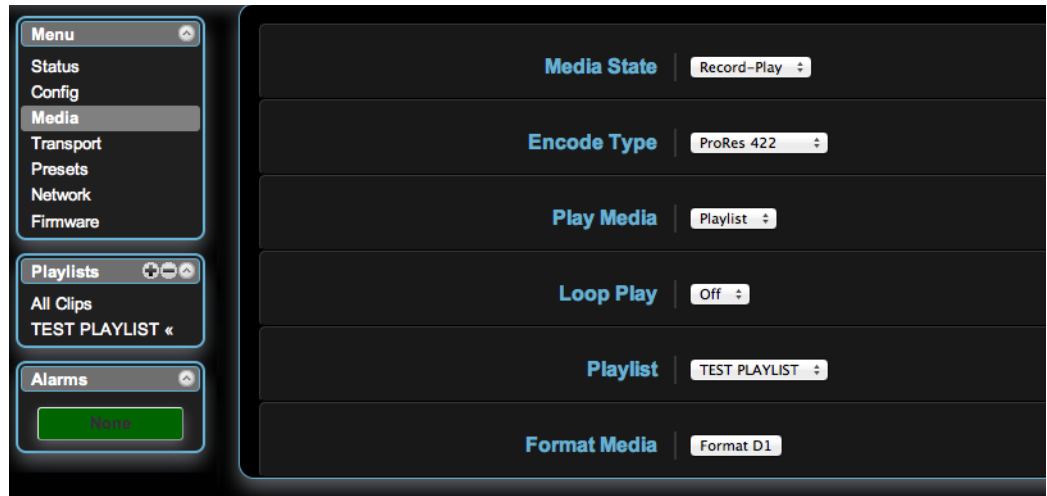
Select a playlist from the *Playlist* parameter in the *Media* menu. Once a playlist is selected, you will noticed that a double arrow indication will appear next to the selected list in the *Playlists* portion of the web UI. If you go to the Transport portion of the web UI, you will now notice that the playlist is cued up, ready for playback of the first clip in the list. If you want to navigate within your list, you may use the fast forward and rewind buttons or the select up/down buttons. You can loop playback of a list using the Media menu parameters as well.

Management of the playlists is made possible via the web UI; creation and management of playlists from the front panel is not supported. An indication of a selected playlist is presented on the front panel UI via menu parameter 15.3 Playlist. The selection of a playlist does not survive reboots of the unit, but the playlists that are created do survive reboots.

Using Presets   Ki Pro Quad offers a simple and efficient way to configure multiple parameters of the device from a preset. You can store a preset configuration and then recall that preset later to return Ki Pro Quad to the stored configuration.

Storing a Preset   The easiest way to work with presets is via the web UI. A Presets web UI page is provided where 20 customizable presets are offered.
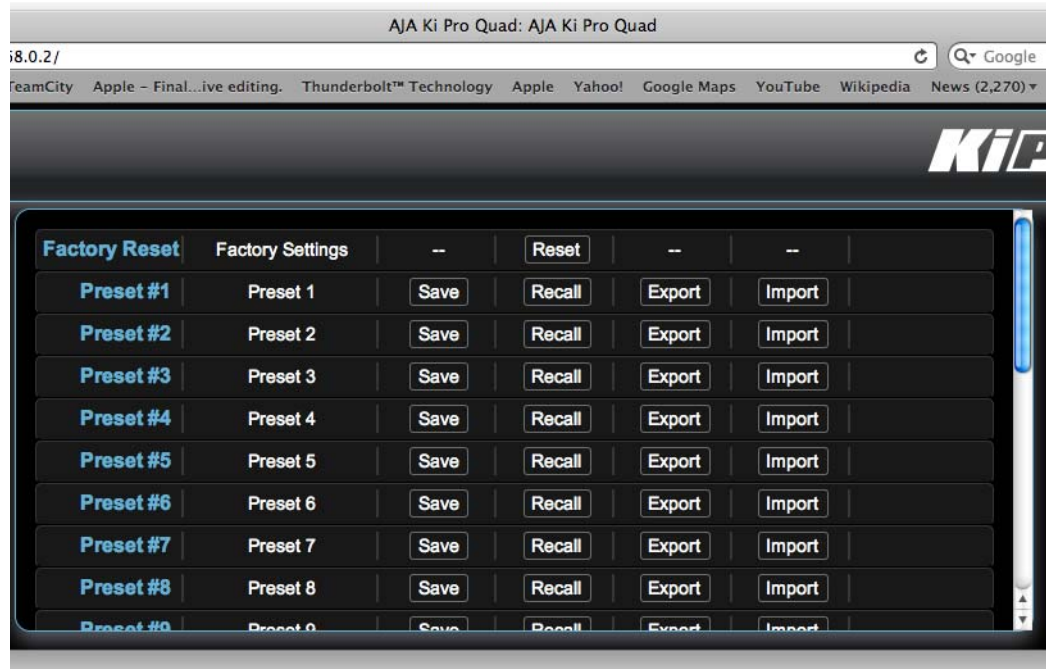
To customize presets, you may click on the second column of text fields and name the preset.
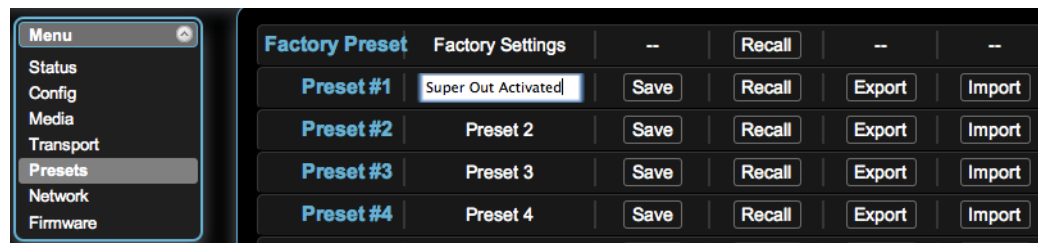
After you have entered a name for the preset, press Enter.

The preset is not stored until you save it.

IMPORTANT: *Be sure that you have made all of the parameter settings you want for a particular preset before you save it. By default, all parameters are stored and recalled.*

Recalling Presets   To recall a preset, select the Recall button in the row associated with the desired preset. You can also export a preset file to your computer or import a preset file from your computer.
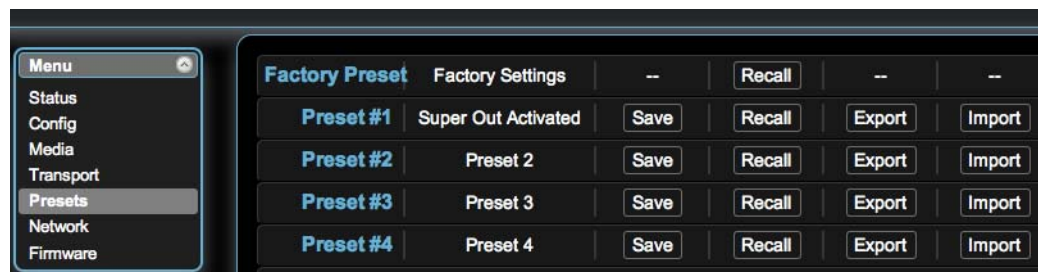
NOTE: AJA recommends that presets only be used between the same types of devices. In other words, only use presets from Ki Pro Quads with other Ki Pro Quads, not with Ki Pros.

At any time you may perform a recall of the Factory Settings if you have presets enabled.

IMPORTANT: Presets do survive device reboots. If you want to be sure that your device does not have someone else's settings in place, you can perform a recall of Factory Settings prior to configuring and working with the Ki Pro Quad.

Presets may be saved and recalled from the front panel UI. However, AJA recommends using the web UI to work with presets since more options are available.

IMPORTANT: Custom naming of presets is not possible from the front panel UI; presets will have their default names of "Preset 1," Preset 2," etc. To recall a preset from the front panel UI, navigate to CONFIG menu parameter 91.1 Recall Preset. Use the ADJUST up/down buttons to select a preset. Use the SELECT up button to choose a specific preset and the ADJUST up button to recall the preset. To abort recalling a preset, press the select down button.

To save a preset, navigate to CONFIG menu parameter 92.1 Store Preset. Use the ADJUST up/down buttons to select a preset. Use the SELECT up button to choose a specific preset and the ADJUST up button to store the Preset. To abort a preset recall, press SELECT down.

HINT: In both CONFIG menu parameters 91.1 and 92.1, you can tell if you are navigating through the presets if you see the leading numeric characters flashing. Again, use the SELECT down button to exit these menu parameters.

## All Clips and Media State > Data-LAN

If the Ki Pro Quad is configured for Media State > Data-LAN, appropriately encoded QuickTime files may be uploaded to the Ki Pro Quad or downloaded from the Ki Pro Quad via the All Clips portion of the interface. (See ""Appropriately Encoded Clips"" for clip encoding requirements.)

During an upload, useful information about the upload is given: the name of the file being uploaded, the size of the file being uploaded, a progress bar and a Cancel button. Additionally transfer speed information, remaining time to transfer and percentage of data transferred are shown.
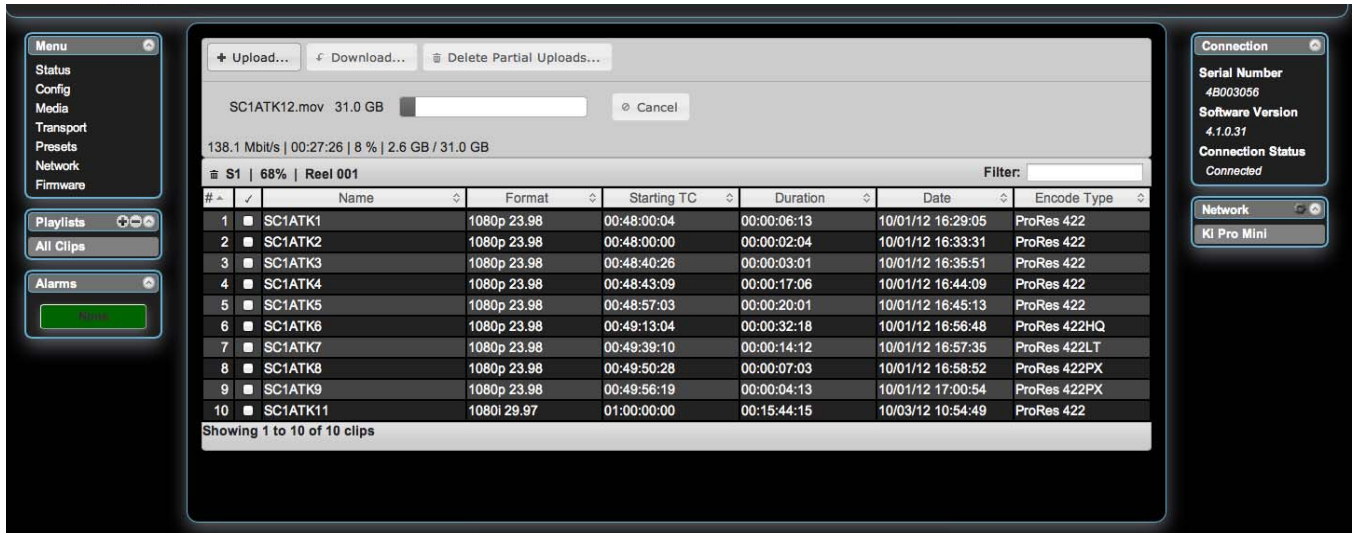
Note that if an upload is cancelled or interrupted for any reason, the transfer may be resumed by simply selecting the clip that was transferring again and re-starting the transfer. If you have cancelled some uploads, you may regain the space that these partial uploads may occupy on them media by choosing the *Delete Partial Uploads* option.

To download a clip, select the *Download* option. Note that the file will be downloaded to the particular web browser's selected download location.

Appropriately Encoded Clips

Appropriately encoded clips must have the following properties:

- A supported codec: Apple ProRes 444, Apple ProRes 422 (Proxy), Apple ProRes 422 (LT), Apple ProRes 422, Apple ProRes 422 (HQ).

- A supported frame size: 4096x2160 (4K), 3840x2160 (Quad HD), 2048x1080 (2K), 1920x1080 (HD) or 1280x720 (HD).

- A supported frame rate: 23.98, 24, 25 or 29.97 fps for 4K, Quad HD, 2K or 1080p material, 25 or 29.97 for 1080i material and 50 or 59.94 fps for 720p material.

- Proper interlace setting for interlaced material: for 50Hz and 59.94 Hz regions, HD interlaced material will be top field first.

- Proper sound settings: Format > Linear PCM, Channels > Stereo (L R) or 2 Discrete Channels or 8 Discrete Channels, Rate > 48.000 kHz, Sample size > 24 bits, and Little Endian.

Appendix A: Specifications

Formats

- 720P 23.98*, 25*, 29.97*, 50, 59.94, 60

NOTE: 	*720p 23.98 (24), 720p 25 and 720p 29.97 require a valid camera source and the use of the Record Type>VFR selection*

- 1080i 25, 29.97, 30
- 1080PsF 23.98, 24, 25*, 29.97*

NOTE: 	25 and 29.97 require a valid camera source and the use of the Record Type>PsF selection

- 1080p 23.98, 24, 25, 29.97, 50, 59.94
- 2K (2048x1080) PsF 23.98, 24, 25*, 29.97*

NOTE: 	*25 and 29.97 require a valid camera source and the use of the Record Type>PsF selection*

- 2K (2048x1080) p 23.98, 24, 25, 29.97, 50, 59.94
- QuadHD (3840x2160) PsF 23.98, 24, 25, 29.97
- QuadHD (3840x2160) p 23.98, 24, 25, 29.97, 50*, 59.94*

NOTE: 	*50 and 59.94 are not supported for recording only for input passthrough*

- 4K (4096x2160) PsF 23.98, 24, 25, 29.97
- 4K (4096x2160) p 23.98, 24, 25, 29.97, 50*, 59.94*

NOTE: 	*50 and 59.94 are not supported for recording only for input passthrough*

Codec Support

- Apple ProRes 4444
- Apple ProRes 422
- Apple ProRes 422 (HQ)
- Apple ProRes 422 (LT)
- Apple ProRes 422 (Proxy)

Removable Storage

- 2x slots, AJA Pak SSD media

Video Input Digital

- 4x 3G/HD SDI, SMPTE-292/296/424, 10-bit (12-bit input supported)
  - Single Link 4:2:2, 4:4:4 or Canon Raw (1 x BNC)
  - Dual Link 4:2:2, 4:4:4 or Canon Raw (2 x BNC)
  - 4K or Quad HD 4:2:2 or 4:4:4 (4 x BNC)
- 1D LUT Support

Video Output Digital

- 4x 3G/HD SDI, SMPTE-292/296/424, 10-bit
  - Single Link 4:2:2 or 4:4:4 (1 x BNC)
  - Dual Link 4:2:2 or 4:4:4 (2 x BNC)
  - 4K or Quad HD 4:2:2 or 4:4:4 (4 x BNC)
- 1x HD SDI monitor output with support for up to 2K (2048x1080) 4:2:2
- 1x HDMI v1.4 monitor output
- 1D LUT support

Audio Input Digital

- 8-channel, 24-bit SDI embedded audio, 48kHz sample rate, Synchronous

Audio Input Analog

- 2-channel, 24-bit A/D analog audio, 48kHz sample rate, balanced (2 x XLR)
- Input level: Line, Mic, Mic+phantom 48Vdc
- +24dBu Full Scale Digital
- +/- 0.2dB 20Hz to 20kHz Frequency Response

Audio Output Digital

- 8-channel, 24-bit SDI embedded audio, 48kHz sample rate, Synchronous
- 8-channel, 24-bit HDMI embedded audio, 48kHz sample rate, Synchronous

Audio Output Analog

- Stereo unbalanced headphone jack (1 x mini TRS)

Timecode

- SDI RP188/SMPTE 12M via SDI BNC
- LTC input (1 x BNC)

Reference Input

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

Network Interface

- 10/100/1000 Ethernet (RJ-45)
- Embedded web server for remote control

Data Interface

- 1x Thunderbolt

User Interface

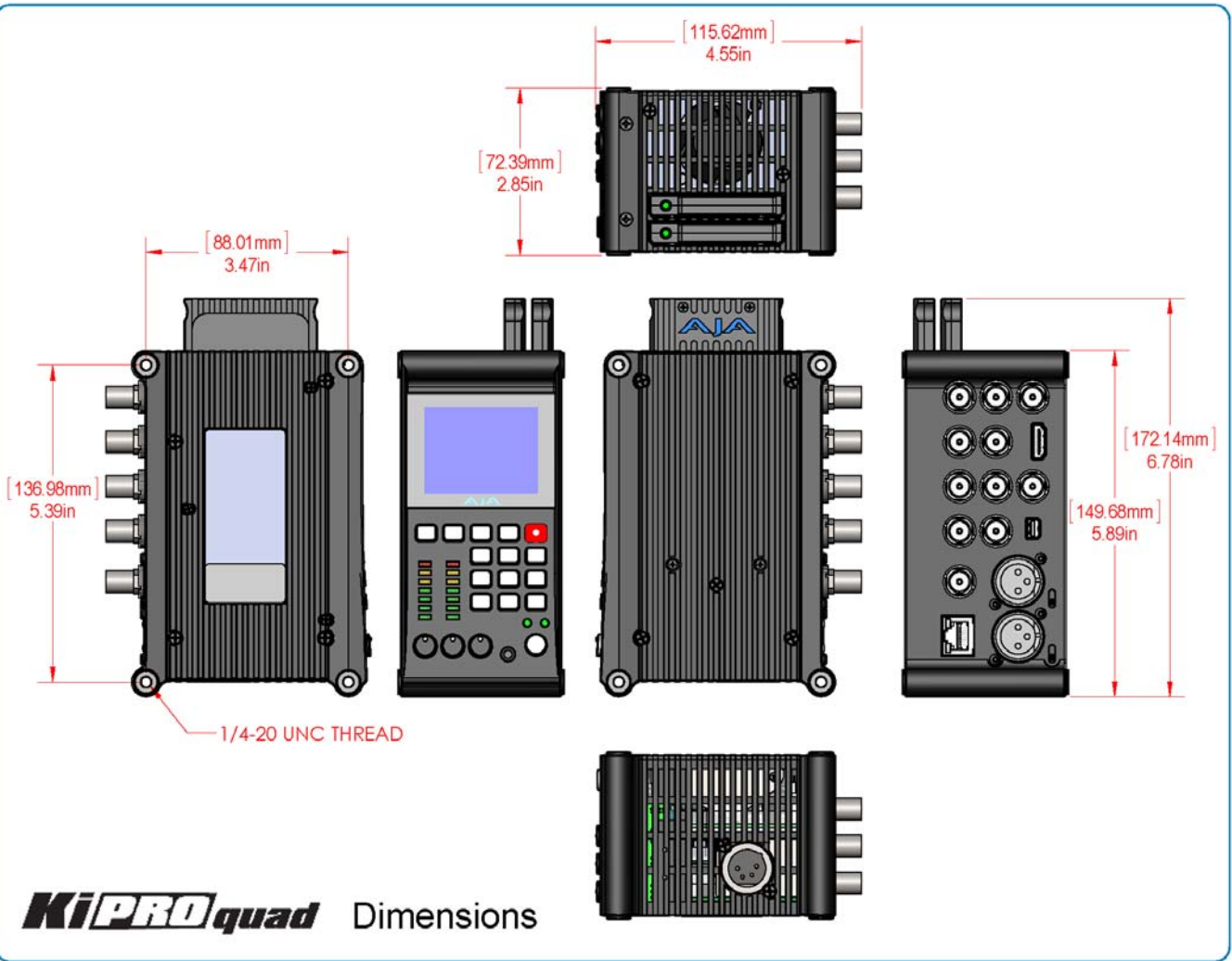- 320x240 LCD display and 14 dedicated operational buttons

Physical

- Width: 4.55 in. (11.557 cm)
- Depth: 2.85 in. (7.239 cm)
- Height: 5.89 in. (14.9606 cm)
- Power: 100-240 VAC 50/60Hz (adapter), 12-18Vdc 4-pin XLR (chassis), 3.46A max, 31.2-35.5W typical-41.5W Max
- Weight: 2.22 lb (1.00698 kg)

Temperature

- Operating Temperature Range: 5^C to 40^C
- Safe Storage Temperature Range (power OFF): -20^C to 60^C

Dimensions

[115.62mm] 4.55in

[72.39mm] 2.85in

[88.01mm] 3.47in

[136.98mm] 5.39in

[172.14mm] 6.78in

[149.68mm] 5.89in

1/4-20 UNC THREAD

Ki PRO quad Dimensions

Appendix B: Compliance

Federal Communications Commission (FCC) Compliance Notices

Class B Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15, Subpart B of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Canadian ICES Statement

Canadian Department of Communications Radio Interference Regulations

This digital apparatus does not exceed the Class B limits for radio-noise emissions from a digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications. This Class B digital apparatus complies with Canadian ICES-003.

Règlement sur le brouillage radioélectrique du Quadstère des Communications

Cet appareil numérique respecte les limites de bruits radioélectriques visant les appareils numériques de classe B prescrites dans le Règlement sur le brouillage radioélectrique du Quadstère des Communications du Canada. Cet appareil numérique de la Classe B est conforme à la norme NMB-003 du Canada.

European Union and European Free Trade Association (EFTA) Regulatory Compliance

This equipment may be operated in the countries that comprise the member countries of the European Union and the European Free Trade Association. These countries, listed in the following paragraph, are referred to as The European Community throughout this document:

AUSTRIA, BELGIUM, BULGARIA, CYPRUS, CZECH REPUBLIC, DENMARK, ESTONIA, FINLAND, FRANCE, GERMANY, GREECE, HUNGARY, IRELAND, ITALY, LATVIA, LITHUANIA, LUXEMBOURG, MALTA, NETHERLANDS, POLAND, PORTUGAL, ROMANIA, SLOVAKIA, SLOVENIA, SPAIN, SWEDEN, UNITED KINGDOM, ICELAND, LICHTENSTEIN, NORWAY, SWITZERLAND

Declaration of Conformity

Marking by this symbol indicates compliance with the Essential Requirements of the EMC Directive of the European Union 2004/108/EC.

This equipment meets the following conformance standards:

Safety: EN 60065: 2002 + A1: 2006 + A11: 2008 + A2: 2010 + A12: 2011 (GS License)

IEC 60065: 2001 + A1: 2005 + A2: 2010 (CB Scheme Report/Certificate)

Additional licenses issued for specific countries available on request.

Emissions: EN 55103-1: 2009, CISPR22: 2008

EN 61000-3-2: 2009, EN61000-3-3: 2008

Environments: E2, E3 and E4

Immunity: EN 55103-2: 2009

EN61000-4-2: 2008, EN61000-4-3: 2010, EN61000-4-4: 2011,

EN 61000-4-5: 2005, EN 61000-4-6: 2008, EN61000-4-11: 2004

Environments: E2, E3 and E4

The product is also licensed for additional country specific standards as required for the International Marketplace.

⚠️	**Warning!** This is a Class B product. In a domestic environment, this product may cause radio interference, in which case, the user may be required to take appropriate measures. Achtung! Dieses ist ein Gerät der Funkstörgrenzwertklasse B. In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkstörungen auftreten, in welchen Fällen der Benutzer für entsprechende Gegenmaßnahmen verantwortlich ist. Attention! Ceci est un produit de Classe B. Dans un environnement domestique, ce produit risque de créer des interférences radioélectriques, il appartiendra alors à l?utilisateur de prendre les mesures spécifiques appropriées.

Recycling Notice

	This symbol on the product or its packaging indicates that this product must not be disposed of with your other household waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste for recycling, please contact your local authority, or where you purchased your product.

Korea KCC Compliance Statement

1) Class A ITE

A급 기기 (업무용 방송통신기기)	이 기기는 업무용 (A 급) 으로 전자파적합등록을 한 기기이오니 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.

1) Class A device

Class A (Broadcasting and Communication Equipment for Business Use)	Please note that this equipment has obtained EMC registration for business use (Class A), and it is intended to use in other than home area.

Taiwan Compliance Statement

警告使用者： 這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

This is a Class B product based on the standard of the Bureau of Standards, Metrology and Inspection (BSMI) CNS 13438, Class B. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Japanese Compliance Statement

この装置は、クラスＢ情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをして下さい。　　　　ＶＣＣＩ－Ｂ

This is a Class B product based on the standard of the VCCI Council (VCCI V-3/2011). If this equipment is used in a domestic environment, radio interference may occur, in which case, the user may be required to take corrective actions.

Chinese Compliance Statement

This product has been tested to the following Chinese standards:

GB13837-2012, GB8898-2011, and GB17625.1-2012

This product meets the requirements of implementation rules for compulsory certification (REF NO. CNCA-01C-017:2010) under certificate number 2013010805630417.

Translated Warning and Caution Messages

The following caution statements, warning conventions, and warning messages apply to this product and manual.

 Warning Symbol   Caution Symbol

Before Operation Please Read These Instructions

<table>
<tr>
<td>⚠️</td>
<td>

Warning!

Read and follow all warning notices and instructions marked on the product or included in the documentation.

Avertissement ! Lisez et conformez-vous à tous les avis et instructions d'avertissement indiqués sur le produit ou dans la documentation.

Warnung! Lesen und befolgen Sie die Warnhinweise und Anweisungen, die auf dem Produkt angebracht oder in der Dokumentation enthalten sind.

¡Advertencia! Lea y siga todas las instrucciones y advertencias marcadas en el producto o incluidas en la documentación.

Aviso! Leia e siga todos os avisos e instruções assinalados no produto ou incluídos na documentação.

Avviso! Leggere e seguire tutti gli avvisi e le istruzioni presenti sul prodotto o inclusi nella documentazione.

</td>
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</table>

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<tr>
<td>⚠️</td>
<td>

Warning!

Do not use this device near water and clean only with a dry cloth.

Avertissement! N'utilisez pas cet appareil près de l'eau et nettoyez-le seulement avec un tissu sec..

Warnung! Das Gerät nicht in der Nähe von Wasser verwenden und nur mit einem trockenen Tuch säubern.

¡Advertencia! No utilice este dispositivo cerca del agua y límpielo solamente con un paño seco.

Aviso! Não utilize este dispositivo perto da água e limpe-o somente com um pano seco.

Avviso! Non utilizzare questo dispositivo vicino all'acqua e pulirlo soltanto con un panno asciutto.

</td>
</tr>
</table>

> ⚠️ **Warning!**
> Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
>
> **Avertissement !** Ne bloquez aucune ouverture de ventilation. Suivez les instructions du fabricant lors de l'installation.
>
> **Warnung!** Die Lüftungsöffnungen dürfen nicht blockiert werden. Nur gemäß den Anweisungen des Herstellers installieren.
>
> **¡Advertencia!** No bloquee ninguna de las aberturas de la ventilación. Instale de acuerdo con las instrucciones del fabricante.
>
> **Aviso!** Não obstrua nenhuma das aberturas de ventilação. Instale de acordo com as instruções do fabricante.
>
> **Avviso!** Non ostruire le aperture di ventilazione. Installare in conformità con le istruzioni del fornitore.

> ⚠️ **Warning!**
> Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
>
> **Avertissement !** N'installez pas l'appareil près d'une source de chaleur telle que des radiateurs, des bouches d'air de chauffage, des fourneaux ou d'autres appareils (amplificateurs compris) qui produisent de la chaleur.
>
> **Warnung!** Nicht in der Nähe von Wärmequellen wie Heizkörpern, Heizregistern, Öfen oder anderen Wärme erzeugenden Geräten (einschließlich Verstärkern) aufstellen.
>
> **¡Advertencia!** No instale cerca de fuentes de calor tales como radiadores, registros de calor, estufas u otros aparatos (incluidos amplificadores) que generan calor.
>
> **Aviso!** Não instale perto de nenhuma fonte de calor tal como radiadores, saídas de calor, fogões ou outros aparelhos (incluindo amplificadores) que produzam calor.
>
> **Avviso!** Non installare vicino a fonti di calore come termosifoni, diffusori di aria calda, stufe o altri apparecchi (amplificatori compresi) che emettono calore.

Warning!
Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

Avertissement! La sécurité de la prise polarisée ou de la prise de type mise à la terre ne doit en aucun cas être empêchée de fonctionner. Une prise polarisée a deux broches, l'une étant plus large que l'autre. Une prise de type mise à la terre a deux broches et une troisième broche pour la mise à la terre. La broche large ou la troisième broche sont fournies pour votre sécurité. Si la prise fournie ne s'insère pas dans votre prise femelle, consultez un électricien pour le remplacement de la prise femelle obsolète.

Warnung! Der Sicherheitszweck des gepolten bzw. Schukosteckers ist zu berücksichtigen. Ein gepolter Stecker verfügt über zwei Pole, von denen einer breiter als der andere ist. Ein Schukostecker verfügt neben den zwei Polen noch über einen dritten Pol zur Erdung. Der breite Pol bzw. der Erdungspol dienen der Sicherheit. Wenn der zur Verfügung gestellte Stecker nicht in Ihren Anschluss passt, konsultieren Sie einen Elektriker, um den veralteten Anschluss zu ersetzen.

¡Advertencia! No eche por tierra la finalidad del tipo de enchufe polarizado con conexión a tierra. Un enchufe polarizado tiene dos espigas, una más ancha que la otra. Un enchufe con conexión a tierra tiene dos espigas iguales y una tercera espiga que sirve para la conexión a tierra. La expiga ancha, o la tercera espiga, sirven para su seguridad. Si el enchufe suministrado no encaja en el tomacorriente, consulte con un electricista para reemplazar el tomacorriente obsoleto.

Aviso! Não anule a finalidade da segurança da ficha polarizada ou do tipo ligação terra. Uma ficha polarizada tem duas lâminas sendo uma mais larga do que a outra. Uma ficha do tipo de ligação à terra tem duas lâminas e um terceiro terminal de ligação à terra. A lâmina larga ou o terceiro terminal são fornecidos para sua segurança. Se a ficha fornecida não couber na sua tomada, consulte um electricista para a substituição da tomada obsoleta.

Avviso! Non compromettere la sicurezza della spina polarizzata o con messa a terra. Una spina polarizzata ha due spinotti, di cui uno più largo. Una spina con messa a terra ha due spinotti e un terzo polo per la messa a terra. Lo spinotto largo o il terzo polo sono forniti per motivi di sicurezza. Se la spina fornita non si inserisce nella presa di corrente, contattare un elettricista per la sostituzione della presa obsoleta.

> ⚠️ **Warning!**
> Since the Mains plug is used as the disconnection for the device, it must remain readily accessible and operable.
>
> **Avertissement!** Puisque la prise principale est utilisée pour débrancher l'appareil, elle doit rester aisément accessible et fonctionnelle.
>
> **Warnung!** Da der Netzstecker als Trennvorrichtung dient, muss er stets zugänglich und funktionsfähig sein.
>
> **¡Advertencia!** Puesto que el enchufe de la red eléctrica se utiliza como dispositivo de desconexión, debe seguir siendo fácilmente accesible y operable.
>
> **Aviso!** Dado que a ficha principal é utilizada como a desconexão para o dispositivo, esta deve manter-se prontamente acessível e funcional.
>
> **Avviso!** Poiché il cavo di alimentazione viene usato come dispositivo di sconnessione, deve rimane prontamente accessibile e operabile.

> ⚠️ **Warning!**
> Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the device.
>
> **Avertissement!** Protégez le cordon d'alimentation pour que l'on ne marche pas dessus ou qu'on le pince, en particulier au niveau des prises mâles, des réceptacles de convenance, et à l'endroit où il sort de l'appareil.
>
> **Warnung!** Vermeiden Sie, dass auf das Netzkabel getreten oder das Kabel geknickt wird, insbesondere an den Steckern, den Steckdosen und am Kabelausgang am Gerät.
>
> **¡Advertencia!** Proteja el cable de energía para que no se le pise ni apriete, en especial cerca del enchufe, los receptáculos de conveniencia y el punto del que salen del equipo.
>
> **Aviso!** Proteja o cabo de alimentação de ser pisado ou de ser comprimido particularmente nas fichas, em tomadas de parede de conveniência e no ponto de onde sai do dispositivo.
>
> **Avviso!** Proteggere il cavo di alimentazione in modo che nessuno ci cammini sopra e che non venga schiacciato soprattutto in corrispondenza delle spine e del punto in cui esce dal dispositivo.

⚠️ **Warning!**
Unplug this device during lightning storms or when unused for long periods of time.

Avertissement! Débranchez cet appareil pendant les orages avec éclairsou s'il est inutilisé pendant de longues périodes.

Warnung! Das Gerät ist bei Gewitterstürmen oder wenn es über lange Zeiträume ungenutzt bleibt vom Netz zu trennen.

¡Advertencia! Desenchufe este dispositivo durante tormentas eléctricas o cuando no se lo utilice por largos periodos del tiempo.

Aviso! Desconecte este dispositivo da tomada durante trovoadas ou quando não é utilizado durante longos períodos de tempo.

Avviso! Utilizzare soltanto i collegamenti e gli accessori specificati e/o venduti dal produttore, quali il treppiedi e l'esoscheletro.

⚠️ **Warning!**
Do not open the chassis. There are no user-serviceable parts inside. Opening the chassis will void the warranty unless performed by an AJA service center or licensed facility.

Avertissement! Ne pas ouvrir le châssis. Aucun élément à l'intérieur du châssis ne peut être réparé par l'utilisateur. La garantie sera annulée si le châssis est ouvert par toute autre personne qu'un technicien d'un centre de service ou d'un établissement agréé AJA.

Warnung! Öffnen Sie das Gehäuse nicht. Keine der Geräteteile können vom Benutzer gewartet werden. Durch das Öffnen des Gehäuses wird die Garantie hinfällig, es sei denn, solche Wartungsarbeiten werden in einem AJA-Service-Center oder einem lizenzierten Betrieb vorgenommen.

¡Advertencia! No abra el chasis. El interior no contiene piezas reparables por el usuario. El abrir el chasis anulará la garantía a menos que se lo haga en un centro de servicio AJA o en un local autorizado.

Advertência! Não abra o chassi. Não há internamente nenhuma peça que permita manutenção pelo usuário. Abrir o chassi anula a garantia, a menos que a abertura seja realizada por uma central de serviços da AJA ou por um local autorizado.

Avvertenza! Non aprire lo chassis. All'interno non ci sono parti riparabili dall'utente. L'apertura dello chassis invaliderà la garanzia se non viene effettuata da un centro ufficiale o autorizzato AJA.

⚠️	**Warning!** Disconnect the external AC power supply line cord(s) from the mains power before moving the unit. **Avertissement!** Retirez le ou les cordons d'alimentation en CA de la source d'alimentation principale lorsque vous déplacez l'appareil. **Warnung!** Trennen Sie die Wechselstrom-Versorgungskabel vom Netzstrom, bevor Sie das Gerät verschieben. **¡Advertencia!** Cuando mueva la unidad desenchufe de la red eléctrica el/los cable(s) de la fuente de alimentación CA tipo brick. **Advertência!** Remova os cabos CA de alimentação brick da rede elétrica ao mover a unidade. **Avvertenza!** Scollegare il cavo dell'alimentatore quando si sposta l'unità.

⚠️	**Warning!** Refer all servicing to qualified service personnel. Servicing is required when the device has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the device, the device has been exposed to rain or moisture, does not operate normally, or has been dropped. **Avertissement !** Référez-vous au personnel de service qualifié pour tout entretien. L'entretien est exigé quand l'appareil a été endommagé de quelque manière que ce soit, par exemple lorsque le cordon d'alimentation ou la prise sont endommagés, que du liquide a été versé ou des objets sont tombés dans l'appareil, que l'appareil a été exposé à la pluie ou à l'humidité, ne fonctionne pas normalement ou est tombé. **Warnung!** Das Gerät sollte nur von qualifizierten Fachkräften gewartet werden. Eine Wartung ist fällig, wenn das Gerät in irgendeiner Weise beschädigt wurde, wie bei beschädigtem Netzkabel oder Netzstecker, falls Flüssigkeiten oder Objekte in das Gerät gelangen, das Gerät Regen oder Feuchtigkeit ausgesetzt wurde, nicht ordnungsgemäß funktioniert oder fallen gelassen wurde. **¡Advertencia!** Consulte al personal calificado por cuestiones de reparación. El servicio de reparación se requiere cuando el dispositivo ha recibido cualquier tipo de daño, por ejemplo cable o espigas dañadas, se ha derramado líquido o se han caído objetos dentro del dispositivo, el dispositivo ha sido expuesto a la lluvia o humedad, o no funciona de modo normal, o se ha caído. **Aviso!** Remeta todos os serviços de manutenção para o pessoal de assistência qualificado. A prestação de serviços de manutenção é exigida quando o dispositivo foi danificado mediante qualquer forma, como um cabo de alimentação ou ficha que se encontra danificado/a, quando foi derramado líquido ou caíram objectos sobre o dispositivo, quando o dispositivo foi exposto à chuva ou à humidade, quando não funciona normalmente ou quando foi deixado cair. **Avviso!** Fare riferimento al personale qualificato per tutti gli interventi di assistenza. L'assistenza è necessaria quando il dispositivo è stato danneggiato in qualche modo, ad esempio se il cavo di alimentazione o la spina sono danneggiati, è stato rovesciato del liquido è stato rovesciato o qualche oggetto è caduto nel dispositivo, il dispositivo è stato esposto a pioggia o umidità, non funziona correttamente o è caduto.

⚠️	**Warning!** Only use attachments and accessories specified and/or sold by the manufacturer. **Avertissement!** Utilisez seulement les attaches et accessoires spécifiés et/ou vendus par le fabricant. **Warnung!** Verwenden Sie nur Zusatzgeräte und Zubehör angegeben und / oder verkauft wurde durch den Hersteller. **¡Advertencia!** Utilice solamente los accesorios y conexiones especificados y/o vendidos por el fabricante. **Aviso!** Utilize apenas equipamentos/acessórios especificados e/ou vendidos pelo fabricante. **Avviso!** Utilizzare soltanto i collegamenti e gli accessori specificati e/o venduti dal produttore.

Warranty and Liability Information

Limited Warranty

AJA Video Systems, Inc. (AJA Video) warrants that the product, not including hard-disk based Storage Modules (HDD), will be free from defects in materials and workmanship for a period of three years from the date of purchase. AJA Video warrants that the hard-disk based Storage Modules (HDD), will be free from defects in materials and workmanship for a period of one year from the date of purchase. If a product proves to be defective during this warranty period, AJA Video, at its option, will either repair the defective product without charge for parts and labor, or will provide a replacement in exchange for the defective product.

To obtain service under this warranty, the Customer must notify AJA Video of the defect before expiration of the warranty period and make suitable arrangements for the performance of service by contacting AJA Video support through the channels set forth on the support contacts web page at http://www.aja.com/support/index.php. Except as stated, the Customer shall bear all shipping, packing, insurance and other costs, excluding parts and labor, to effectuate repair. Customer shall pack and ship the defective product to a service center designated by AJA Video, with shipping charges prepaid. AJA Video shall pay to return the product to Customer but only if to a location within the country in which the AJA Video service center is located.

This warranty shall not apply to any defect, failure or damage caused by negligent, inadequate or improper use, handling or maintenance. Without limiting the foregoing, AJA Video shall not be obligated to furnish service under this warranty or repair any damage or malfunction a) resulting from attempts by personnel other than AJA Video representatives to install, repair or service the product, b) resulting from improper use or connection to incompatible equipment, c) caused by the use of non-AJA Video parts or supplies, d) if the product has been modified or integrated with other products when the effect of such a modification or integration increases the time or difficulty of servicing the product, or (e) resulting from being dropped or otherwise subjected to undue force, exposure to moisture or other corrosive or conductive substances, exposure to strong magnetic fields, use with improperly regulated power supplies, exposure to electric shock, use in temperatures outside the specified operating range, or otherwise failing to treat the product in accordance with the standard of care appropriate to sensitive and delicate electronic equipment.

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Limitation of Liability

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