Ki PRO
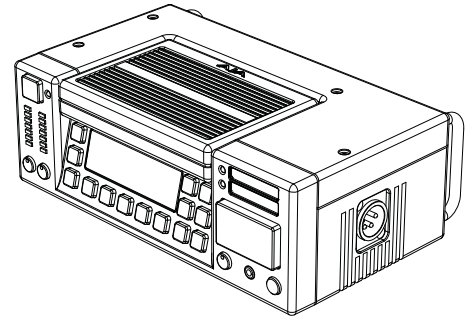
Installation and Operation Guide

Because it matters.

AJA
VIDEO SYSTEMS

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Overview

Ki Pro is an all new way of connecting production and post. With it, you can now acquire with the same codec you edit with—Apple ProRes 422. Ki Pro simplifies the link between production and post by acquiring on the best codec for use with Apple Final Cut Studio, from virtually any camera, regardless of format. With its extensive analog and digital connectivity, virtually any video and audio source can be fed into Ki Pro. Also included is AJA's powerful 10-bit realtime up/down/cross conversion, allowing you to record in the format you want to edit and deliver.

Small and portable, AJA's Ki Pro was designed as a field recorder for creating "ready-to-edit" professional digital video. Ki Pro supports an Apple "file-based" workflow by recording standard Apple ProRes 422 QuickTime files on industry standard media. Ki Pro supports analog and digital audio/video I/O and records on either removable 34mm ExpressCards (up to two can be mounted) or a removable storage module. Two types of storage modules are also available for Ki Pro: a 2.5" SATA hard drive (supplied with the base system), or a Solid-State-Drive (SSD) module you can optionally purchase. When removed, storage modules function as a standard FireWire 800 drive when connected to a Mac.

Note: ExpressCard storage is not currently supported with version 1.0

Ki Pro's multi-purpose mechanical design and small form factor allow both "stand-alone" and camera configurations. In standalone mode, it can connect to a camera while sitting on a desk or flat surface. In a camera configuration it mounts between the camera and a tripod using an optional "Exo-skeleton" frame. The frame option allows for flexible positioning of the camera and accessories and serves as an attachment to a professional tripod.

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

Like AJA's famous KONA and Io HD desktop products, Ki Pro offers unparalleled connectivity. Within its portable and rugged form factor, Ki Pro offers SD/HD analog I/O, SD/HD digital I/O including SDI, HD-SDI and HDMI, two channels of balanced and unbalanced analog audio with switch selectable line/mic levels, and LTC timecode in/out.

Control options are also varied and flexible. Ethernet 10/100/1000 connection is possible via an RJ45 connector, allowing remote control and configuration from a Mac or PC web browser.

Note: Though not supported in Version 1.0, a future release will support a FireWire 400 (1394a) connector that allows passing control and timecode from the camera, while a special "AJA Lens Tap" connector provides the unique ability to intercept lens control data for use in start/stop and automated recording control. Plus, a FireWire 800 connector will allow a Mac to mount Ki Pro's storage devices (SSD, HD, and ExpressCards).

For wireless control, Ki Pro features an internal 802.11b/g antenna and radio for connection to wireless devices such as iPhone, iPod Touch, or 802.11 equipped computers. (For detailed illustrations and discussions of Ki Pro connectors and control features, see Chapter 2.)

This manual covers the installation and operation of Ki Pro and its optional accessories.

Features

Ki Pro offers a large number of unique features for optimum quality, ease of use, and support for a wide variety of workflows and environments. Ki Pro provides flexible standard and high definition recording, with hardware up/down/cross-conversion for versatile operation in a mixed SD/HD environment, plus a wide variety of control methods and storage options.

Hardware

- Apple ProRes 422 and Apple ProRes 422 HQ Codec—SD, HD 720/1080, full-raster 10 bit 4:2:2, realtime, implemented in hardware
- Up/down/cross-conversion, 10-bit, realtime, implemented in hardware
- Component HD/SD analog video I/O (6 BNC)
- Composite video output (1 BNC)
- HD/SD SDI I/O (2 BNC)
- HDMI I/O (2 HDMI)
- 2 channel balanced and unbalanced analog audio I/O (4 XLR, 4 RCA)
- LTC I/O (2 BNC)
- IEEE 802.11 wireless
- 10/100/1000 Ethernet LAN

- Panel user interface features a VFD display (2 line character display), with 14 control buttons, 3 control knobs, and a power button
- Storage Module (HDD) with FireWire 800 port for use with Apple Mac® computers (HFS+ file system)
- 12 Vdc AC adapter with industry standard 4-pin XLR connector
- 3-year warranty

Software

- Remote Browser control software. When a Mac®, PC, or 802.11b/g enabled device such as an iPhone are connected via the Ki Pro Ethernet port or its 802.11b/g connection, the device can control the Ki Pro via a web browser.
- Embedded internal web server for remote control via 802.11b/g or LAN

Options

AJA's Ki Pro can be enhanced by purchasing several options:

- Ki Box Exo-skeleton—provides a surrounding chassis for the Ki Pro that can both mount to a tripod and provide a mount for camera on top; this combination allows convenient access to controls.

Base Ki Pro Exo-skeleton chassis with camera mount

Knurled thumbscrews secure Ki Pro chassis to Exo-skeleton
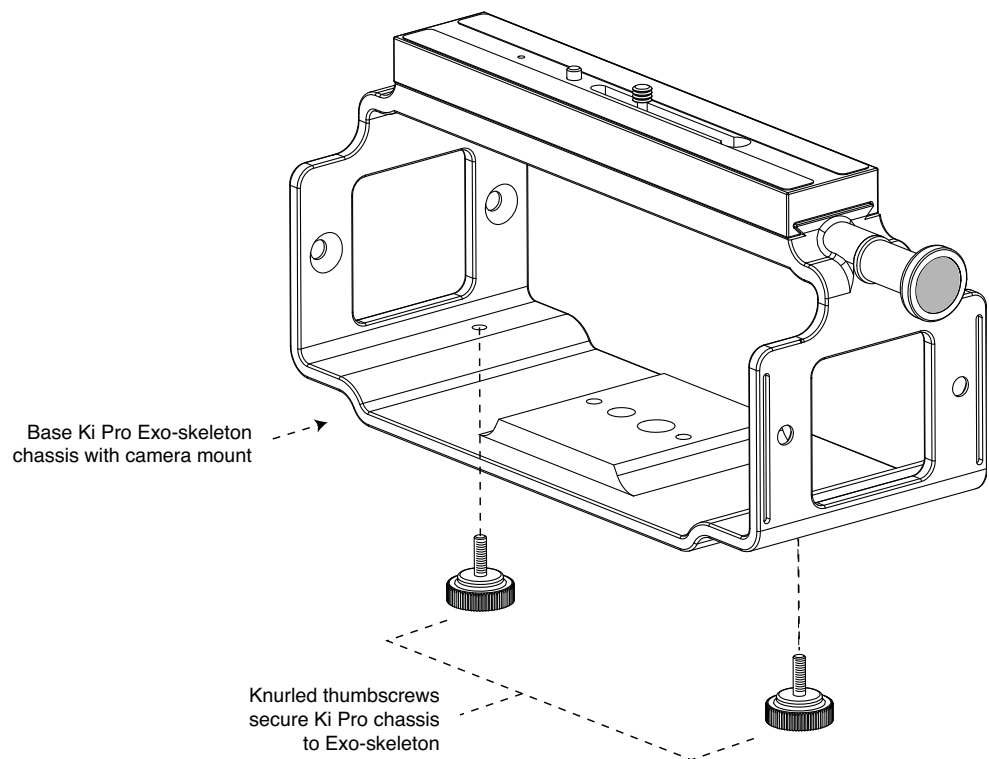
Ki Box Exo-skeleton Option
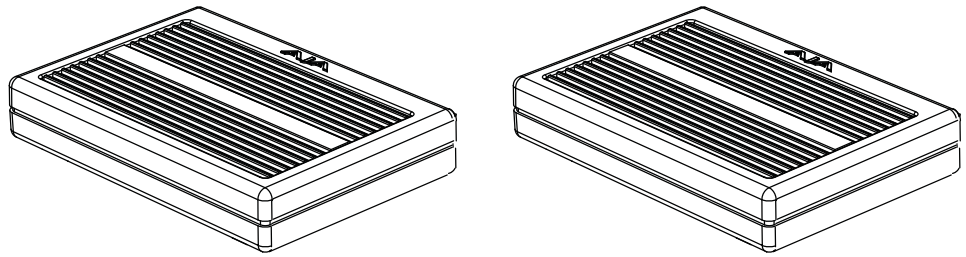
Storage Module Options: SSD or Hard Drive

- Ki Pro SSD Storage Module—although the Ki Pro comes standard with a removable HDD Storage Module, an optional SSD Storage Module is also available. The Ki Pro Solid State Storage Module (SSD) is recommended for mobile environments where shock-proof sturdiness may be needed. The Ki Pro SSD Storage Module offers the ultimate in media reliability.

- Ki Pro Hard Drive Storage Module—although Ki Pro comes with one removable HDD Storage Module standard, you can buy extras and simply swap them as needed.

- Ki Pro Rod Accessory Kit—this kit adds endplates to the Exo-skeleton so you can attach two user-supplied 15mm camera accessory rods. The endplates have knobs for adjusting the height of the rod brackets relative to the camera, as well as a set of knobs for securing the rods in the brackets.

Optional Rod Accessory Kit Assembly

Kit components:
 2 endplates
 4 screws (5/32 allen)
 4 knobs with plastic washers
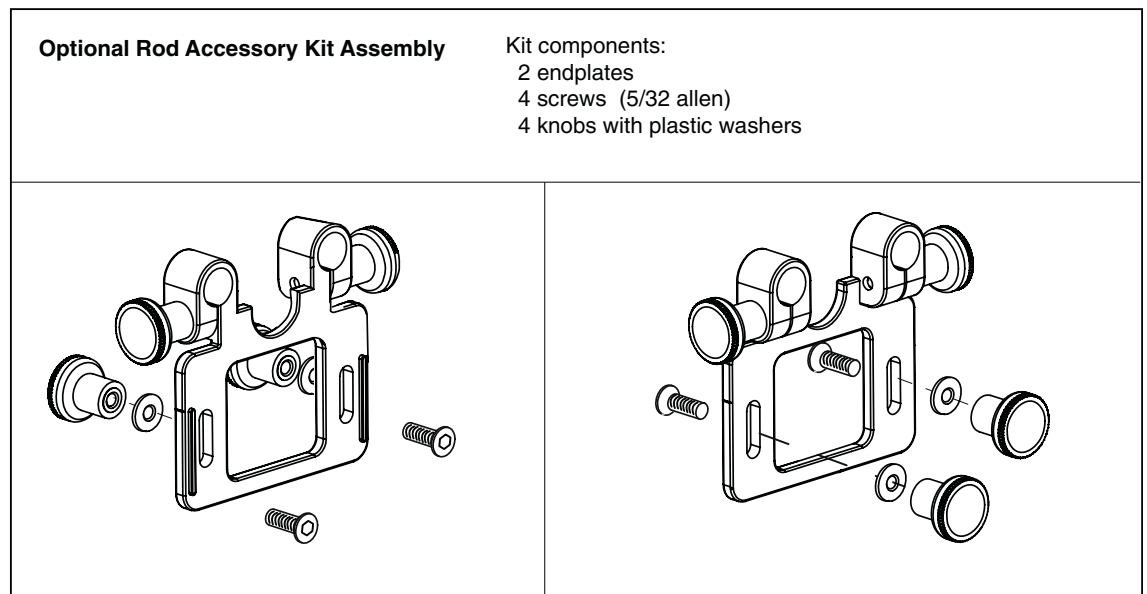
Rod Accessory Kit Option

- AJA Lens Tap Cable Accessory—this AJA proprietary cable allows Ki Pro to connect between the lens tap control connector on a lens and camera body, thereby intercepting the lens control signals for use in simple start/stop Ki Pro recording operations. This option is not available with Version 1.

What's In The Box?

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

- Ki Pro CD-ROM—this CD contains documentation—including this manual you're reading (PDF format).

- Ki Pro Recorder

- Ki Pro 250GB Hard Drive Storage Module and AC Adaptor

- AC Adapter 110/220 with industry standard 4-pin XLR connector for supplying power to the Ki Pro.

- Read Me First Notice—Contains late-breaking news and/or errata related to Ki Pro.

- Registration Sheet—allows you to register by mail or online (details provided).

Please save all packaging for shipping the Ki Pro should you wish to do so when moving or sending it in for service.
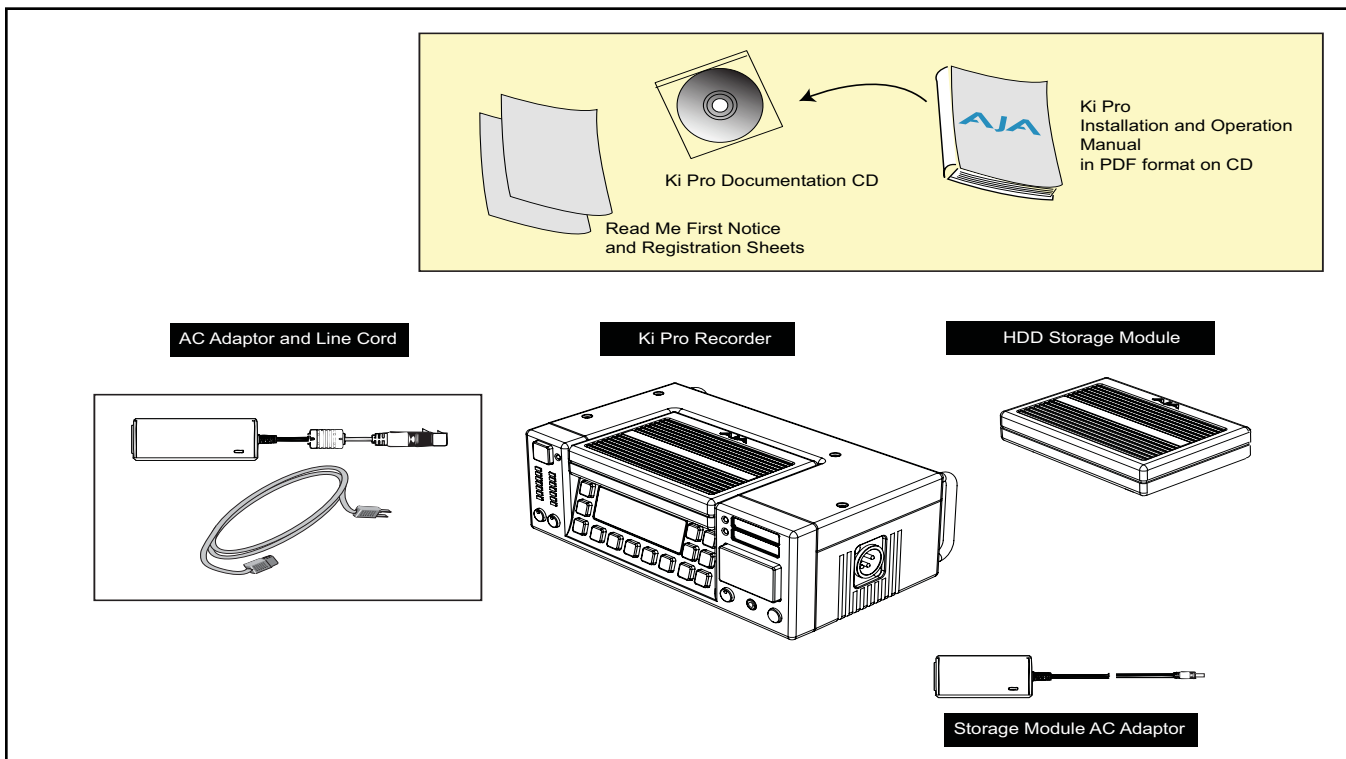
Ki Pro Shipping Box Contents

⚠️ **Warning!**

Only use attachments and accessories specified and/or sold by the manufacturer, such as the Exo-skeleton.

⚠️ **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.

System Requirements

AJA Video recommends that the Mac Pro or MacBook Pro used with the Ki Pro offer a FireWire 800 port and support Apple ProRes 422 with a satisfactory level of performance. Consult Final Cut Pro documentation when setting up and configuring your system for editing; ensure you have an adequate storage system (RAID array) and any needed video/audio interfaces.

Apple ProRes 422 Advantages

Data rate: 145 Mb/second ProRes 422, 220 Mb/second ProRes 422 HQ—supported by internal system drive or attached storage

Quality: Excellent, broadcast quality

Captured media is virtually indistinguishable from pristine uncompressed sources. Better yet, ProRes maintains the quality during editing, surviving multiple encoding/decoding generations without degradation. It was designed by Apple for editing, rather than as a transmission/distribution codec as are most popular codecs. Some of the advantages include:

- Full-size 1920-by-1080 and 1280-by-720 HD resolutions.
- Full-size 720-by-486 and 720-by-576 SD resolutions.
- 4:2:2 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.
- 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

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, introducing the front and rear panel features, connections and indicators, and all the options available.

Chapter 3 provides complete instructions for operating the Ki Pro from the front panel.

Chapter 4 discusses remote web browser control of Ki Pro via Ethernet or 802.11b/g.

Overview

When using Ki Pro, you'll make media 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 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. For ease of explanation, we'll talk about these two ways of using the Ki Pro:

- Stand-alone—in standalone use for *acquiring media*, the Ki Pro unit is placed on a desktop or surface and connected by cable to video/audio sources, usually a camera or camcorder. After acquiring media, you can use the media on a Mac, by removing the Ki Pro storage module and directly connecting it to the Mac via FireWire 800. Alternatively, the whole Ki Pro unit can be connected to a Mac via a FireWire 800 cable (this feature is not enabled in version 1.0).

- Camera Mount with Exo-skeleton—for the optimum in onset flexibility, an optional Ki Pro Exo-skeleton camera mount can be attached to a tripod, the Ki Pro mounted within it, and the camera mounted on top of the Exo-skeleton. This creates a complete self contained acquisition system for acquiring Apple ProRes 422 media in realtime as the camera is shooting. As in the standalone mode, the storage media can be easily inserted or removed for shooting and shuttling to your editing system—without having to remove Ki Pro from the tripod. The Exo-skeleton offers many adjustments and an optional rod accessory kit is available for vertical/horizontal camera adjustment with respect to the rod and accessories.

Learning about the front panel indicators will be useful in selecting operational modes and monitoring what is happening on Ki Pro as well as troubleshooting problems that can occur. Becoming familiar with the Ki Pro 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!

This device is a Class A product. Operation of this equipment in a residential area is likely to cause harmful interference, in which case users will be required to take whatever measures may be necessary to correct the interference at their own expense.

Caution!

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

Operator Side

Storage Module Release Button
(press and hold button down while removing Disk Storage Cartridge)

Storage Module (slides into slot)

Slot LED Status Indicators show:
Media Selected—Green
Not-Selected—not illuminated
Recording—flashes Green, On and Off

Expresscard Memory Slots (2) — 34mm 1-lane PCIe
(press card in to mount; press again to eject)

VU Meters (2 Channel)

Audio Input Level Adjust
(Press in and knob will pop out for easy adjustment)

STATUS CLIP xxxxxxxx   01 1 4% S
CONFIG REEL xxx   00:01:21:13
MEDIA

SELECT   ADJUST

DELETE CLIP   SLOT

L   R
Mic/Line

Phones

Cover Plate over 802.11 b/g Antenna

4-pin XLR Battery Power Connector
(on side)

140 x 16 pixel Alphanumeric and Graphics Display (typically 2 x 20 characters)

Transport Control Buttons (Reverse/Stop/Play/Record/Fast Forward)

Head Phone Volume
(Press in and volume adjust knob will pop out for easy adjustment)

Head Phone Jack

Power ON/OFF
(Press to power up, press and hold for 2 seconds to power-down; abort power-down by removing finger before 2 seconds)

Ki Pro Operator Side (front panel)

Controls and Displays

The Operator Side of Ki Pro features a variety of buttons, knobs, jacks, and indicators for operating Ki Pro 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 in the Exo-skeleton, it matches the operator side of the camera. When controlling camera features, you'll also be looking at all the Ki Pro control features for ease of use.

The front panel of Ki Pro operates in two modes: the "TRANSPORT" mode (default), and the "MENU" mode. Some controls have different functions in these two modes. The TRANSPORT mode (shown above) controls basic play, record, clip select, etc. functions. The MENU mode is for set-up and configuration of Ki Pro. There are three menu groups: STATUS, CONFIG, and MEDIA - these menus are accessed by depressing the corresponding Menu buttons on the left of the panel.

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 or depress the button—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 2 seconds. 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 2 seconds have elapsed.

STATUS Button—Pressing the STATUS button, when not lit, enters the I/O Status menu. 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 (PLAY, RECORD, FF, REV). 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'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 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 for all speeds.

SELECT (up/down): The SELECT up/down buttons operate differently depending on whether Ki Pro 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 "cues" it to the beginning. Note that ordering and playback of clips is based on timestamp order (creation date), not clip name. In the MENU mode, the SELECT buttons select parameters for adjustment.

ADJUST (up/down):): The ADJUST up/down buttons operate differently depending on whether Ki Pro 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.

DELETE CLIP Button—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 storage is accessed by the system—either the storage module slot or one of the ExpressCard slots. Second, the SLOT button is used to unmount a currently selected piece of media.

Caution!

Not using the SLOT button to unmount the media **can lead to issues with the media if the media is removed** prior to this action.

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 Backup and Reformat" or "WARNING Media Unrecognized."

Note: On power up, the storage module is the initial storage system selected and accessed by Ki Pro.

Disk Storage Module Release Button—Press and hold to physically release a storage module from the unit; you must pull out the storage module while pressing the button. This action prevents a storage module from accidental removal while recording/playing. For safe removal of any media, either storage module or Expresscards, the corresponding slot LED must be unlit. Note: the ExpressCard/34 media is push-to-eject media and does not require this release button to be pressed for removal.

Caution!

Removing any media with the slot LED lit, or while flashing, **can result in corrupted media** or potential damage to the SSD, hard drive or ExpressCard/34 media.

Analog Audio Input Level Adjust Knobs—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 and HDMI 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 Display—Display details: The display is a 140x16 Graphics display. Normally, it will be configured in a 2x20 character format. All menus are designed to fit into this format, so some words may be truncated to fit the display limits.

Operational note: The display power consumption is directly related to the number of pixels that are turned on and the intensity. Therefore, the default brightness is an intensity value of 6 (on a scale of 1-8) and users will be able to diminish this value as they see fit in order to conserve as much as 22% power consumption for the VFD. The intensity setting of the VFD also correlates to the backlit buttons on the unit (play, select up, select down, etc.)

During a period of 3 minutes of inactivity, the VFD will go to a screensaver mode—if the Screen Saver parameter has been set in the CONFIG menu.

VU Meters—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).

ExpressCard Slot LED Status Indicators—Each of the 3 media slots (S1, S2, D1) have an associated LED status indicator. The following states for the LED indicator denote the status of the media:

LED lit/on: selected media
LED unlit/off: inactive media, okay to eject or no media inserted
LED flashing: recording in progress

Disk Storage Module LED Status Indicator—The following states for the LED indicator denote the status of the media:

LED lit/on: selected media
LED unlit/off: inactive media, okay to eject or no media inserted
LED flashing: recording in progress

Other Front Panel Features

ExpressCard Memory Slots (2)—Both of these slots support ExpressCard/34 (34 mm wide) memory cards (not ExpressCard/54). Cards must be very fast to be used with Ki Pro.

Note: ExpressCard Memory is not supported in the Version 1.0 Ki Pro release.

Visit the Ki Pro support page on our website for a list of AJA-qualified cards:

http://www.aja.com/support/ki-pro/ki-pro.php

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

Connector Side

Connect any camcorder, camera, or audio source—digital or analog—regardless of brand or format, to Ki Pro's many connectors. The connector side of Ki Pro contains almost all of the available connections, protected by handles that extend out for easy grip while protecting the connectors when out of the Exo-skeleton. On the back side of the unit is a single power connector for supplying the 12-Volt DC operating voltage (see *installation* later in this chapter).

The function of Ki Pro's inputs and outputs depend on the operational mode. Ki Pro's active input (the one to be recorded) is selected by front panel, web browser, or wireless device browser. Ki Pro's outputs are active all the time. In other words, the same output video appears simultaneously on the HDMI, SDI, component, and composite outputs. (Note: composite is an SD only format, so it will not output HD material.) This method of operation allows simultaneous connection to source devices, onset monitoring displays, and audio equipment.
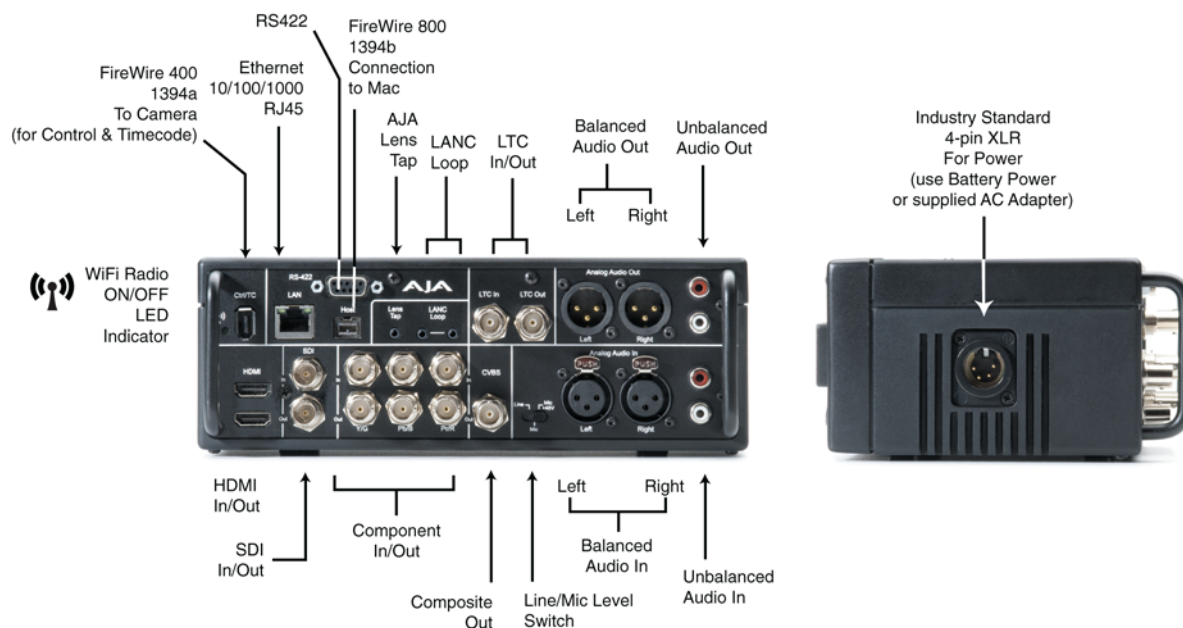
Ki Pro Connector Side and Back Side

Connections

- HDMI—v1.1 video with embedded audio (2 channels input, 8 channels output), 1x connector for input and 1x connector for output.
- HD/SD-SDI Input and Output, with 8 channel embedded audio (2x BNC)

Note: Though Ki Pro SDI and HDMI support 8 channel embedded audio in E-to-E, only 2 channels can be captured and played back.

- HD/SD Component YPbPr/RGB Video, 3x BNCs for input, and 3x BNCs for output.
- Composite video output (CVBS, 1x BNC)
- 2 channel balanced analog audio Input and Output (4x XLR)
- 2 channel unbalanced analog audio Input and Output (4x RCA)
- Line/Mic Level Switch (analog XLR audio input level)
- LTC Input and Output (2x BNC)
- Lens Tap*
- LANC*
- 1394a FireWire port (connection to camera for timecode and control)*
- 1394b FireWire port (connection to host computer)*
- LED Indicator for IEEE 802.11 Radio ON/OFF
- 10/100/1000 Ethernet LAN
- 9 pin serial port (for future use)*

Note: above items marked with an asterisk (*)are not supported in Ki Pro Version 1.0 software.

LTC Timecode Input And Output

Two BNCs provide connections to the house LTC timecode generator or source. Connections are high impedance. One BNC is for input and the other for output.

SDI Input and Outputs

Two BNC connectors are provided for SDI input and output. SDI input and output supports SD-SDI and HD-SDI video and embedded 24-bit digital audio. If your camera has multiple outputs, look to see if it has SDI, and use it where possible for the highest quality.

Component YPbPr

Connect component YPbPr video cables from a VTR, Camera, or other source to the three YPbPr input BNCs: Y/G, Pb/B and Pr/R. Then connect the YPbPr Out BNCs to a monitor, or other component device. Component input video signals are A/D (input) converted (10-bit). Similarly, component output video signals are D/A converted (10-bit). Component video signals are higher quality than composite.

A Note About RGB—Although RGB is used less in today's video systems, Ki Pro supports it at output. Because Ki Pro's (and SMPTE SDI) native format is YPbPr, AJA recommends the use of YPbPr whenever possible. Although component video monitors often have RGB inputs, it's better to use YPbPr when the monitor supports it. The YPbPr format provides "headroom" for "superwhite" and "superblack"—and these video levels *will be clipped* when transcoding to RGB. Also, the RGB/YPbPr transcoding involves a level translation that results in mathematical round-off error.

A Note About YPbPr—Component Video, or YPbPr, has been given several names over time. YUV, Y/R-Y/B-Y, and YCbCr, are just some examples. Although these various formats have some differences in levels, they are all basically the same. Ki Pro supports three different types of YPbPr: SMPTE/EBU N10, Betacam (NTSC), and Betacam (NTSC Japan). These three formats differ in level only.

CVBS Composite NTSC/PAL Output

One BNC connector supplies composite NTSC or PAL output. Connect the CVBS Out BNC to a monitor, or other Composite video device. Composite video signals are D/A (output) converted (10-bit).

HDMI

Two HDMI connectors provide for input and output of HDMI compatible video (version 1.1) and multi-channel embedded audio. HDCP is not supported on either input or output. The HDMI input is designed to support long cable runs: up to 100 feet (30.48m) when using 22 or 24AWG HDMI cable, or up to 50 feet (15.24m) using 28 or 30AWG HDMI cable. The HDMI output supports standard HDMI cables only.

HDMI Formats supported in Version 1.0:

> 525i 29.97
> 625i 25
> 720p 50
> 720p 59.94
> 1080i 25
> 1080i 29.97

Note: When using Ki Pro HDMI connections and attaching it to any HDMI audio or video accessory, you must use one each of the ferrite beaded HDMI cables, HH-28F-06, between the input and output ports of the Ki Pro and the HDMI accessory to maintain regulatory compliance.

Analog 2 Channel Balanced Audio Input and Output

Four XLRs, 2 female for input and 2 male for output, provide 2 channels of balanced audio. Audio is high-quality 24-bit A/D input and D/A output 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.), or Mic for microphones without phantom power (dynamic micrphones).

Analog 2 Channel Unbalanced Audio Input and Output

Two RCA connectors provide an unbalanced stereo audio input pair for use with consumer camcorders, VTR/VCRs and other A/V devices. For output, two RCA connectors provide an unbalanced stereo audio output pair for driving inexpensive audio monitoring systems.

9-pin Connector

Reserved for future use.

Host (FireWire 800)

IEEE 1394b FireWire™ connector for connecting to the 800 Mb/s FireWire connector on an Apple Mac Pro or MacBook Pro for passing data. This connector does not support connection to any other FireWire devices such as cameras or hard drives. *Feature not supported in Version 1.0.*

CTRL/TC (FireWire 400)

IEEE 1394a FireWire™ connector for connecting Ki Pro to a camera for timecode control. This connector does not support data transfer of compressed audio/video signals nor does it support connection to hard drives. *Feature not supported in Version 1.0.*

Ethernet

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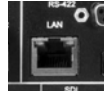
LANC Loop

This connector accepts a LANC plug (2.5mm 3-conductor TRS jack) and then loops it through to a second connector (loop). LANC or Local Application Control Bus System (sometimes called Control-L) is a Sony protocol for synchronizing cameras. Available on many brands of cameras, LANC enables accessories to control camera and Ki Pro record/stop functions. *Feature not supported in Version 1.0.*

Lens Tap

This connector supports an optional "Lens Tap" kit AJA offers for controlling Ki Pro. A proprietary AJA cable connects between the camera body and the lens, intercepting the camera's own interconnecting cable. This allows the Ki Pro transport control (record/stop) to happen by simply operating the shutter/record button on the camera. *Feature not supported in Version 1.0.*

LED Indicator for IEEE 802.11 Radio

This LED shows the status of the internal 802.11 radio used to transmit and receive data. When illuminated, the LED shows the radio is ON.

Power Connector (back of unit)

On the back of Ki Pro 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 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 hours of media to a portable removable hard-drive storage module with built-in FireWire 800, or to flash-based ExpressCard/34 cards (*feature not available in version 1.0)*, that both instantly mount on your OSX desktop for immediate editing and file access. Ki Pro ships with a 250GB hard disk that can store up to 2 hours of 1080i Apple Pro Res 422 HQ media or 4 hours of standard 1080i Apple Pro Res 422 (or even more for standard definition). For additional storage you can buy a variety of storage types.

Caution!

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

ExpressCard/34 Memory Cards

Although AJA doesn't make or sell ExpressCard/34 memory cards, Ki Pro provides two slots where they can be used (ExpressCards not supported in version 1.0). With the rapid industry development of these cards and many manufacturers providing them, brands and models will change often. AJA will post on the Ki Pro support web page which brands AJA has tested and found to work acceptably. Since cards have to be fast enough to sustain throughput without dropping frames, not all ExpressCard/34 cards will qualify for Ki Pro usage.

Search here to find list of qualified cards:
http://www.aja.com/support/ki-pro/ki-pro.php

ExpressCard/34 Memory Card

Note: ExpressCard/34 media is not a supported recording media for the 1.0 release of Ki Pro.

Removable Storage Modules (HDD or SSD)

Although the Ki Pro comes standard with a removable 250GB HDD Storage Module, an optional SSD Storage Module is also available. The Ki Pro Solid State Storage Module (SSD) is recommended for mobile environments where shock-proof sturdiness may be needed. The Ki Pro SSD Storage Module offers the ultimate in media reliability.

You may also choose to purchase extra HDD or SSD Storage Modules so you can quickly load and unload media from the Ki Pro unit while onset.

Storage Modules can be powered via the FireWire 800 cable, or via an AC adapter (supplied).

Check with your AJA dealer or the AJA website for Storage Module offerings as capacities and models may change.

Firewire 800 Connector

Power connector (AC Adapter)

Storage Module (HDD and SSD look identical—see label underneath for type)

Formatting Media

To reformat storage media, it must first be selected using the SLOT button (see previous topic). Once selected, follow these steps:

1. Press the STOP button
2. Press the MEDIA button
3. Press SELECT (up or down) repeatedly until you see the menu 16.1 Format Media.
4. Press ADJUST up arrow. Ki Pro will display "FORMAT". Press the ADJUST up arrow button. Ki Pro will display "CONFIRM ERASE"—press and hold the ADJUST up arrow button for 2 seconds or longer and then formatting will begin. Ki Pro will display progress and when done, you'll see the 16.1 Format Media menu once again.

Using Ki Pro Media in Final Cut Pro

When a Ki Pro storage module (HDD or SSD) is removed and connected to a Mac via a FireWire 800 cable, the module will mount as a normal Apple HFS+ filesystem. The REEL NAME parameter is the name of the media that will appear mounted on the OSX desktop.

Once a Ki Pro storage device (storage module or ExpressCard/34) is mounted, each clip recorded by Ki Pro will be a file on its filesystem, which can be opened in Final Cut Pro. Because the clips were recorded as Apple ProRes 422 or Apple ProRes 422 HQ with proper Final Cut Pro metadata, they're instantly ready to edit.

In Final Cut Pro's browser window you will see some of the information Ki Pro saved as data to describe the media. Ki Pro saves the "Name", "Media Start", "Media End" and "Reel" for Final Cut Pro.

Installation

The following topic details set up and installation of Ki Pro. There are two different ways to set up and use the Ki Pro portable recorder:

- Stand-alone use
- Camera and mounting with optional Exo-skeleton (with or without a tripod)

Software setup is the same for both uses. Choices you will make include how Ki Pro will be controlled (front panel, 802.11 wireless, or Ethernet & web-browser) and the physical system requirements for your application (camera mount or not, video and audio monitoring choices, and media workflows). First we'll discuss mounting methods and then follow up with software configuration and setup.

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.

Stand-alone Usage

In stand-alone use, Ki Pro is simply a box that connects to the video and audio output connector(s) from a camera, camcorder, or other professional source, recording media that is output. Here are some typical workflows and applications:

- Recording a live video feed from a camera; Ki Pro is rackmounted, receiving component video input.
- Recording a corporate video live from a camera; Ki Pro sits on a computer work desk receiving HDMI audio and video input.
- Recording on location, Ki Pro is truck-mounted, receiving an HD-SDI feed.

- Desk mounted in an AV media library, recording legacy material from a variety of decks, formats and sources, converting dissimilar media to standardized Apple Pro Res for archival.

- Recording live house-of-worship services, Ki Pro sits on a shelf receiving a feed from a wall mounted remote camera and audio feed from the house mixer.

- Recording live music at a remote location, Ki Pro receives video feed from event producer's switcher and picks up audio from a stereo pair of phantom-powered condenser microphones.

Camera Mounting with Exo-skeleton

Ki Pro's applications become even wider, when you add in the optional Exo-skeleton that provides for mounting of both a camera and/or a tripod. Here are some typical workflows and applications:

- Handheld camcorder with Ki Pro mounted underneath and a battery pack used for live sports—recorded media is ready to edit immediately.

- Broadcast usage with Ki Pro's hardware-based conversion capability to take camera's (1080 or 720) input and realtime convert to another format.

Ki Pro with Exo-skeleton and camera on mount

Ki Pro with Exo-skeleton and optional endplates with user-supplied accessory rods

- On-set application: camera operator controls shooting via optional AJA lens tap—whenever trigger is pressed, recording/stop occurs. An assistant remotely names clips and content using an iPhone communicating with Ki Pro wirelessly. (Note: Lens tap feature not available in version 1.0.)

- Multi-camera shoot, with different brands of cameras, different internal camera codecs, all mounted with Ki Pros and delivering the same format of media: Apple Pro Res 422, ready to edit immediately after filming. No log and capture necessary.

When mounting a camera inside the Exo-skeleton frame, all Ki Pro controls will face the same direction as the camera controls, so the camera operator can easily make adjustments. Power to Ki Pro exits on the same side as the camera power supply so cables don't clutter the lens side of the setup.

Exo-skeleton Setup and Adjustment

The Exo-skeleton option has two configurations. As it comes out of the box, it contains an adjustable camera mount on top, a plate on the bottom for tripod mounting, and two thumbscrews for securing the Ki Pro unit to the Exo-skeleton.

Base Ki Pro Exo-skeleton chassis with camera mount

Knurled thumbscrews secure Ki Pro chassis to Exo-skeleton

An option that can be added is an *accessory rod kit* that adds plates to each side of the Exo-skeleton frame so that 15mm user-supplied rods can be used with the camera.

Rods are handy for mounting battery packs, matte boxes, and a wide variety of other accessories.

Optional Rod Accessory Kit Assembly

Kit components:
 2 endplates
 4 screws (5/32 allen)
 4 knobs with plastic washers
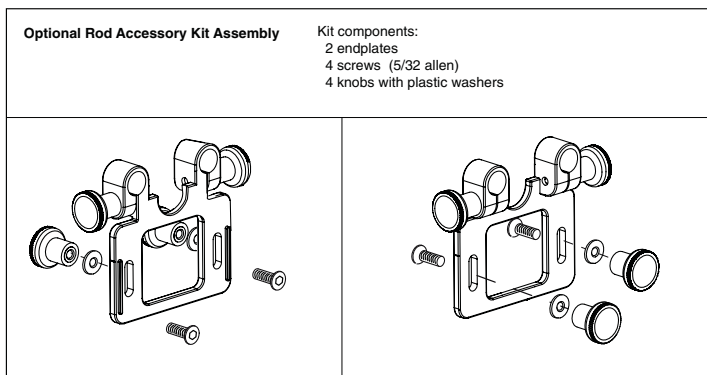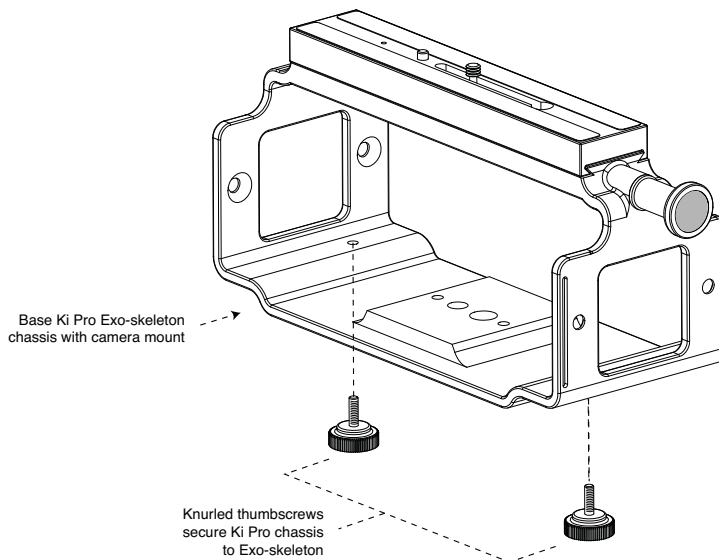
For most uses with an Exo-skeleton, you'll want to first mount the camera or camcorder to the adjustable mount on top, before sliding in the Ki Pro unit and locking it. To mount a camera, follow these steps:

1. Locate the camera mount locking knob on the Exo-skeleton and loosen it.
2. Slide the camera mount off of the mounting rail.
3. Place the camera on the mount, orienting the mount's alignment pin to camera's corresponding pin socket. Once aligned, tighten the mounting screw to secure the camera.
4. Slide the camera and mount back on the rail and tighten the locking knob.

Alignment   Mounting
Pin   Screw

2

Slide Mount
off of Exo-skelton

3

Locate the Camera
Mounting screw underneath
(2 sizes provided),
align pin to Camera base
and tighten the Mounting screw
to fasten securely.
Replace Mount on
Exo-skeleton when done,
and tighten Locking Knob
to lock camera in place.

1

Loosen
Camera
Mount
Locking
Knob

Base Ki Pro Exo-skeleton
chassis with camera mount

Knurled thumbscrews
secure Ki Pro chassis
to Exo-skeleton

Exo-skeleton Camera Mounting

Attaching the optional Ki Pro Exo-skeleton rod accessory kit is simple:

1. Open the kit box; you'll find preassembled endplates—these must be disassembled before you can attached the plates to the Exo-skeleton. Place an endplate from the kit on the outside of the Exo-skeleton frame, aligning it's two screw slots with the two screw holes in the frame.

2. Insert one of the supplied screws from the inside of the frame through the frame hole and slot. While holding the screw from the inside, place a supplied washer over the threaded end of the screw and screw one of the supplied knobs over the end of the screw.

3. Repeat step 2 for each of the 4 knobs, washers and screws.

Once the kit is installed, you can then loosen the rod lock knobs, insert user-supplied 15mm accessory rods, and then mount any desired accessories.

To raise or lower the rods, simply loosen the rod height adjustment knobs (the ones you installed in step 2), lift the rods to the desired height, and then tighten the knobs once complete.

Camera Mount
Locking Knob

Rod
Lock
Knob

Rod
Lock
Knob

Rod Height
Adjustment
Knob

Rod Height
Adjustment
Knob

Ki Pro Locking Thumbscrew (1 each side)

Side View

Slide-adjustable Mount

Camera
Mount
Locking
Knob

Ki Pro
Locking
Thumbscrew
(1 each side)

Accessory Rod Lock
Knobs
(2 on each side)

Rod Height Adjustment Knobs
(2 on each side)
For adjustment of the
accessory rods height
relative to the camera

Locking
Thumbscrew
(1 each side)

Exo-skeleton Endplates and Rod Height Adjustment

Applying Power

The installation and set up of a Ki Pro is straight-forward. If you'll be controlling the unit from the front panel buttons and display, it's ready right out of the box. Just cable the system's audio and video sources, VTR(s), monitors, and audio equipment, mount the Ki Pro unit as desired, and begin recording. However, if you wish to control Ki Pro from a web browser or 802.11 device (iPhone etc.), then there are additional configuration steps necessary.

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.

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, plug the 4-pin XLR on the supplied AC adapter into the XLR power socket on the back of Ki Pro. Then plug the AC adapters line cord into 110 VAC or 230 VAC (the supply is autosensing).

1. Locate Line Cord

2. Insert into DC supply

3. Insert 4-pin XLR into 12Vdc Ki Pro power socket

Using DC Power

To run Ki Pro on DC power, simply plug a 3rd-party industry standard 12 volt battery pack with a 4-pin female XLR connector into the side power connector on Ki Pro. 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.

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

Ki Pro consumes approximately 30 watts of power so many batteries can power Ki Pro 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 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

.
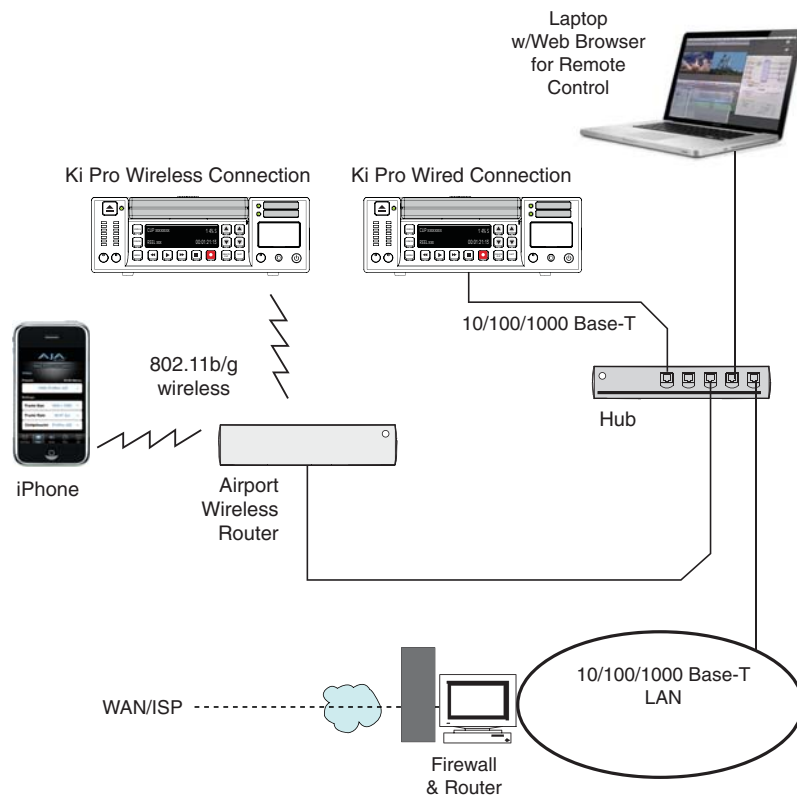
Ki Pro Networking Example

Network Connections

Ki Pro can be networked directly to a MacBook Pro or Mac using a single Ethernet cable (straight or cross-over)—or it can be connected to a local area network (LAN). If wireless networking is desired, Ki Pro can also be controlled via an iPhone or laptop browser using 802.11b/g and communicating through a wireless access point (Airport).

In hard-wired configurations, Ki Pro connects via its 10/100/1000 Base-TX Ethernet connector. In a direct connection, you simply connect the Ki Pro to an Ethernet-equipped computer having a browser using a Cat-5 cable. If connecting via a LAN, you then connect the Ki Pro's Ethernet connector to a hub or switch on the LAN. 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 separated by software or hardware routers.

Devices on a LAN have IP addresses which may be fixed and permanent, or dynamically assigned by the network (DHCP). When attaching Ki Pro to a LAN, you should first talk to your network administrator and find out how they want it connected (static IP or DHCP). Your IT department will be able to supply the information you need to install Ki Pro on a LAN.

Caution!

This device is a Class A product. Operation of this equipment in a residential area is likely to cause harmful interference, in which case users will be required to take whatever measures may be necessary to correct the interference at their own expense.

Caution!

The 802.11b/g radio is disabled by default and can be enabled only in the presence of an authorized access point.

Warning!

Intentional radiators, such as the AJA Ki Pro client adapter, are not intended to be operated with any antenna(s) other than those furnished by AJA. An intentional radiator may only be operated with the antenna(s) with which it is authorized.

Warning!

Do not touch the Ki Pro radio or antenna cover when the antenna is transmitting or receiving.

Warning!

Install this device in such a manner as to maintain a minimum of 5 cm (2 inches) separation distance between the radiating element(s) and all persons. This safety warning conforms with FCC radio frequency exposure limits.

TCP/IP Information You'll Need

If your LAN has a DHCP server that assigns IP addresses dynamically, then you don't have to configure anything (Ki Pro defaults to DHCP). If for some reason your IT administrator prefers an assigned IP address that is fixed (called a "static IP), then get the IP address—you'll be entering it in the "IP CONFIG parameter." If your LAN requires static IP addresses, then 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: 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—e.g. an Airport base station wireless router), then you need to do nothing other than plugging the Ki Pro 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!
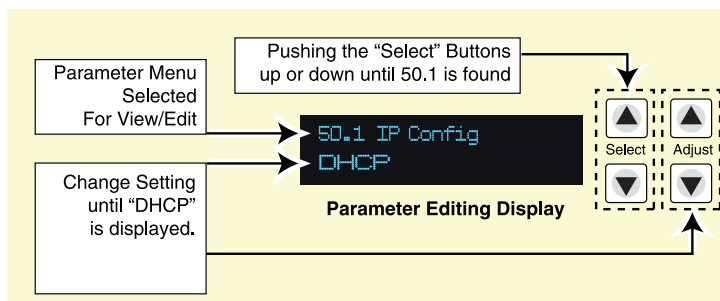
Here are the steps to communicate with Ki Pro after choosing the DHCP selection:

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's browser status screen.

If Ki Pro cannot get an address from the DHCP server on the LAN while Ki Pro 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:

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's browser status screen.

Note: If Ki Pro fails to find a DHCP server via it's 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 using a Static IP Address

To set a static IP address for Ki Pro, 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).
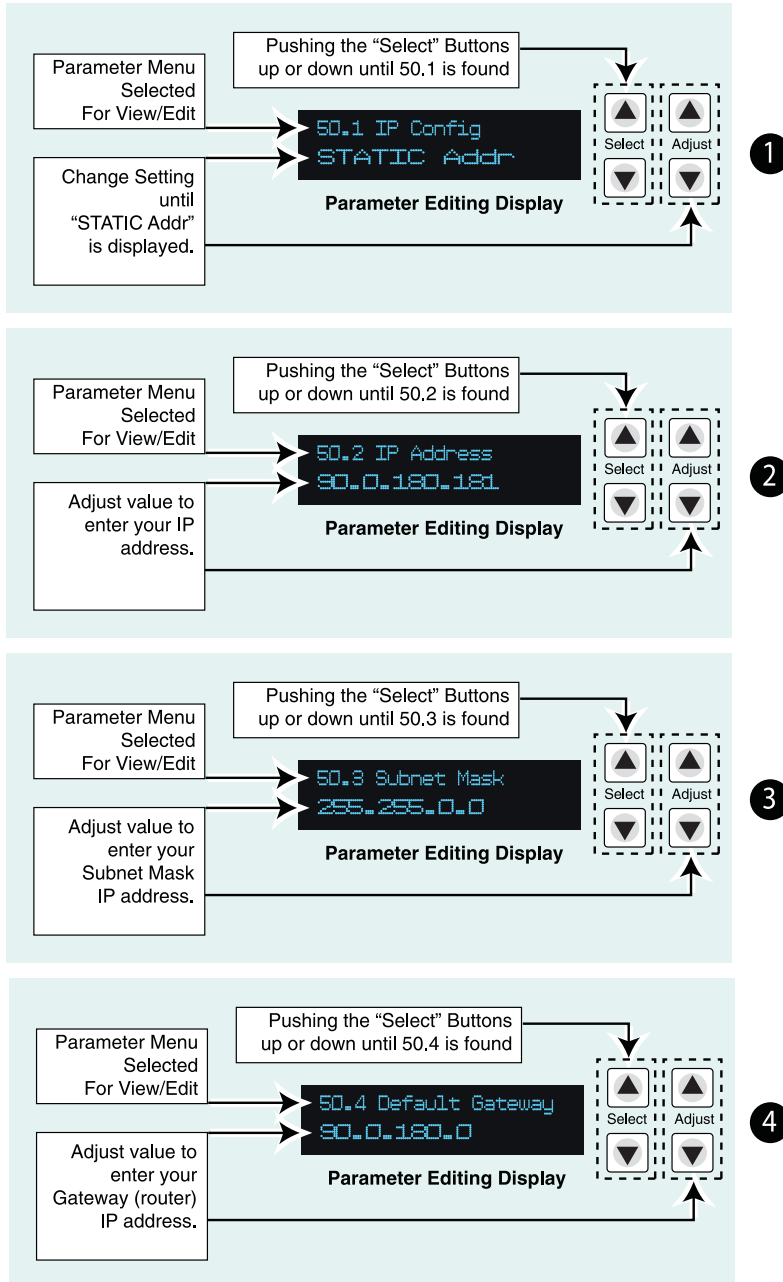
1

Parameter Menu Selected For View/Edit

Pushing the "Select" Buttons up or down until 50.1 is found

50.1 IP Config
STATIC Addr

Parameter Editing Display

Select   Adjust

Change Setting until "STATIC Addr" is displayed.

2

Parameter Menu Selected For View/Edit

Pushing the "Select" Buttons up or down until 50.2 is found

50.2 IP Address
90.0.180.181

Parameter Editing Display

Select   Adjust

Adjust value to enter your 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., 90.0.180.0).

For these parameters, 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.

3

Parameter Menu Selected For View/Edit

Pushing the "Select" Buttons up or down until 50.3 is found

50.3 Subnet Mask
255.255.0.0

Parameter Editing Display

Select   Adjust

Adjust value to enter your Subnet Mask IP address.

4

Parameter Menu Selected For View/Edit

Pushing the "Select" Buttons up or down until 50.4 is found

50.4 Default Gateway
90.0.180.0

Parameter Editing Display

Select   Adjust

Adjust value to enter your Gateway (router) IP address.

Configuring Ki Pro with a Static IP Address

Networking Ki Pro using the Factory Default IP

If you don't want to use DHCP to network Ki Pro 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 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's browser status screen.

Test Ki Pro's Network Connection with "Ping"

After setting the IP address and other TCP/IP settings and connecting Ki Pro's Ethernet connection to a LAN or directly to a computer, ensure that you have a valid connection by "Pinging" the Ki Pro. Pinging ensures that other devices on the network, or a computer directly attached to it, can see it. Simply run the Ping utility from a computer on the same LAN as Ki Pro, or one attached directly to Ki Pro. Here's how to Ping a Ki Pro from a Mac OSX computer:

Mac Ping Procedure

1. Find the Applications Folder, and then find the Utilities Folder inside of the Applications Folder.
2. Locate the "Terminal" utility application and double-click it.
3. On the Ki Pro, go to parameter menu 50.2 and read the IP address.
4. At the Terminal prompt, enter the IP address noted in step 3. For example: ping 192.168.0.2
5. If successful, the ping utility will respond that packets were sent, received and how long it took. For example:
   64 bytes from 192.168.0.2: icmp_seq=0 ttl=64 time=0.590 ms
6. If unsuccessful, check Ki Pro's network settings and resolve the problem with your IT administrator.

Controlling Ki Pro from a web-browser

To control Ki Pro from a web-browser on a network attached computer, you must enter Ki Pro's IP address as a URL in the browser. For example, if Ki Pro's IP address were "90.0.6.31", you would then type into the web browser: http://90.0.6.31

This topic is explained in greater detail in *Chapter 4: Browser Remote Control.*

Controlling Ki Pro via 802.11b/g

Another option for remote control is Ki Pro's built-in 802.11 wireless transceiver which can communicate with properly configured 802.11 wireless access points such as an Airport Basestation or 802.11 wireless router.

You can enable or disable wireless control of Ki Pro for security. Further, you can select a type of wireless security to match other devices; popular methods such as WEP, WPA and WPA2 are supported. To use wireless control you'll follow this basic process:

• Enable wireless control of Ki Pro

- Select a wireless network to connect to (as set on the access point you'll communicate with).

- Select the type of security, if any, to be used. If there is security, you'll also enter its password.

- Once configured, you can control Ki Pro from an iPhone or other 802.11 wireless device that supports browser control (iPod Touch et al).

Wireless control of Ki Pro is managed using menus 53.1 through 53.5 as listed in Chapter 3, under *Config Menu Parameters.* The steps of setting up and using Wireless control are then discussed later in Chapter 4 under *Browser Remote Control.*

Warning!

 Install this device in such a manner as to maintain a minimum of 5 cm (2 inches) separation distance between the radiating element(s) and all persons. This safety warning conforms with FCC radio frequency exposure limits.

Caution!

The 802.11b/g radio is disabled by default and can be enabled only in the presence of an authorized access point.

Warning!

 Intentional radiators, such as the AJA Ki Pro client adapter, are not intended to be operated with any antenna(s) other than those furnished by AJA. An intentional radiator may only be operated with the antenna(s) with which it is authorized.

There are three ways to control Ki Pro: the front panel, remotely from a web browser connected via ethernet, or a wireless browser (iPhone etc.) via 802.11. This chapter discusses controlling and using Ki Pro from its front panel. (Remote control via browser is discussed later in Chapter 4.)

In Chapter two we discussed the panel controls overall, so ensure you've read and understand that material first. Here in this Chapter we introduce each of the front panel's modes and menus—plus talk about *Clips* and *Reels*, with procedures for basic use.

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.
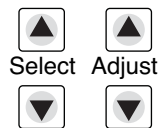
Select   Adjust

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. The display for the TRANSPORT mode is shown below:

Clip SC12BTK1	D1	47%
Reel 212		01:02:22:14

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 display for the STATUS menu is shown below:

3

Input Format	Input selected
Recording Format	Audio input selected

STATUS Menu (Record Mode)

Current Clip	Storage Slot	Remaining Capacity
Reel Number		Timecode

STATUS Menu (Play Mode)

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 display for the CONFIG and MEDIA menus is sh

own below:

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 operation. When you power up Ki Pro, 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.

Pushing one of the transport buttons in the middle of the front panel (PLAY, STOP, FF, REV, REC) 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 "STOP" mode, the CONFIG and MEDIA set-up menus can be accessed to adjust various parameters that control Ki Pro'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 VFD 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 is in an E-to-E state. However, any conversions selected (on input or output) will be applied. This means you can specify the type of recording via the *In Convert* as "None", leaving the incoming signal as is, or convert the signal to another format for your recording.

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 in numerous ways. The MEDIA and CONFIG menus presented later in this chapter detail the parameters you have 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). If these settings are acceptable, then push the red RECORD button below the display.
2. The green LED next to the storage module release button will begin blinking, showing that a recording is in process, and you'll see the timecode changing on the display. The RECORD button is also backlit while recording.
3. When you've finished recording, press the STOP button (left of RECORD).

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

Note: To change Apple ProRes 422 settings prior to recording: press MEDIA, then repeatedly press SELECT until you see 14.1 Encode Type—then press ADJUST up or down to select "ProRes 422" or "ProRes 422HQ". 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 In—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 In. Press ADJUST up or down to chose a desired audio input connector.

Note: You cannot select HDMI audio unless you have an HDMI video source, nor can you select a SDI audio source if you have not selected an SDI video source.

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 may take a few seconds to close longer files (files over 20 minutes). For these longer recordings, you may see a "Closing File" prompt on the display.
- Ki Pro 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.

Playing Back a Clip

To playback recorded media, you simply select the clip desired 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, web browser, and wireless). 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'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.

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 storage device. (In version 1.0 only the Storage Module is supported; in a future release Ki Pro will support ExpressCard/34 cards—when a clip is on another storage device, 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 will ask "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 (TRANSPORT)

Line 1: displays the input format, the 4 characters on the right display the selected input video format. The 4 character video symbols are: SDI, CMP, HDMI

Line 2: displays the record format—the 4 characters on the right display the selected audio input. The 4 character audio symbols are: SDI, XLR, RCA, HDMI

Here are some STATUS display examples of record mode:

Clip SC12BTK1	S1	47%
Reel 001		01:02:22:14

Transport (also Status Play Mode)

IN 720p 59.94	SDI
REC 1080i 29.97	XLR

Record Mode

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.

SYSTEM NORMAL

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 alarm active (e.g. *Invalid Selection*) 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 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.

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

```
WARNINIG

INVALID SELECTION
```

```
WARNING

UNRECOGNIZED MEDIA
```

```
WARNING

MEDIA IN USE
```

Ki Pro 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 is changed. If this occurs, Ki Pro stops the recording that is in progress.

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

"WARNING A/V Mismatch" may appear if SDI video is selected and HDMI audio is selected or vice versa. Embedded audio, via SDI or HDMI, must be matched to the video source. Analog audio can be used with any video input.

"WARNING Dropped Frames" may appear if media is underperforming and cannot keep up with the data rate required to make a recording or perform a playback. If you see this prompt during recording, 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 remove the media by pushing the SLOT button while an operation is still taking place. Wait for the operation to finish and then try again.

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

"WARNING Media Unrecognized" may appear if there is a problem with the media. To resolve this issue, mount the drive on an Apple computer under Mac OSX, copy the clips from the media, then re-insert the media into Ki Pro. If it does not read properly, you will need to format the media.

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

"WARNING Backup and Reformat" may appear if media has issues being mounted by the Ki Pro. As the prompt indicates, it is best to back up the media by copying it to another 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 does not result in a recording.

MEDIA menus

As the name implies, these menus display choices are all related to media storage, the type of encoding, and how Ki Pro behaves when recording and playing back. There are also menus for naming reels, clips and takes.

Media Menu Parameters

14.1 ENCODE TYPE

This parameter defines the Apple ProRes encoding method.

14.1 ENCODE TYPE	PRORES 422 (default) PRORES 422HQ	Record media as Apple ProRes 422 files. Record media as Apple ProRes 422 HQ files.

15.2 LOOP PLAY

This parameter turns looped playback on and off.

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

16.1 FORMAT MEDIA

This parameter is used to format the currently selected storage device.

16.1 FORMAT MEDIA	KEEP MEDIA (default) FORMAT MEDIA	No action (do not format the media device selected) Format the selected media device (you will be prompted Y/N?)

16.2 DELETE CLIPS

This parameter can be used to delete all of the clips on the media.

16.2 DELETE CLIPS	ALL CLIPS (default) KEEP CLIPS	Deleted all clips on the storage device when DELETE CLIPS is pressed No action (do not delete clips)

The Ki Pro Storage Module can be used to hold data other than Apple ProRes 422 QuickTime recordings. If other files are saved to the Ki Pro Storage Module, 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. 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 is also the name of the media as it will appear when the storage device (storage module or ExpressCard/34) is mounted on a Mac OSX desktop (and media was formatted by the user).

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

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".

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

Clip Naming—Two Examples

Two examples are presented below showing how resulting 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 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 the Final Cut Pro Browser window. Final Cut Pro's Browser window provides columns of data used to describe the media. In the most minimal form, "Name", "Media Start", "Media End" and "Reel" are 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.

Example 1: using the factory default AJA parameter settings:

REEL NAME	001
CLIP NAME	CLIP
CLIP NUMBER	1
CLIP APPEND	NONE
ALPHA APPEND	A
TAKE	1

The resulting clip would be named and displayed as: "CLIP1TK1". 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	SC
CLIP NUMBER	12
CLIP APPEND	ALPHA
ALPHA APPEND	B
TAKE	1

The resulting clip would have the following naming convention: "SC12BTK1". 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.

17.3 CLIP NUMBER	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.

| 17.4 CLIP APPEND | NONE (default) | No text is appended to the CLIP NAME and CLIP NUMBER |
| | ALPHA | The text value entered in ALPHA APPEND 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.

| 17.5 ALPHA APPEND | 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. |

17.6 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.

| 17.6 TAKE | 1 to 999 (default = 1) | Ki Pro 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. |

There are rules that Ki Pro observes in relation to Clips and Takes:

1. Ki Pro 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 will not auto-increment; instead it will register 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.

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'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'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.

Note: The composite output on the unit follows the component output; this means that the composite output only works if either the source format or the convert format is SD.

CONFIG Menu Parameters

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

Before we begin listing all of the individual CONFIG menu parameters, it's useful to see how they can be used for an example application. Here are two examples of making CONFIG menu selections for specific real world workflows.

Example 1: In this example the incoming video is 1080i29.97. However, we want our Ki Pro recording to match the rest of the footage we have acquired at 720p59.94. Therefore, we select IN CONVERT>HD 720 to get the desired result. Here are the parameter settings:

    1. Set 1.1 RECORD TYPE>NORMAL

    2. Set 1.4 IN CONVERT>HD 720

    3. Set 1.5 OUT CONVERT>NONE

Example 2: In this example the incoming video is 1080PsF 29.97, so we need to configure Ki Pro for PsF recordings (which would otherwise be understood as interlace). To do this, we'll set the RECORD TYPE to PsF. Here are the parameter settings:

    1. Set 1.1 RECORD TYPE>PsF

    2. Set 1.4 IN CONVERT>NONE

    3. Set 1.5 OUT CONVERT>NONE

1.1 RECORD TYPE

This parameter defines the frame recording method of media stored. 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).

| 1.1 RECORD TYPE | NORMAL (default) | Record standard format as input |
| | PSF | Record progressive segmented frame |

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.

1.4 IN CONVERT

This parameter defines the type of up, down, cross, or aspect-ratio conversion, if any, applied to the selected input and stored when recording.

1.4 IN CONVERT	NONE (default)	No conversion of selected input.
	SD	Convert selected input to SD
	HD 720	Convert selected input to HD 720
	HD 1080	Convert selected input to HD 1080

Note: There is one converter available for input—if selected, it will be applied to the currently selected input. Also, input conversion of 1080psf23.98 sources is not supported.

1.5 OUT CONVERT

This parameter defines the type of up, down, cross, or aspect-ratio conversion, if any, applied to the output when playing media from storage or while recording.

1.5 OUT CONVERT	NONE (default)	No conversion on output.
	SD	Convert on output to SD
	HD 720	Convert on output to HD 720
	HD 1080	Convert on output to HD 1080.

Note: There is one converter available for output—if selected, it will be applied as appropriate, based on other settings (1.6, 1.7 and 1.8) possibly affecting multiple outputs. Output conversion of 1080psf23.98 is only supported for SD (not 720p).

1.6 SDI OUT

This parameter defines whether the SDI output matches the file format or has the 1.5 OUT CONVERT selection applied to it.

| 1.6 SDI OUT | FILE FRMT (default) | Output with the same format as the file |
| | OUT CONVERT | Output using the selection in 1.5 OUT CONVERT |

Note: The "FILE FRMT" (file format) is from the file on playback and is the result of any input conversion (or none) applied during capture.

1.7 COMPONENT OUT

This parameter defines whether the component video output matches the file format or has the 1.5 OUT CONVERT selection applied to it.

| 1.7 COMPONENT OUT | FILE FRMT (default) | Output with the same format as the file |
| | OUT CONVERT | Output using the selection in 1.5 OUT CONVERT |

1.8 HDMI OUT

This parameter defines whether the HDMI output matches the file format or has the 1.5 OUT CONVERT selection applied to it.

| 1.8 HDMI OUT | FILE FRMT (default) | Output with the same format as the file |
| | OUT CONVERT FRMT | Output using the selection in 1.5 OUT CONVERT |

2.1 VIDEO INPUT

This parameter selects a video input source from the video input connections available. This is the video that will be recorded and/or passed through.

2.1 VIDEO INPUT	SDI (default)	Selects SDI input connector
	HDMI	Selects the HDMI input connector
	COMPONENT	Selects the Component input connectors

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 and HDMI audio, which requires and HDMI video source.

2.2 AUDIO INPUT	SDI (default)	Selects SDI embedded audio from the SDI input connector (if SDI video input is selected)
	RCA	Selects the two RCA jacks (stereo pair) for audio input
	XLR	Selects the XLR input for audio input
	HDMI	Selects HDMI embedded audio (if HDMI video input is selected)

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

3.1 COMPONENT IN LVL

This parameter selects the input level for signals applied at the component video input connectors.

| 3.1 COMPONENT IN LVL | SMPTE/N10 (default) | Selects SMPTE/N10 input signal levels |
| | BETACAM | Selects BETACAM input signal levels |

3.2 COMPONENT OUT LVL

This parameter selects the output level for signals applied at the component video output connectors.

3.2 COMPONENT OUT LVL	SMPTE/N10 (default)	Selects SMPTE/N10 output signal levels
	BETACAM	Selects BETACAM output signal levels
	RGB	Selects RGB output signal levels

3.4 NTSC CONFIG

This parameter selects the output level for the composite video output connector.

| 3.4 NTSC CONFIG | NTSC (default) | Selects standard NTSC output signal levels |
| | NTSC JAPAN | Selects NTSC Japan output signal levels |

4.1 ANALOG AUDIO

This parameter configures the analog audio signal levels for input and output. 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.)

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

5.1 UPCONVERSION

This parameter selects the type of upconversion from SD performed, if set up to do so with parameters 1.6 through 1.8.

5.1 UPCONVERSION	ZOOM WIDE (default) ANAMORPHIC ZOOM 14X9 ZOOM LTTRBOX PILLARBOX	Using a combination of zoom and stretch, the image is sized to fit a 16x9 screen Anamorphic full screen display Image is zoomed slightly to fill a 14x9 image with black sidebars Image is zoomed to fit the full screen (this can introduce a small aspect ratio change) Image is not changed; black sidebars surround image

Upconvert Illustrations—Ki Pro

4:3 Upconverts To ⟶ These displays on 16:9

Anamorphic

Zoom 14x9
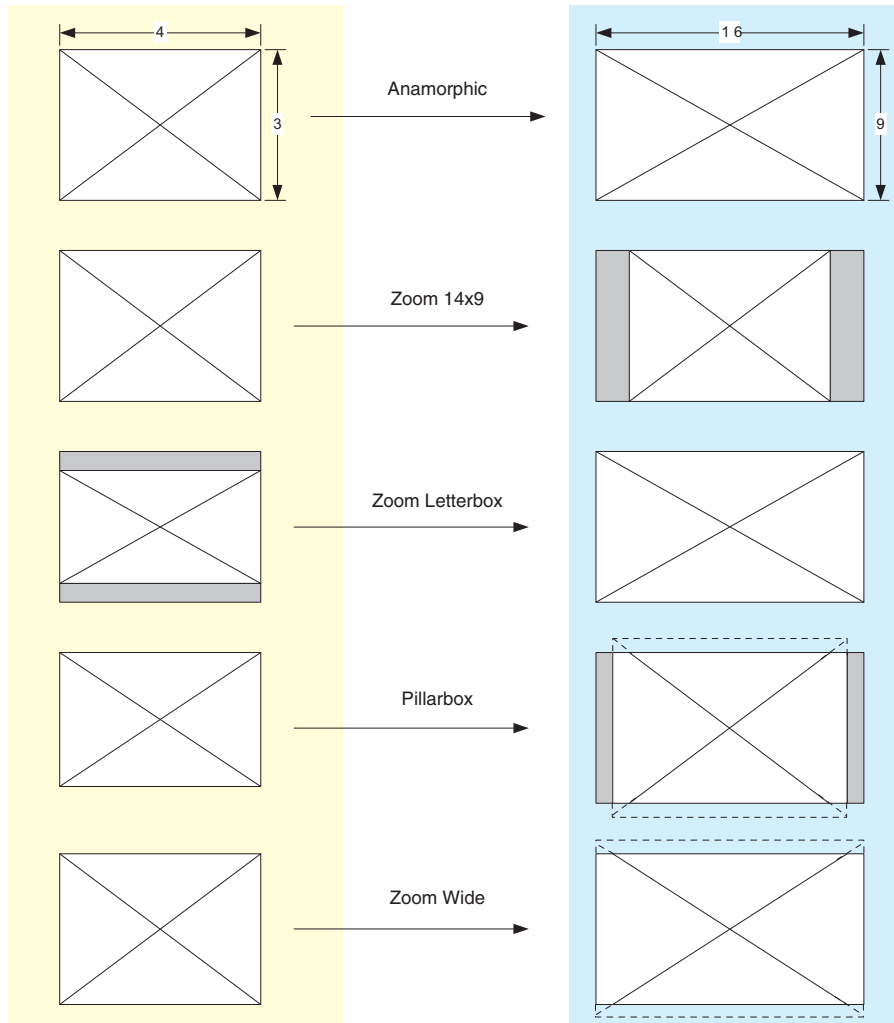
Zoom Letterbox

Pillarbox

Zoom Wide

5.2 DOWNCONVERSION

This parameter selects the type of downconversion from HD performed, if set up to do so with parameters 1.6 through 1.8.

5.2 DOWNCONVERSION	LETTERBOX (default)	Image is reduced with black top and bottom added to image area, with the aspect ratio preserved
	CROP	Image is cropped to fit new screen size
	ANAMORPHIC	HD image is converted to full-screen SD with a 16x9 aspect ratio (anamorphic)

Downconvert Illustrations—Ki Pro

16:9 Downconverts To → These displays on 4:3
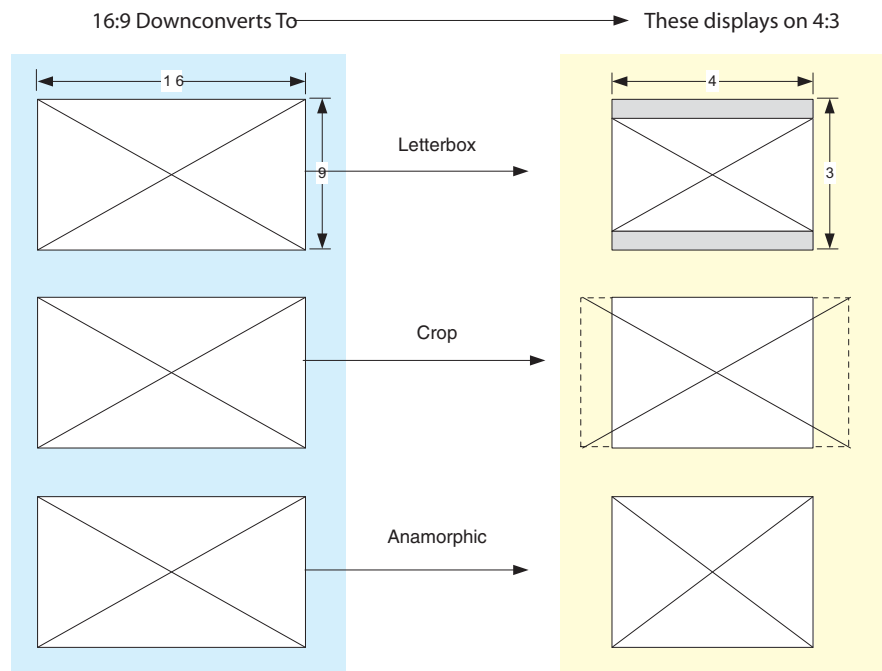
6.1 GENLOCK

This parameter selects source of reference video used to genlock to during playback. Ki Pro always genlocks to the selected input during capture.

6.1 GENLOCK	INPUT	Use the currently selected input as the Genlock source
	CMP Y	Use component Y as the Genlock source
	FREERUN (default)	Free run mode: Ki Pro syncs to its own timebase and is not locked to an external source

8.0 TC IN

This parameter selects the source of timecode from those available.

8.0 TC IN	TC VALUE (default)	Use the value specified in parameter 8.1 TC VALUE
	SDI RP188	Use the timecode read from the embedded RP188 metadata in the SDI input
	LTC	Use timecode from the LTC input connector
	TIME OF DAY	Set to "Time of Day" clock (CONFIG parameter 55.6)

8.1 TC VALUE

This parameter selects an hour for timecode to start.

8.1 TC VALUE	1 to 23	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.

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

25.0 802.11 MAC ADDRESS

This parameter is an information only field showing the MAC address of the wireless adapter.

25.0 802.11 MAC ADDRESS	*information only display*	Selecting this parameter allows you to view the Ki Pro's 802.11b/g MAC address. The MAC address is a unique value associated with the wireless radio's internal 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. Ki Pro has two MAC addresses: one for the radio and one for the ethernet adapter—parameter 50.6 shows the ethernet MAC address.

50.1 IP CONFIG

This parameter determines the type of TCP/IP network configuration used by Ki Pro.

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.

50.1 IP CONFIG	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 cannot find a DHCP server to communicate with, it will select the default factory IP address of 192.168.0.2.

50.2 IP ADDRESS

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

50.2 IP ADDRESS	*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. If 50.1 is set to *DHCP* and there is a DHCP failure, then the default IP address is: 192.168.0.2 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., 90.0.181.0). 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 for TCP/IP networking.

50.3 SUBNET MASK	*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. If 50.1 is set to *DHCP,* the default *Subnet Mask* will be assigned by the DHCP server 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 GATEWAY

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

50.4 GATEWAY	*variable*	Using the adjust buttons, enter a gateway compatible with your LAN (if you have one). This is only needed for Static IP configurations. If 50.1 is set to *DHCP,* the default *gateway* will be assigned by the DHCP server 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 will be unable to see other Ki Pros on the network, although you may still be able to control the Ki Pro 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 on the network.

50.5 SYSTEM NAME

This parameter defines a name for Ki Pro and gives it a unique identifier. This same name is used both when displaying systems via the web interface/802.11b/g and for display on Ki Pro's screen saver (if System name is chosen in Parameter 70.1 Screen Saver).

50.5 SYSTEM NAME	*variable*	Using the adjust buttons, enter a name for Ki Pro. 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:* aja-kipro

50.6 MAC ADDRESS

This parameter is an information only field showing the MAC address of the Ki Pro's ethernet adapter.

50.6 MAC ADDRESS	*information only*	Selecting this parameter allows you to view Ki Pro'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. Ki Pro has two MAC addresses: one for the 802.11 radio and one for the ethernet adapter—parameter 25.0 shows the radio's MAC address.

53.1 802.11 CONTROL

This parameter determines whether Ki Pro can be controlled remotely from a wireless browser. Enabling 802.11b/g control turns on the internal 802.11 radio. Parameters 53.2 through 53.5 must be set correctly to configure Ki Pro so it can be controlled. Ki Pro wireless control also requires the presence of wireless access point on the local LAN that it can communicate with.

Note: Although Ki Pro has an internal 802.11 transceiver, it is not a wireless access point. Wireless browser clients talk to Ki Pro via an external wireless access point (such an Airport Extreme base station). Also, turning on the 802.11 radio consumes additional power; it should be disabled unless needed in order to save battery life.

53.1 802.11 CONTROL	DISABLED (default) ENABLED	Disable wireless control of Ki Pro Enable wireless 802.11 control of Ki Pro

Caution!

The 802.11b/g radio is disabled by default and can be enabled only in the presence of an authorized access point.

Controlling Ki Pro from a browser (wired or wireless) is described in Chapter 4, Remote Web Control. As an overview, to wirelessly connect Ki Pro, you must:

- Enable the radio (53.1)

- Define the security between Ki Pro and wireless browser clients via parameter 53.3

- Setup the correct password required for wireless browser clients via parameter 53.4

- Choose the wireless access point that will connect Ki Pro to the LAN and to wireless browser clients (54.1 through 54.3). The access point will have a 802.11b/g network name defined.

53.2 802.11 NETWORK

This parameter defines the wireless network or "SSID" that Ki Pro will connect to via the access point.

53.2 802.11 NETWORK	variable	Using the adjust buttons, enter a legal wireless network name (SSID) for Ki Pro to connect with. Using the adjust buttons and the top Select button, select the characters for the password. 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:'-','.', A through Z (uppercase) and a through z (lowercase).

53.3 802.11 SECURITY

This parameter defines the type of security (encryption/format) used between Ki Pro, the access point and wireless browser clients—if any.

53.3 802.11 SECURITY	WPA2 (default) DISABLED WEP WPA	Use WPA2 packet and stream encryption No security employed. No password needed Use WEP packet and stream encryption Use WPA packet and stream encryption Note: WEP is an entry level encryption, with WPA being better and WPA2 the best of the three.

53.4 802.11 PASSWORD

This parameter defines the password used between Ki Pro, the access point and wireless browser clients—if any.

53.4 802.11 PASSWORD	variable	Using the adjust buttons, enter a password for Ki Pro. Using the adjust buttons and the top Select button, select the characters for the password. 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). Maximum password length is 20 characters.

54.1 802.11 IP CONFIG

This parameter determines the type of TCP/IP network configuration used by Ki Pro's wireless 802.11 transceiver.

Note: There is no timeout when editing—changes made will be saved and activated when the menu is exited.

54.1 802.11 IP CONFIG	DHCP	Select automatic IP address assignment from DHCP server in access point.
	STATIC ADDR (default)	Assign a static IP address manually (parameters 54.2 and 54.3 will have to be entered to accomplish this).

54.2 802.11 IP ADDRESS

This parameter determines the static IP address used by Ki Pro's wireless 802.11 transceiver.

54.2 802.11 IP ADDRESS	variable	Using the adjust buttons, enter an IP address compatible with your access point (if you have one). This is only needed for Static IP configurations.

Note: For parameters 54.2 and 54.3, you will be setting IP addresses that consist of "octets" separated by a period (i.e., 90.0.181.0). 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.

54.3 802.11 SUBNET MASK

This parameter determines the subnet mask used by Ki Pro's wireless 802.11 transceiver.

54.3 802.11 SUBNET MASK	*variable*	Using the adjust buttons, enter a subnet mask compatible with your access oint (if you have one). This is only needed for Static IP configurations. If 54.1 is set to *DHCP,* the default *Subnet Mask* is: 255.255.255.0

55.4 DATE SET

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

55.4 DATE SET	*variable*	Using the adjust buttons, enter a calendar date for Ki Pro. 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 clock, when setting manually (NTP not used).

55.6 TIME SET	*variable*	Using the adjust buttons, enter a time for Ki Pro'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

70.1 SCREEN SAVER

When set to "AJA Logo", a rolling AJA logo screen saver will appear on the alphanumeric display after 3 minutes of inactivity—defined as no button presses on the front panel. When the Screen saver is on, the STATUS button or STOP button will exit the screen saver.

70.1 SCREEN SAVER	ON (AJA LOGO — default)	Display horizontally rolling AJA logo after 3 minutes of button inactivity
	SYSTEM NAME	Display the Ki Pro system name (defined in parameter 50.5).
	OFF	Screen saver is disabled.

Note: The screensaver will not appear if an active transport function is underway (e.g., Play, Record, etc.).

70.2 DISPLAY INTENSITY

This parameter determines the brightness of the alphanumeric VFD display and front panel backlit buttons.

70.2 DISPLAY INTENSITY	*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's internal cooling fan. In some environments where audio recording is occurring close to the Ki Pro unit, it may be desirable to set the fan speed to "QUIET RECORD" for optimum quiet operation.

70.3 FAN SPEED	NORMAL (default) QUIET RECORD	Fan runs at normal speed for optimum cooling. Fan runs at a slower speed for optimum quiet.

80.1 SERIAL NUMBER

This parameter displays this Ki Pro's unique serial number.

80.2 SW VERSION

This parameter displays Ki Pro's software version level.

99.0 FACTORY RESET

Selecting this parameter and then pressing the ADJUST (up) button for 2 seconds recalls
Ki Pro'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 network settings: IP Config, IP Address, Subnet Mask, Default Gateway, System Name, 802.11 settings, or Date and Time. To clear 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.

Chapter 4: Browser Remote Control

Remote Control Overview

An optimized web server inside Ki Pro allows you to remotely monitor and adjust parameter settings via a a browser client, either running on a network wired computer or wireless device. The network can be a closed local area network, a straight computer-to-Ki Pro cable, or even exposed through a firewall to a broadband WAN (not generally recommended since anyone on the internet can then access the Ki Pro). If wireless networking is desired, Ki Pro can communicate with a LAN attached 802.11 access point for communication with wireless browser clients like an Apple iPhone or Apple iPod Touch—or 802.11b/g enabled laptops.

The LAN connection on Ki Pro 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 supported web browser for Ki Pro control. Other browser software may work, but AJA cannot guarantee operation.

Web Browser via Ethernet

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

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

4

General Screen Information

All Ki Pro web screens have certain areas in common. On the left of each screen is an information pane listing all the available Ki Pro screen choices. Click any of these items to jump to that screen. At the top of each screen you'll also find a heading showing the connection status in addition to the Ki Pro'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. In the middle of each screen are menu choices and information pertaining to the subject matter of that screen (i.e., the "wireless" screen has choices about the wireless radio and its TCP/IP network configuration).

Ki Pro 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.

S/N, software version, and connection status

Pull-down menu choices

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

Ki Pro Web Interface, Main Status Screen

Controlling Multiple Ki Pros

From the *Network* screen, you can at-a-glance see all of the Ki Pro devices present on the same local LAN as the current Ki Pro you are controlling. At the bottom of the screen under "Available Ki Pros: Click to Refresh", the system names of all Ki Pros on the LAN are listed. Clicking on any of these will bring up the Status screen of that particular Ki Pro.

Note: the Ki Pro you control may be running a different software version 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, you must have a properly configured default gateway to see the Ki Pros. In addition to Ki Pro on the LAN, the network screen will also display any AJA FS1 frame syncs that are also attached to the LAN—these will be displayed under "Others" at the bottom.
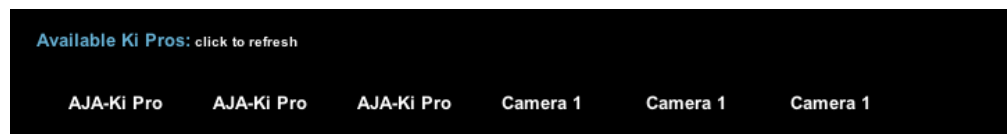
Also, if the Default Gateway (parameter 50.4) is not configured properly, other Ki Pros will not be visible here. If it displays "No Ki Pros found" then check the gateway setting.

Resetting Values To Factory Settings

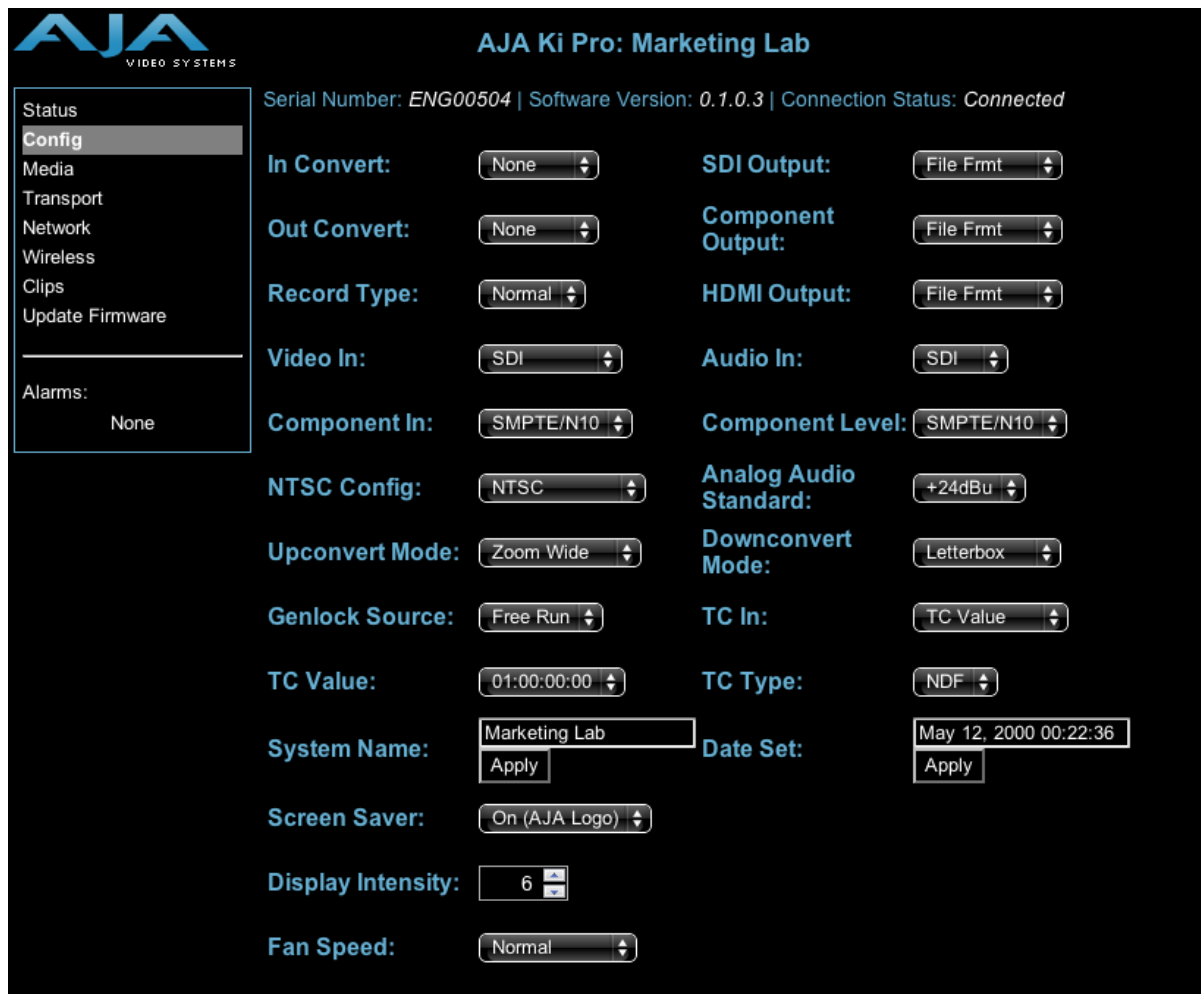To perform a global reset of Ki Pro to factory settings, go to Ki Pro front panel CONFIG parameter 99.0 for a reset to factory values.

Config Screen

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

Ki Pro 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.

In Convert (1.4): This parameter defines the type of up, down, cross, or aspect-ratio conversion, if any, applied to the selected input when recording.

SDI Output (1.6): This parameter defines whether the SDI output matches the file format or has the 1.5 OUT CONVERT selection applied to it.

Component Output (1.7): This parameter defines whether the component video output matches the file format or has the 1.5 OUT CONVERT selection applied to it.

Out Convert (1.5): This parameter defines the type of up, down, cross, or aspect-ratio conversion, if any, applied to the output.

Record Type (1.1): This parameter defines the frame recording method of media stored. RECORD TYPE can be configured to record the incoming video signal in a "NORMAL" manner, or as a "PsF" signal if the incoming source is 1080psf 29.97 (for example).

HDMI Output (1.8): This parameter defines whether the HDMI output matches the file format or has the 1.5 OUT CONVERT selection applied to it.

Video In (2.1): This parameter selects a video input source from the video input connections available. This is the video that will be recorded and/or passed through.

Audio In (2.2): This parameter selects an audio input source from the audio input connections available. This is the audio that will be recorded and/or passed through.

Component In (3.1): This parameter selects the input level for signals applied at the component video input connectors.

Component Level (3.2): This parameter selects the output level for signals applied at the component video output connectors.

NTSC Config (3.4): This parameter selects the output level for the composite video output connector.

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

Upconvert Mode (5.1): This parameter selects the type of upconversion from SD performed, if set up to do so with parameters 1.4 through 1.8.

Downconvert Mode (5.2): This parameter selects the type of downconversion from HD performed, if set up to do so with parameters 1.4 through 1.8.

Genlock Source (6.1): This parameter selects source of reference video used to genlock to during playback.

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

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

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

System Name (50.5): This parameter defines a name for Ki Pro and gives it a unique identifier. This same name is used both when displaying systems via the web interface/wireless and for display on Ki Pro's screen saver (if System name is chosen in Parameter 70.1 Screen Saver).

Date Set (55.4): This parameter manually sets the calendar date of the internal Ki Pro clock.

Time Set (55.6): This parameter manually sets the time of the internal Ki Pro clock.

Screen Saver (70.1): When set to "AJA Logo", a rolling AJA logo screen saver will appear on the alphanumeric display after 3 minutes of inactivity—defined as no button presses on the front panel.

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

Fan Speed (70.3): This parameter determines the speed of Ki Pro's internal cooling fan. In some environments where audio recording is occurring close to the Ki Pro 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 422 encoding, and reel and clip definitions.

Ki Pro Web Interface, Media Screen

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

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

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 that determines the name of the media as it will appear when the storage device (storage module or ExpressCard/34) is mounted on a Mac OSX desktop.

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.

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.

Transport Screen

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

Ki Pro Web Interface, Transport Screen

STOP ■ : Press STOP to end playback or a media operation (PLAY, FF, REV, or RECORD). When stopped, Ki Pro 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 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 for all speeds above 1x.

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 storage is accessed by the system-either the storage module slot or one of the ExpressCard slots. Second, the SLOT button is used to unmount a currently selected piece of media.

Caution!

Not using the SLOT button to unmount media before removal can cause problems with the files stored on that 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."

Network Screen

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

Note: Ki Pro IP Address and netmask fields filter keystrokes and only allow legal characters. The Ki Pro 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 will display an error dialog—you must correct the error before updating.

Ki Pro Web Interface, Network Screen

IP Address Type (50.1): use to change the IP address for Ki Pro. When an IP address is entered and the Update 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 to a computer, this is the IP address that you'll enter in the computer's web browser to bring up the Ki Pro's web interface from its embedded web server. You must also click the "*Update*" button to update Ki Pro 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 "*Update IP Address*" button to update Ki Pro 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 "*Update IP Address*" button to update Ki Pro with the changed information entered here.

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

Available Ki Pros- Click to Refresh: all of the Ki Pro devices present on the same local LAN as the current Ki Pro are listed below this heading (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. Note: the Ki Pro you control may be running a different software version 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 "Available Ki Pros—Click to Refresh" on the Network page 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 Available Ki Pros listing. If, at anytime you want a current view of the network (clearing the cache and showing the realtime state), then press the Control key on your keyboard while clicking the *Available Ki Pros—Click to Refresh* link.

Wireless Screen

This screen is used to enable or disable wireless access to/from Ki Pro and a LAN wireless access point, as well as check settings and update them. You will see different controls depending on whether wireless access has been enabled or disabled.

Ki Pro Web Interface, Wireless Screen

KiPro 802.11 Control (53.1): this parameter determines whether Ki Pro can be controlled remotely from a wireless browser. Enabling wireless control turns on the internal 802.11 radio. Parameters 53.2 through 53.5 must be set correctly to configure Ki Pro so it can be controlled. Ki Pro wireless control also requires the presence of wireless access point on the local LAN that it can communicate with.

Note: Although Ki Pro has an internal 802.11 transceiver, it is not a wireless access point. Wireless browser clients talk to Ki Pro via an external wireless access point (such an Airport Extreme base station).

Warning!

Do not touch the Ki Pro radio or antenna cover when the antenna is transmitting or receiving.

Warning!

Install this device in such a manner as to maintain a minimum of 5 cm (2 inches) separation distance between the radiating element(s) and all persons. This safety warning conforms with FCC radio frequency exposure limits.

802.11 Connection Status: shows the status of connection (connected or not connected)

802.11 IP Address Type (54.1): shows the type of IP address (DHCP, Static, or default)

802.11 Network (53.2, SSID): This parameter defines the wireless network or "SSID" that Ki Pro will connect to via the access point.

802.11 IP Address (54.2): This parameter determines the static IP address used by Ki Pro for TCP/IP networking.

802.11 Security (53.3): This parameter defines the type of security (encryption/format) used between Ki Pro, the access point and wireless browser clients—if any.

802.11 Netmask (54.3): This parameter determines the subnet mask used by Ki Pro for TCP/IP networking.

802.11 Password (53.4): This parameter defines the password used between Ki Pro, the access point and wireless browser clients—if any.

802.11 MAC Address (55.1): This parameter is an information only field showing the MAC address of the wireless adapter.

Update and Apply 802.11 Settings: clicking this button updates the Ki Pro with any changes you've made on the "Wireless" screen.

Clips Screen

The Clips screen allows you to see at a glance all of the clips on the currently selected media storage device (storage module or Expresscard/34 memory card) as chosen by the SLOT button (see *Transport* screen).
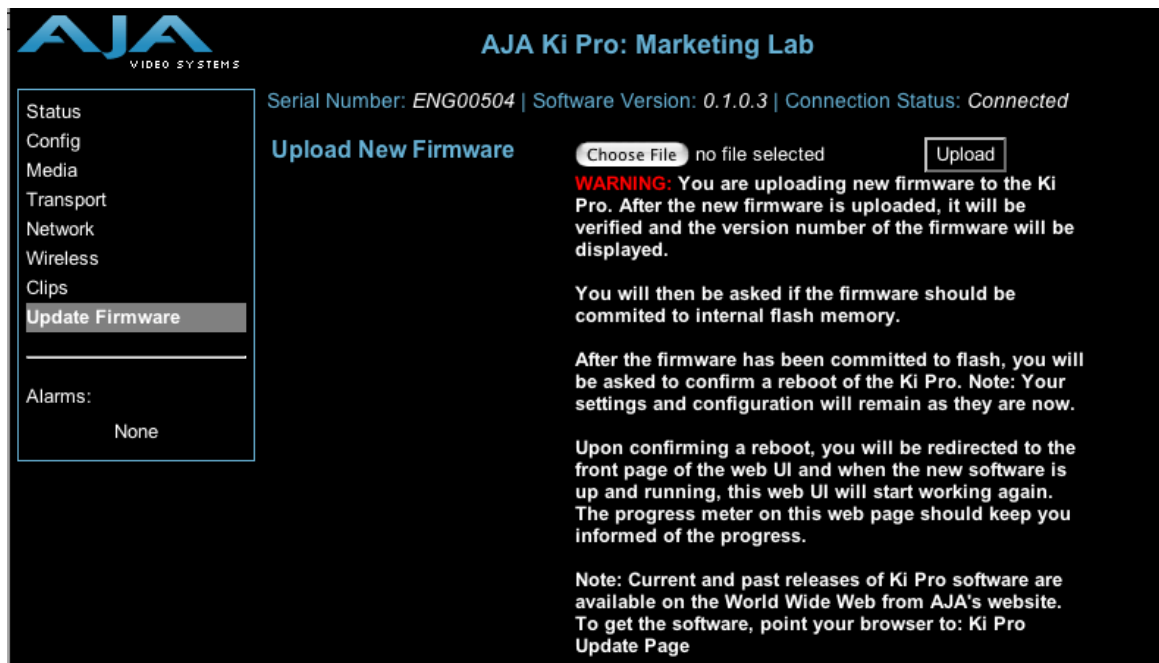
This screen also allows you delete clips listed, either all-clips or individually. A refresh button ensures that the web pages cache is updated to show the latest state of what is on the Ki Pro.

Ki Pro Web Interface, Clips Screen

Update Firmware Screen

The Update Firmware screen allows you to update your Ki Pro 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.

AJA Ki Pro: Marketing Lab

Serial Number: *ENG00504* | Software Version: *0.1.0.3* | Connection Status: *Connected*

Status
Config
Media
Transport
Network
Wireless
Clips
Update Firmware

Alarms:
        None

Upload New Firmware

[Choose File] no file selected   [Upload]

WARNING: You are uploading new firmware to the Ki Pro. After the new firmware is uploaded, it will be verified and the version number of the firmware will be displayed.

You will then be asked if the firmware should be commited to internal flash memory.

After the firmware has been committed to flash, you will be asked to confirm a reboot of the Ki Pro. Note: Your settings and configuration will remain as they are now.

Upon confirming a reboot, you will be redirected to the front page of the web UI and when the new software is up and running, this web UI will start working again. The progress meter on this web page should keep you informed of the progress.

Note: Current and past releases of Ki Pro software are available on the World Wide Web from AJA's website. To get the software, point your browser to: Ki Pro Update Page

Ki Pro Web Interface, Update Firmware Screen

Preparing to Update Software

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

1. Download the Latest Ki Pro Software

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

    http://www.aja.com/support/ki-pro/ki-pro.php

    This link is also available at the bottom of the "Update Firmware" screen (discussed later on this page). Once you're at the update page, Ki Pro software files can be selected to download to your Mac or PC for upgrading your machine.

2. Unpack the Software

    Ki Pro software update files are "ZIP" files, which you can open with a number of standard and third party uncompressor applications. The software image that you'll install on Ki Pro is a file with a name like *kipro_ver_1.0.1.0.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

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

1. Point your browser at Ki Pro's upgrade page by clicking on the "Update Firmware" link at the bottom of the navigation box on the left-hand side of any Ki Pro web page.

2. Click the "Browse..." button to select the file you previously downloaded. For example: *kipro_ver_1.0.1.0.bin* contained in the zipfile downloaded from AJA.

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

4. Wait for the procedure to complete—it will take only a few minutes. When done, Ki Pro will prompt you to restart your machine. After restart, Ki Pro will be running the new software. Progress is shown on the front panel.

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

    Ensure the new software is running by bringing up the Ki Pro 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 will boot the older software version and the upgrade process can then be re-started by the user. This happens because Ki Pro 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 when on mains power, or with a fully charged battery.

Web Browser via Wireless Device

Another option for remote control is Ki Pro's built-in 802.11 wireless transceiver which can communicate with properly configured 802.11 wireless access points such as an Airport Basestation or 802.11 wireless router.

Note: Although Ki Pro has an internal 802.11 transceiver, it is not a wireless access point. Wireless browser clients talk to Ki Pro via an external wireless access point (such an Airport Extreme base station). Enabling wireless control turns on the internal 802.11 radio. Parameters 53.1 through 55.1 must be set correctly to configure Ki Pro so it can be controlled via 802.11b/g.

You can enable or disable wireless control of Ki Pro for security. Further, you can select a type of wireless security to match other devices; popular methods such as WEP, WPA and WPA2 are supported. To use wireless control you'll follow this basic process:

• Enable wireless control of Ki Pro: use parameter 53.1 to make this choice.

• Enter the name of a wireless network to connect to (as set on the access point you'll communicate with): use parameter 53.2 to enter the access point name (SSID).

• Select the type of security, if any, to be used. If there is security, you'll also enter its password: use parameter 53.3 to choose a method.

• Once configured, you can control Ki Pro from an iPhone or other 802.11 wireless device that supports browser control (iPod Touch et al).

Using Wireless Devices to Control Ki Pro

Once an access point on the LAN is set up and Ki Pro is configured and enabled to communicate with wireless devices, making the connection is easy. Like using a web browser on a Mac or PC, wireless devices such as iPhones that have browsers can also be used to control Ki Pro. As in using a computer's browser, the same optimized web server inside Ki Pro allows you to use an iPhones browser to load Ki Pro web pages for it. There are many wireless devices, some with non-standard or incompatible browsers, so all examples shown in this chapter are based on using an iPhone or iPod Touch wireless device. These are AJA supported configurations.

To access the Ki Pro, simply enter its URL in the iPhone's web browser. For most devices with standard browser displays (such as a laptop), the URL will be the IP address defined in Ki Pro's Network parameter menus (50.2—please note also that 50.1 through 50.4 must all be configured correctly to access Ki Pro on your network). If Ki Pro is using DHCP, the IP address can be found by pressing the Status button on the Ki Pro front panel repeatedly until the Network Status display is shown or by going to parameter 50.2 and reading it there.

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's web interface *Main Status* screen.

iPhone Ki Pro Screens

When using a small handheld device like iPhone or iPod Touch browser, you will want to also use the IP address as a URL, but also specifying a specially formatted webpage formatted for the small display:

On an iPhone or iPod Touch, use this URL:

http://<*IP address for your Ki Pro*>/iphone.html

For example, if your Ki Pro is 90.0.7.110, then on an iPhone, you'd enter:

http://90.0.7.110/iphone.html

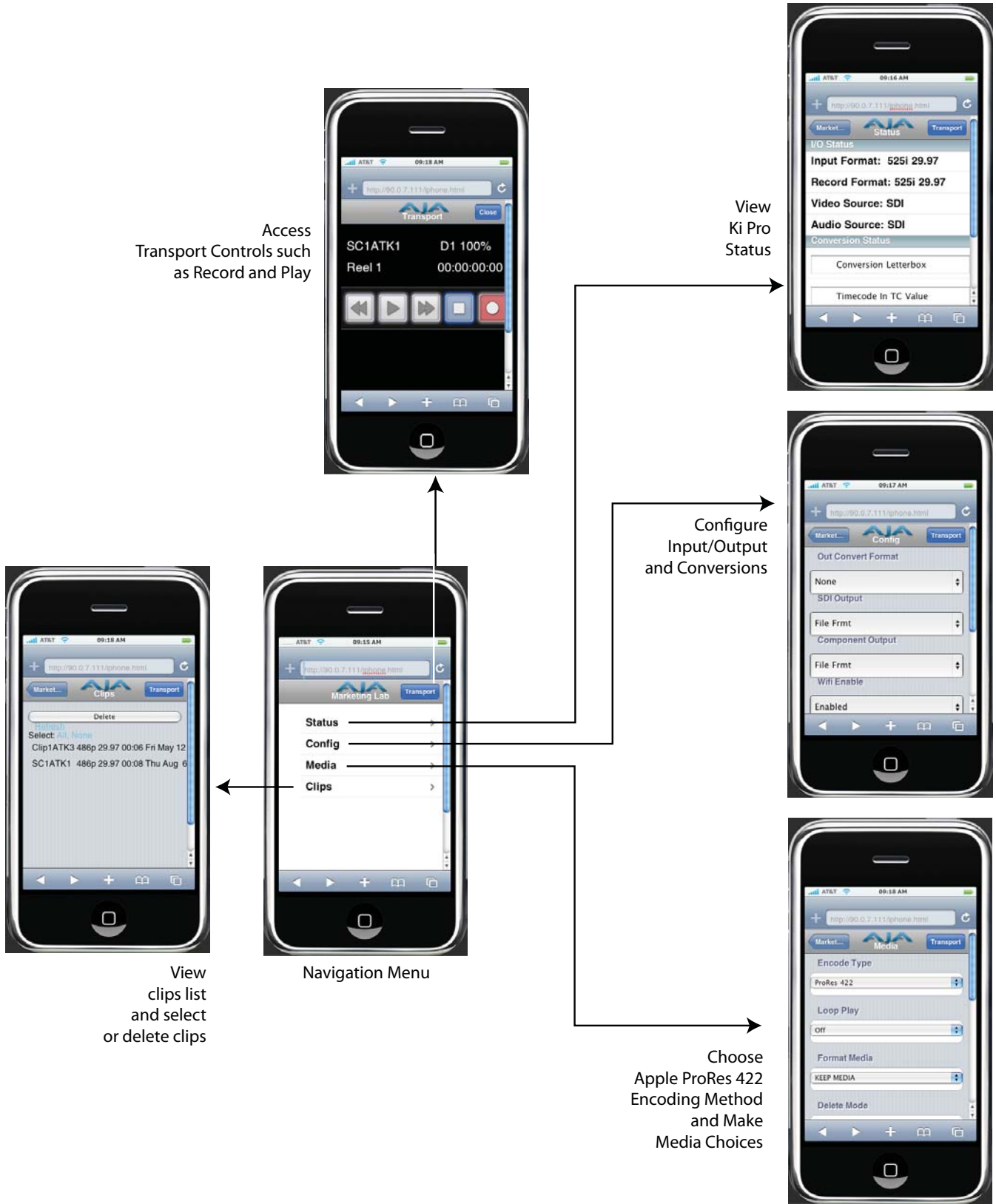Once entered, the URL takes you to a navigation screen with these choices for controlling KiPro:

- Status
- Config
- Media
- Clips

The fields on these pages are a subset of the fields previously described in the Web Browser page definitions.

When Using an iPhone to Control Ki Pro

- Be sure that your iPhone or iPod touch is updated to the latest version of software (as of this writing, version 3.0.1 is the most recent for the iPhone). If you do not use the most recent software for these devices, you may experience less than optimal interaction with the Ki Pro wireless UI including, but not limited to inability to use the transport buttons to operate the device.

- You can add the Ki Pro web control to your iPhone Home Screen by pushing the "+" button, then "Add to Home Screen". Hint: Before adding the Ki Pro to the Home Screen, open the Transport portion of the UI on the phone. The icon created on the Home Screen will then look like the Ki Pro's front panel.

    Hint: To see all of the buttons as they appear on the front of the Ki Pro in the iPhone UI, turn the iPhone to landscape mode in the Transport menu and you will then see the SELECT up/down. ADJUST up/down, DELETE CLIP and SLOT buttons.

Access
Transport Controls such
as Record and Play

View
Ki Pro
Status

Configure
Input/Output
and Conversions

View
clips list
and select
or delete clips

Navigation Menu

Choose
Apple ProRes 422
Encoding Method
and Make
Media Choices

Status

This iPhone screen displays the following controls and values:

- I/O status including input format, record format, video source and audio source
- Conversion status
- Alarm status (OK or specific alarm conditions)

Config

This iPhone screen displays the following controls and values:

- Out convert format
- SDI output
- Component output
- 802.11 enable/disable
- 802.11 security
- 802.11 Network (SSID)
- 802.11 password

Media

This iPhone screen displays the following controls and values:

- Encode type
- Loop play on/off
- Format media
- Delete mode
- Reel name
- Clip name
- Clip number
- Clip append
- Alpha append

Clips

This iPhone screen lists all the clips on the currently selected Ki Pro storage device with controls for deleting all clips or specific clips. You can also select "Refresh" to update the browser with the latest list of clips on the Ki Pro storage device.

Appendix A: Specifications

Video Input

Digital: SD and HD-SDI (1xBNC), SMPTE-259/292/296

HDMI

Analog: SD/HD Component (3xBNCS):

SMPTE/EBU N10, Betacam 525 line,

Betacam 525J, YPbPr

12-bit A/D, 2x oversampling

Video Output (all simultaneously active)

Digital: SD and HD-SDI, SMPTE-259/292/296 (1xBNC)

HDMI

Analog: Composite (1xBNC):

NTSC, NTSCJ, PAL

12-bit D/A, 8x oversampling

SD/HD Component (3xBNCs):

SD: SMPTE/EBU N10, Betacam 525 line,

Betacam 525J, RGB

12-bit D/A, 8x oversampling

HD: YPbPr, RGB

12-bit D/A, 2x oversampling

Audio Input

Digital:

24-bit SDI embedded audio, 8 channel, 48kHz

HDMI embedded, 2 channel

Analog:

24-bit A/D, 2 channel balanced (2 XLR), 48kHz

Input level: Line, Mic, Mic + phantom 48Vdc

2 channel unbalanced (2 RCA)

A

Audio Output

Digital:

24-bit SDI embedded audio, 8 channel, 48kHz

HDMI embedded, 8 channel

Analog:

24-bit D/A, 2 channel balanced XLR, 48kHz

2 channel unbalanced (2 RCA)

Network

10/100/1000 Ethernet (RJ45)

802.11b/g wireless transceiver

Embedded webserver for remote control

Panel User Interface

2 x 20 character display, with dedicated buttons

Timecode

LTC timecode input and output via BNC

SDI embedded RP188 timecode

Control

LANC Loop (2 LANC connectors)—not supported in Version 1.0

Lens Tap: connects to optional AJA Lens Tap intercept cable placed between camera body and lens for start/stop control—not supported in Version 1.0

IEEE-1394a/FireWire 400 for control and timecode data—not supported in Version 1.0

Serial Port

RS-422 (slave pinout), 9-pin—for future use (not supported in version 1.0). Connector pinout is as follows:

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

FireWire

IEEE-1394b, FireWire™ 800Mb/s connects to Mac Pro or MacBook Pro (mount as harddrive)—not supported in Version 1.0

Hardware up-conversion - 10-bit

Anamorphic: full-screen

Pillar box 4:3: results in a 4:3 image in center of screen with black sidebars

Zoom 14:9: results in a 4:3 image zoomed slightly to fill a 14:9 image with black side bars

Zoom Letterbox: image zoomed to fill screen

Zoom Wide: combination of zoom and horizontal stretch to fill 16:9 screen; this setting can introduce a small aspect ratio change

Hardware down-conversion - 10-bit

Anamorphic: full-screen

Letterbox: image is reduced with black top and bottom added to image area with the aspect ratio preserved

Crop: image is cropped to fit new screen size

Hardware cross-conversion - 10-bit

1080i to 720P

720P to 1080i

Physical

Height: 3.25" (8.25 cm)

Width: 9.00" (22.86 cm)

Depth: 6.12" from front antenna cover to back of handles (15.56 cm)

Weight: 3.7 pounds (1.67 kg)

Power

Voltage: 100-240 VAC (to supplied AC Adapter);
12Vdc to power connector input on side of chassis:
    12Vdc minimum
    18Vdc maximum
Current: 3.3A (maximum)

Typical operating power: 30W