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KAYENNE

VIDEO PRODUCTION CENTER

User Manual

Software Version 3.0

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AUGUST 2011

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The www.grassvalley.com web site offers the following:

Online User Documentation — Current versions of product catalogs, brochures, data sheets, ordering guides, planning guides, manuals, and release notes in .pdf format can be downloaded.

FAQ Database — Solutions to problems and troubleshooting efforts can be found by searching our Frequently Asked Questions (FAQ) database.

Software Downloads — Download software updates, drivers, and patches.

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END-OF-LIFE PRODUCT RECYCLING NOTICE

Grass Valley's innovation and excellence in product design also extends to the programs we've established to manage the recycling of our products. Grass Valley has developed a comprehensive end-of-life product take back program for recycle or disposal of end-of-life products. Our program meets the requirements of the European Union's WEEE Directive, the United States Environmental Protection Agency, and U.S. state and local agencies.

Grass Valley's end-of-life product take back program assures proper disposal by use of Best Available Technology. This program accepts any Grass Valley branded equipment. Upon request, a Certificate of Recycling or a Certificate of Destruction, depending on the ultimate disposition of the product, can be sent to the requester.

Grass Valley will be responsible for all costs associated with recycling and disposal, including freight. However, you are responsible for the removal of the equipment from your facility and packing the equipment to make it ready for pickup.

For further information on the Grass Valley product take back system please contact Grass Valley at + 800 80 80 20 20 or +33 1 48 25 20 20 from most other countries. In the U.S. and Canada please call 800-547-8949, and ask to be connected to the EH&S Department. Additional information concerning the program can be found at: www.grassvalley.com/about/environmental-policy

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Contents

Preface

About This Manual

The *Kayenne User Manual* is designed for operators of Kayenne systems.

Standard Documentation Set

The standard Kayenne documentation set consists of a:

- *User Manual*,
- *Installation & Service Manual,*
- *Release Notes*, and
- *Release Notes Addendum*.

The *Kayenne User Manual* contains background information about the Kayenne Video Production Center, and describes operating procedures. This manual can be used while learning about Kayenne, and for enhancing your basic knowledge of the system.

The *Kayenne Installation & Service Manual* contains information about installing, configuring, and maintaining the system.

The *Kayenne Release Notes* contain information about new features and system enhancements for a specific software version, and also includes software installation procedures. Always check the release notes for your current system software before you begin operating your system.

The *Kayenne Release Notes Addendum* contains corrected and known issues about the system software.

Other Documentation

The *Switcher Products Protocols Manual* is available for developers and software engineers to use to design interfaces to the Kayenne system.The

Section 1

Introduction

Note For reader convenience this identical Section 1 is included at the beginning of each Kayenne manual. If you are already familiar with this material you can skip to the next section.

Overview

The Grass Valley Kayenne family of multi-format digital production switchers provides powerful, ground-breaking features designed to meet the widest range of requirements for live studio, mobile, and post-production applications. Available in configurations ranging from 1.5-ME to 4.5-MEs, Kayenne systems combine features and functionality available in the current Grass Valley Kalypso, KayakHD, and XtenDD switchers along with additional capabilities previously unavailable in any video production switcher from any manufacturer.

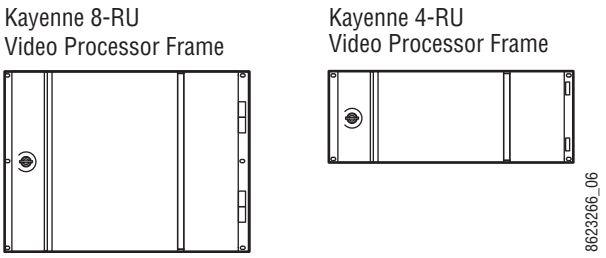
A wide variety of possible Kayenne system configurations exist to meet different customer requirements.

Kayenne Video Processor Frames

The Kayenne Video Processor Frame is available in two sizes. The 8-RU full size frame supports up to 4.5 ME systems. The 4-RU compact frame supports 1.5-ME through 2.5-ME Kayenne systems (Figure 1). The number of licensed boards present in the Kayenne frame determines the number of

MEs available, as well as the number of video inputs, outputs, GPIOs and Relay Tallies.

Figure 1. Kayenne Video Processor Frames



Kayenne Control Surfaces

A Kayenne control surface typically consists of a Control Panel, a Menu Panel with an included articulated support arm, a Panel Control Unit (PCU) frame, and optional Satellite Panels. This control surface has an innovative modular design. Representative Kayenne control surfaces are shown in the following illustrations.

Figure 2. Kayenne 4-ME 35 Control Surface

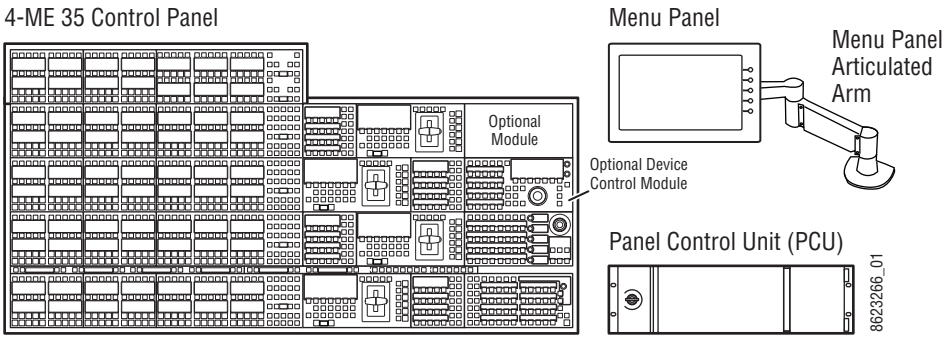


Figure 3. Kayenne 3-ME 35 Control Surface

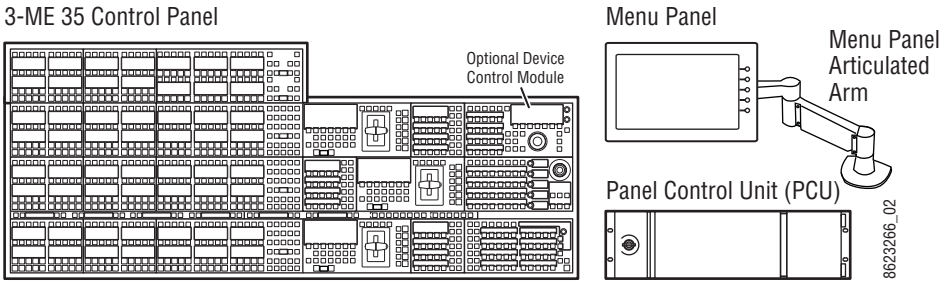


Figure 4. Kayenne 2-ME 25 Control Surface

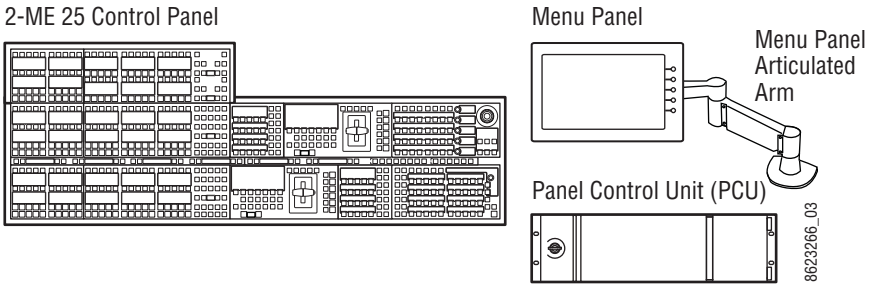
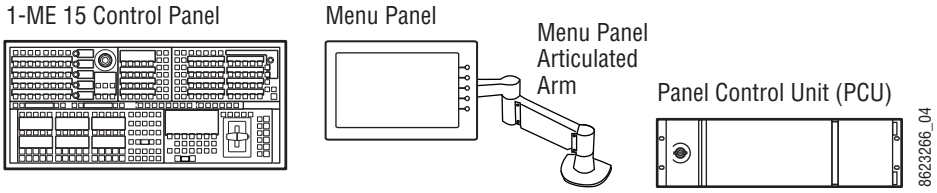


Figure 5. Kayenne 1-ME 15 Control Surface



The modular design and use of a separate PCU supports the hot-replacement of individual Control Panel components, if necessary, while the rest of the system remains operational.

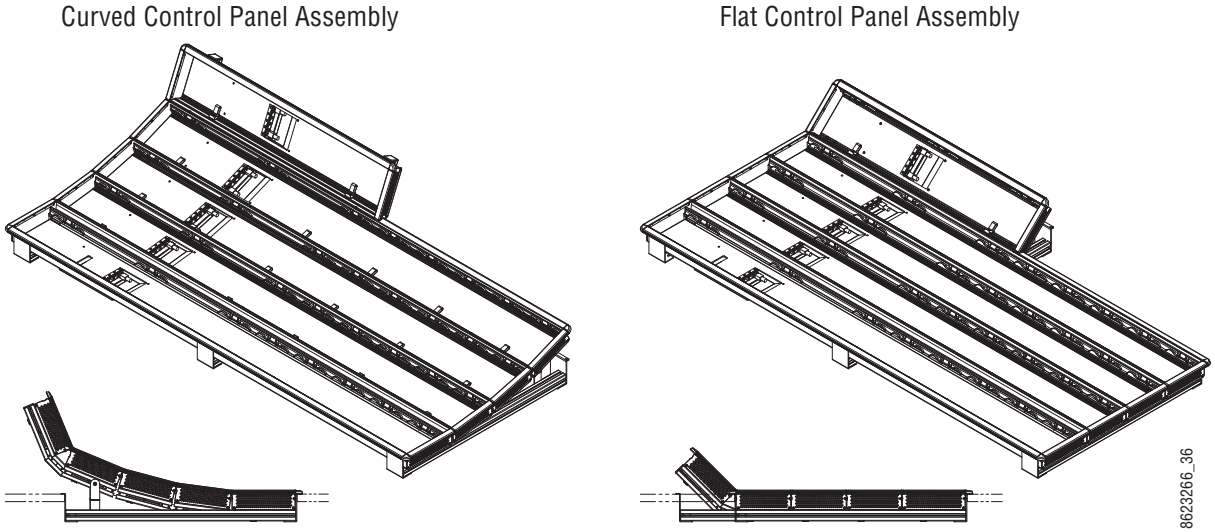
Multiple Suites and Control Surfaces

A Kayenne system can be subdivided into two suites, if desired, each of which can have two control surfaces. Hardware resources in the Video Processor Frame can be assigned to an individual suite during configuration, essentially creating two separate switchers from one Kayenne system. A Kayenne PCU can support two control surfaces using its eight available ports.

Flat or Curved Control Panel Orientation

The main Kayenne Control Panel supports different physical orientations. Besides a conventional flat surface, a special support design permits a curved working surface, where the MEs progressively tilt for improved ergonomics (Figure 6).

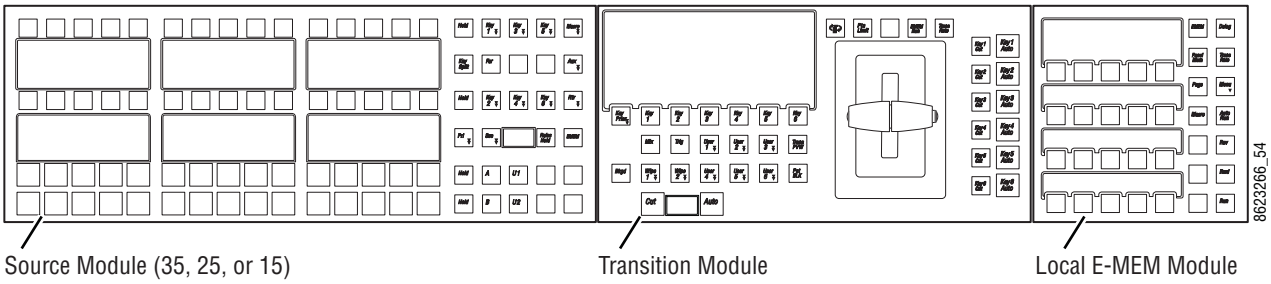
Figure 6. Curved and Flat Control Surface Installations



Control Panel Stripes

The main Kayenne Control Panel is organized into from one to five Stripes. Each Stripe consists of a tray and its complement of drop-in modules. An ME Stripe has a module for Source Selection, Transition, and individual E-MEM control (Figure 7). Additional Master E-MEM, Machine Control, Multi-Function, and Local Aux modules are populated to complete the control surface functionality.

Figure 7. Portion of Control Panel ME Stripe



Control Panel Modules

The following Kayenne modules are available:

- KAYN-PNL-TRM - Transition Module
- KAYN-PNL-LEM - Local E-MEM Module
- KAYN-PNL-MEM - Master E-MEM Module
- KAYN-PNL-MFM - Multi-Function Module

- KAYN-PNL-SRC-35, 25, 15 - Source Module, available in 35, 25, and 15 button widths.

Note 15 button widths are only available with 1-ME Control Panels.

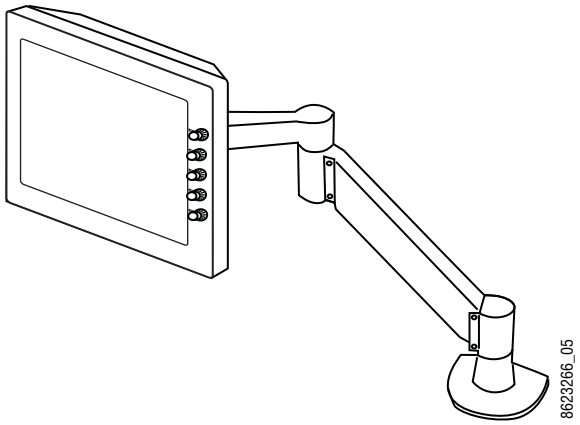
- KAYN-PNL-AUX-35, 25 - Local Aux Module, available in 35 and 25 button widths.
- KAYN-PNL-BAR-35, 15 - System Bar, available in two sizes to match various Control Panel widths.
- KAYN-PNL-DCM - Device Control Module, available as an option for 3 and 4-ME panels and as a satellite panel module.

Touch Screen Menu Panel and PC Menu Control

Each Kayenne control surface includes a Menu Panel that features a wide format 15 in. touch screen display. An articulated arm is also included, offering a wide variety of installation options (Figure 8). The Menu Panel has a standard VESA-75 hole pattern and M4 threads, compatible with this and many other mounting devices.

The Menu Panel has four USB ports, two on the right side edge of the panel and two on the back for keyboard and mouse (wired or wireless are supported).

Figure 8. Menu Panel with Articulated Arm



An additional touch screen Kayenne Menu Panel is available as an option (additional Menu Controller Board is required in the PCU).

It is also possible to run the Kayenne Menu application on a standard PC, permitting mouse and keyboard control from a laptop, or remote control from any location on the network.

Panel Control Unit

The Kayenne Control Panel and Menu Panel(s) are powered from a separate rack mount Panel Control Unit (PCU). Control surface processing and communications are handled by this unit. The PCU eliminates the need for cooling fans in the Control Panel and Menu Panels, making for quiet system operation.

Redundant Power Supplies

Optional built-in redundant power supplies are available for the Kayenne 4-RU and 8-RU Frames. An additional redundant power supply is standard with the Kayenne PCU.

Supported Control Protocols

All Kayenne systems support the following control interfaces and types of external devices:

- Serial control of VTR/DDR (BVW, AMP, and Odetics protocols),
- Ethernet control of DDR channels (AMP protocol),
- Peripheral Bus II protocol,
- Tally (Contact Closure and Serial),
- GPI Inputs and Outputs,
- Routing Control Systems (Jupiter, Encore, SMS-7000, and third party routers), and
- Grass Valley Editor protocol.

Section 2

Concepts

Introduction

In general, any video switcher receives multiple video inputs, performs signal processing on selected input signals, and then outputs the processed video. Efficient real time switcher operation is essential for live production, and can save valuable time in post production environments as well. Several innovative concepts are employed in the Kayenne Video Production Center to enhance its operational speed and flexibility. Understanding these concepts, as well as basic switcher fundamentals, will help you take full advantage of the exceptional power of the Kayenne system.

Kayenne System Configuration Overview

The Kayenne Video Production Center is designed for operational flexibility, and can be configured to fit various applications. Different Kayenne systems can have different capabilities, or the same Kayenne system can be re-configured to have different capabilities at different times. The system has also been designed to support multiple users on the same system, but remains suitable for use by a single operator. For these reasons, it is important for you to have a basic understanding of how a Kayenne system is configured.

The way a Kayenne Video Production Center is wired into your facility affects the Kayenne system's capabilities. For example, the number and types of sources physically connected to the system obviously determines what video the system can handle. However, because Kayenne system inputs and outputs can be configured, once video cables are physically connected they need not be moved. Configuration settings also control many other capabilities that affect Kayenne system behavior.

Kayenne Video Production Center configuration information is divided into three areas, to simplify and increase the speed of reconfiguring the system. The basic areas of Kayenne configuration are:

- Engineering Setups (settings established by the engineer in charge that affect the entire system, which never need to be changed by operators),
- Suite Preferences (settings for a suite that affect all the operators working in that suite, that are designed to suit a particular show or production style and ensure a consistent working environment), and
- Preferences (settings that give the operator the ability to customize his individual work surface to meet his personal preferences).

All Kayenne configuration settings are non-volatile. Disk save and load operations are available that allow users to store configuration information on removable media for easy transport and for use as backup copies.

Engineering Setups

Engineering Setups control how the Kayenne Video Production Center's major components behave and interact, and how the Kayenne system interacts with the rest of the facility. Engineering Setups are not likely to change on a daily basis and so are grouped separately from the Suite and Panel Preferences. Facility maintenance personnel or the engineer in charge of a production truck generally manages Engineering Setups.

Note It is not recommended that you store Engineering Setup files with Show files.

Engineering Setups information includes:

- Acquired Resources menu (if assigning ME 50 (half ME) to a logical ME)
- Networking IP addresses,
- Source definition (described later in this section),
- Output assignment (identifying which output connectors are Program, which are Preview, etc.),
- External device interfaces (DDRs, VTRs, DPM, Router, etc.),
- Control surface and suite definitions,
- Single Suite or (for Resource Sharing) Multi Suite operating mode, and
- Various other system functions.

Suite Preferences

A Kayenne suite corresponds to a control room, where there is a grouping of one or more control surfaces. Suite Preferences define how all the control

surfaces associated with a Kayenne suite behave when they control the Kayenne system. Some parameters (for example, safe title displays) must be identical to all Kayenne users involved in a session. Suite Preferences can substantially change system behavior, not just a user's view of the system. Suite Preferences are intended for day-to-day or session-to-session changes in Kayenne system operating behavior and so are open for modification by operators.

The Resource Sharing feature makes it possible to configure the Kayenne system with two suites, corresponding to two different work envrionments. Each suite can be operated with its own Suite Preferences settings.

Suite Preferences include:

- Resource Allocation
- Source patching
- Safe title, preview behavior, etc.,
- Default Source Memory (initial keying and video processing settings used for each source on each bus),
- Default Keyframe (initial settings for many other user controls), and
- Various other suite preferences.

Panel Preferences

Panel Preferences allow users to customize a Kayenne control surface to suit their personal operational style. Panel Preferences apply to only one control surface, and only affect the behavior of the panel controls available to a single operator. Panel Preferences do not change Kayenne system capabilities.

The Resource Sharing feature makes it possible to configure each of the two two suites with two different control surfaces. Each control surface can run its own Panel Preferences settings.

Panel Preferences include:

- Source to button mapping (described later in this section),
- Aux bus delegation button mapping,
- Panel color scheme,
- Source color,
- Macro and E-MEM start number, and
- DPOP prefs.

Signal Routing

Inputs and Sources

Incoming video signals are connected to the Kayenne system via connectors on input modules located at the back of the Kayenne Video Processor frame. All inputs are serial digital (SMPTE 259M, CCIR 601). Signals from external devices not operating in this standard will need to be converted.

Some devices (for example, a camera providing serial digital output) may provide a video signal that can be received on a single connector. However, other devices may output multiple signals. For example, a character generator usually provides a signal with two components (commonly called *video* and *key*). Some incoming signals may also originate from devices the Kayenne system can control (Router, DPM, DDR).

Note Although the character generator utilizes two inputs, it should be defined as only a single Video/Key source (CGx). It is not required to source define or button map the character generator's Key signal.

For a Kayenne Video Production Center, the term *source* refers to all the video signals and other attributes associated with a device. This is a fundamental concept. The Kayenne system is based on sources, not input signals or crosspoints. Each source can be given a descriptive name, but has an ID number for absolute identification. The Kayenne system uses ID numbers, not source names or input connectors, to identify each source. Defining each source is an important aspect of the Kayenne system.

Source Definition

When the Kayenne system is first configured, all sources are defined so the incoming signals from each device can be used effectively. This is usually done by engineering personnel, not operators, and once set these definitions are not changed. A source definition data file tells the system how many signals a source has (video only, or video and key), which physical inputs to route whenever a particular source is selected, the default processing of the source's key signal (if present), and what external devices (if any) are associated with that source. Tally is another important attribute of a source. On-air tally relays are related to sources, not physical inputs or source select buttons. The source definition process includes assigning a name to each source. Once sources are defined, they are mapped to specific source selection buttons. The user is then able to select the source by pressing its button, and the Kayenne system automatically manages all the necessary signals, performs any default processing, and enables any additional control capabilities associated with that source.

Source definition data is stored as a part of Engineering Setups. Only one set of source definition data can be active on a Kayenne system at a time. Note that source definition is separate from source memory (part of Suite Prefs), and specifies what processing is to be applied to the source and can dynamically change during system operation.

Source to Button Mapping

Source to button mapping makes it possible to organize sources on Kayenne Control Panels in a preferred order. For example, cameras can be placed on the left side or the right side of the button row, whichever is preferred. Source mapping is distinct from source definition, as source mapping only involves the location of sources on the Control Panel and does not affect any capabilities defined for the sources. Note that E-MEM effects store the source IDs, not the source select buttons, so remapping or unmapping of sources will not change the appearance of recalled effects. On the Kayenne system, button mapping for each Control Panel bank and Local Aux Module can be different.

Source Naming

Names can be given to sources. The Kayenne system actually supports different source naming schemes, with associated IDs, to accommodate different needs.

Engineering ID – An unchanging numeric value associated with a source. This value is used to unambiguously identify each source from an engineering perspective, regardless of how it may have been named. On-air tally uses Engineering IDs so the proper device always receives tally.

Engineering Name – An editable name that can be associated with a source, intended for use by facility engineers to ease source identification. An Engineering name may that of a particular hard wired device (Cam 1), or it may indicate a patch bay location or a router source or destination. Naming sources in this manner can help engineers configure and re-configure their facility wiring.

Logical ID – An unchanging numeric value associated with a source used in a production environment. E-MEMs, source selection, macros, source memory, and source rules, all use Logical IDs.

Alternative Names – Alternative editable names that can also be associated with a Logical ID. Generally alternative names are short to make larger characters appear in the Kayenne system Displays.

Source Patching

The Kayenne system allows logical sources to be associated with different engineering sources. A source patch table is used to map Logical IDs to Engineering IDs. This table acts like a patch bay. It then becomes possible

to use effects in different environments. For example, effects created in one production truck equipped with one set of devices can be used in a different truck with different devices by modifying the source patch table.

Source Patching associates all attributes of a defined source's tally and attributes if included, for example: key signal, external device settings, and router destination settings.

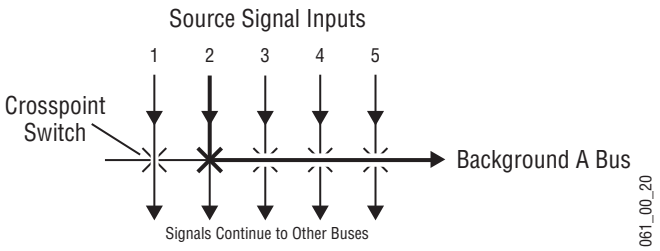
Source Memory

Keying and other parameters can be saved to a separate source memory for every Kayenne system source. These parameters can be applied automatically whenever that source is selected. See *Source Memory* *on page 65* for specific information.

Buses and Crosspoints

A *bus* is technically defined as a signal path where one of several available inputs can be selected to feed a single output. A *crosspoint* is an electronic switch that allows a signal to pass when the switch is closed. On video switchers, a bus can be constructed containing a series of crosspoints, which permits selecting which one of several incoming signals will be sent out the bus. In Figure 9, source 2 has been selected on the background A bus. This signal can now be called *background* video and is available for further processing.

Figure 9. Buses with Crosspoints



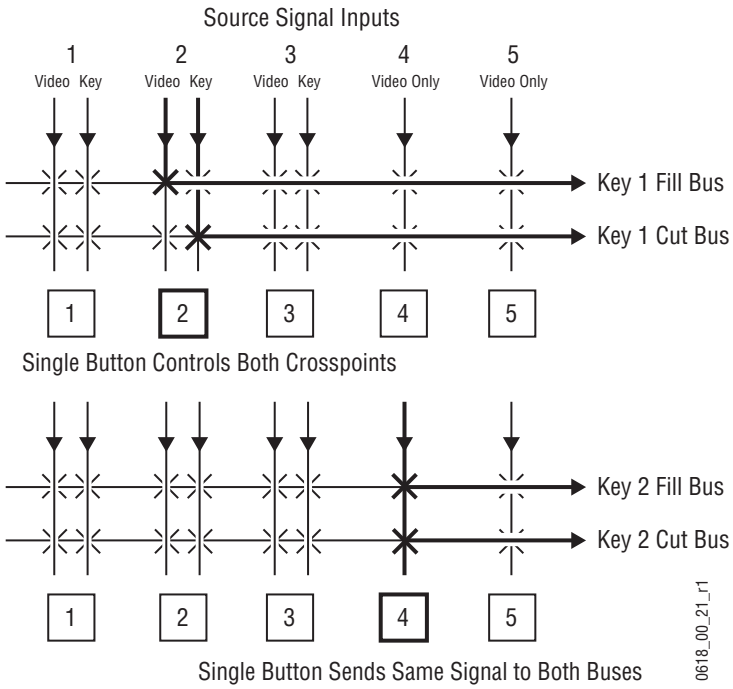
Buttons on a Control Panel can be used to control the switching of crosspoints. The buttons are usually arranged horizontally, making it easy to imagine the available signals coming in from the top, and the single bus output signal going out the right side.

In earlier generation switchers, the terms *crosspoint button* and *crosspoint bus* have been used in reference to Control Panel source selection. For a Kayenne system, the terms *source button* and *source bus* will be used. These terms better reflect a system operating philosophy that is based on sources rather than crosspoints. The Kayenne system does not directly associate a source select button with a physical crosspoint. The association goes first

through source to button mapping, then through source definition to find the physical inputs.

On the Kayenne system, a single source button can control crosspoints on different buses simultaneously. For example, during keying on an ME, both the video and key signals of a source can be selected with a single button press. In this case two different crosspoints on separate buses (key fill bus and key cut bus) are actually switched when the button is pressed. In the upper part of Figure 10, the *video* component of source 2 in the figure has been selected on the key fill bus and becomes the *key fill* signal for subsequent keying. The key component of source 2 selected on the key cut bus becomes the *key cut* signal for keying. The lower part of Figure 10 shows how the same source (source 4) can be selected for both the key fill and key cut signals.

Figure 10. Multiple Crosspoint Control



Shifted Sources and Shift Preference

There are four levels of shift with Kayenne. See *Source Button Mapping on page 129* for more information.

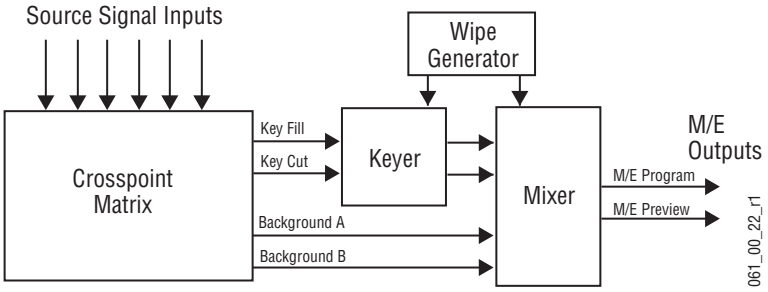
Mix/Effects (ME)

An ME is a subsystem of a video production switcher that can create a composite of two or more pictures. An ME includes multiple source selection

buses and provides transition (mix and wipe) and keying capabilities on the selected signals.

A simple basic ME used in a typical switcher will be used as an example in the following discussion. A Kayenne ME has added capabilities, but the basic principles described here will apply. See *Section 1 - System Overview* for a simplified diagram of the actual Kayenne ME architecture.

Figure 11. Simplified Mix Effects (ME) Subsystem



The basic ME shown in Figure 11 has an A and a B background bus. These buses select the background video signals sent to the output of the ME. Generally the source on the background A bus is the current background output, and the source on the background B bus is the background video that will be used next. During most transitions, portions of both backgrounds are output simultaneously. The keyers in the ME allow the inclusion of additional material over the background. Wipe generators also exist, which create patterns used by the mixer for wipe transitions, or used by the keyers to modify the signals it sends the mixer. See *Transitions on page 35* and *Keying on page 39* for more information. The processed signal in an ME is then sent to an ME output, typically program or preview.

Each Kayenne ME actually is able to produce up to six outputs (Program A, Preview A, Program B, C, D, and Preview 2 that is shared by the three additional program outputs). These additional outputs allow great flexibility in configuring a Kayenne system for special purposes.

Logical Assignments of MEs

A video production switcher can have more than one ME. For example a 4.5-ME Kayenne system has five (ME 1, ME 2, ME 3, ME 4 and PGM PST). A 4.5-ME frame consists of four full ME cards, A, B, C, and D and the standard Half ME (ME 50). Any frame ME can be assigned to the logical MEs by using the Eng Setup, Acquire Resources menu. ME 50 could be assigned as ME 2 or later assigned as PGM/PST on a show-by-show basis. Any of the frame's MEs can be assigned to one of the five logical Kayenne MEs.

Re-Entry

Switchers with multiple MEs generally have re-entry capabilities. Re-entry permits the switcher to select the output of one ME for use as an input source to another ME. The signals are routed internally.

The Kayenne system supports ME re-entry in any order. For example, an output of ME 2 can be sent to ME 1, and an output of ME 1 can be sent to ME 3. Infinite looping re-entry (for example, ME 1 sent to ME 2 and ME 2 sent back to ME 1) is allowed but should be done with great caution.

Utility Buses

Besides the standard A and B background buses, each Kayenne ME also accepts Utility 1 and Utility 2 inputs. Kayenne Utility buses can be used to select signals for special purposes, and have no relation to the background buses. For example, a video signal selected on a Utility bus can be used to fill a keyed Borderline border, to feed a custom pattern into a wipe generator, or create a custom border wash pattern. When the ME is in Double-Take, Split ME mode, the Utility Buses contribute to the secondary mixer of that ME allowing for independent ME transitions

Outputs

Video production switchers generate several different video outputs (Program, Preview, etc.). A final program output from PGM PST is typically sent to the Master Control/Transmission for broadcast and/or to servers or VTRs for recording. Individual ME program and preview outputs and an additional switched preview output are sent to monitors in the control room. These outputs may also be routed elsewhere in the facility. Aux Bus outputs may also be used for studio display systems, ISO feeds, and complex clean feeds.

Output Mapping

Unlike earlier generation switchers, all the Kayenne system outputs are configurable. There are no dedicated output connectors. Any signal can be assigned to any output connector, which provides flexibility and control of the number of fixed and up to 46 Aux bus outputs the system will have. A fixed output is always the same, while an Aux bus's output can change depending on what source has been selected on that bus. Once the fixed system outputs have been assigned, all the remaining outputs can be assigned for use with Aux Buses. When the system is configured, the outgoing signals are assigned to connectors on output modules located at the back of the Kayenne Video Processor.

The most important difference between a fixed output and aux bus is that an operator has control over an aux bus but a fixed output always provides the same signal. Aux bus outputs also support YUV color correction and optionally RGB color correction with E-MEM and macro control. If an output is assigned to a fixed output, any color correction settings are bypassed and the output is set back to unity default.

Aux Buses

Video production switcher Aux Buses can be used to select and route sources to specific destinations. For example, a source selected on an Aux Bus can be sent to an ISO recorder for instant replay. This can be done directly by the Technical Director while he switches the program. Remote Aux Panels can be used to give different operators control over one or more Aux Buses.

On the Kayenne system, each Remote Aux Bus panel can have its own source to button mapping. Source name displays on the 2 RU Local Aux Module show what source is currently available for each button. Aux Buses can also be configured in pairs, to send matching key cut and key fill signals to external devices, Remote Aux Panel IP Address, Logical Aux settings, and Button Mapping are exclusively saved with the Eng Setup file.

Point Of Use

The Kayenne system can share some resources for use at different locations. The location where a resource is being used is called a *point of use*. Different types of resources are shared differently.

Floating resources (like Transform Engines) move between points of use, and the parameters controlling these resources are considered part of the point of use. These resources are used at only one point of use at a time. When the resource floats to the new location, its behavior changes. For example, a Transform Engine can be set for 0.25 Z rotation (parameter) on ME 1 Key 2 (point of use). That same Transform Engine can then be assigned to ME 2 Key 3 and set to a Z rotation of 0.0. When the Transform Engine is reassigned back to ME 1 Key 2, the 0.25 Z rotation parameter will be restored.

Other Kayenne system resources behave differently. For example, wipe pattern generator resources can be used for an ME wipe transition, as a preset pattern, as a mask, or at other points of use. It is also possible to assign the output of the same wipe pattern generator to different points of use at the same time. For efficient operation, the Kayenne system has divided the parameters controlling wipe pattern generators and related utility bus functions into two categories*; shared generator parameters* and *point of use parameters*. The set of parameters for the shared generator are used by all points of use, so changing one of these parameters will affect all

locations where that wipe pattern generator is being used at that time. Separate sets of point of use parameters, however, are maintained for each Kayenne system point of use (same as Transform Engines described above). These settings are used only by each individual point of use, so changing them will not affect any other point of use. For example, a wipe shape (box, circle, etc.) is a generator parameter, but the softness of the shape's edges is a point of use parameter. If the same wipe generator is used by both an ME wipe transition and a preset pattern, adjusting softness at one point of use will not affect the other's softness settings. However, changing the pattern shape affects both locations.

Kayenne systems differ from the Grass Valley Model 4000 switchers in the division between wipe pattern generator and point of use. In the 4000, the edge is created as part of the generator so all points of use have the same softness and border width. The Kayenne system duplicates this circuitry allowing each point of use to have a different edge on the same basic wipe pattern shape.

Transitions

A transition is a change from one image to another. The Kayenne system supports three basic types of transitions:

- Cut
- Mix
- Wipe

A transition can be applied to the entire picture, or to only the background or keyed elements of the picture, and can include multiple elements. See *Current and Next Stack* *on page 38* for information on transitions involving more than one element.

Cut

A *cut* is an instantaneous switch from one image to another (between successive video fields or frames). The simplest type is a *hot cut*, accomplished by selecting a different source on a bus feeding an ME output. This only changes that bus's contribution to the output, and does not change what elements may be involved in the output (the same buses are involved).

The Kayenne system also provides cut transitions, where the elements involved in a composite can be changed instantaneously. Different buses can be included or excluded, causing changes in the resulting composite image. Background cut transitions on an ME are first selected on the Background B bus to allow previewing the upcoming picture before it is cut on-air.

Mix

A *mix* is a transition from one picture to another where the new picture fades in as the existing picture fades out. During a standard mix transition a superimposition of both pictures, each at a lower intensity, is visible.

The Kayenne system allows mixing from one background to another and to mix up to six separate keys on or off over a background. Background and key mixes can be done separately or simultaneously.

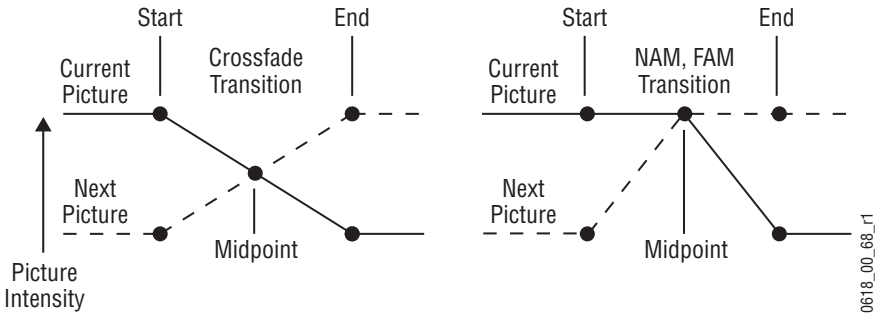
Mix Through Video

A Mix Through Video transition is a special mix transition that incorporates a third intermediate video source. This type of transition can mix from one video source, through a matte or Utility bus video source, to the final video source, all as one transition.

Non-Additive Mix, Full Additive Mix

Non Additive Mix (NAM) and Full Additive Mix (FAM) are special mix transitions that the Kayenne system supports besides normal crossfade transitions. Picture elements in NAM and FAM transitions are composited differently through the time of the transition(Figure 12).

Figure 12. Normal, NAM and FAM Mixes



NAM transitions pass only the brightest regions of each picture to the output. During the first half of a NAM transition the original picture retains its original intensity while the next picture mixes to full intensity. Brighter areas in the new picture replace any corresponding darker areas of the previous picture. During the second half of a NAM transition the previous picture mixes out of the darker areas of the new picture. FAM transitions also first fade a new picture to full intensity and then fade the old picture out, but both full intensity pictures are mixed together to the output during the transition. The resulting signal is clipped at white level to prevent generating illegal video.

Wipe

A *wipe* is a transition from one picture to another in which the edge of a shape moves across the screen, revealing the new picture. Wipe transitions can be applied to backgrounds, to keys, or to both simultaneously. A wipe transition shape can be selected from a variety of patterns, and these patterns can be adjusted in several ways (position, aspect ratios, edge attributes, etc.).

Each Kayenne ME has two separate wipe systems, each of which can be assigned a different wipe pattern and be adjusted independently. These systems can each use one of the two available complex wipe pattern generators with advanced capabilities. It is also possible to combine these wipes to create extremely complicated wipe transition shapes, and generally this is used only by advanced operators. Utility bus video signals can also be used to generate a custom pattern for a wipe transition or other purposes.

Other Wipe Pattern Generator Uses

Wipe pattern generator circuitry can be used for purposes that do not involve transitions. Each Kayenne ME has the two complex wipe pattern generators described above, and each of its six Keyers also has a simple pattern generator and a box pattern generator, making a total of six. These pattern generators can also be used for Preset Pattern, Masking, and Matte Washes.

Preset Black

Preset Black is a special type of transition, where the picture transitions to black, and then transitions out of black to the new picture. Preset Black is really two transitions, one to and one from black, and so requires two operator commands to complete. Preset Black can be used with any transition type (cut, mix, or wipe). The entire picture goes to black, even if all the transition elements involved in the picture were not selected.

Transition Rate

Cut transitions are instantaneous, but mix and wipe transitions have durations. Transition durations can be set in advance to a specific transition rate, and be initiated by pressing a button the Control Panel. It is also possible to manually control transitions using a lever arm.

On the Kayenne system, one transition rate can be assigned to the main transition of each ME. This type of transition can be controlled by that ME's lever arm. Each of the six keyers on each ME can also be assigned its own transition rate, initiated with a separate Key Mix button on that ME.

Flip Flop Background Buses

At the completion of a transition, the background buses swap their source selections (flip flop). This makes the upper bus always act as the on-air bus, and the lower bus act as a preset bus. The operator can reliably setup the next source on the lower bus without disturbing the source selected on the on-air upper bus.

For example, if a transition begins with source 1 on Background A and goes to source 2 on Background B, as soon at the transition to source 2 completes, source 2 will be taken to the Background A bus (without disturbing the output of that ME). The source 1 selection will also be immediately taken to the Background B bus.

Look Ahead Preview

If a preview monitor is configured for Look Ahead Preview mode, the end result of the upcoming transition can be viewed on that monitor. This lets the operator know in advance what will occur for that next transition. The mode you select for each preview monitor depends on the number of monitors available and the individual requirements of the facility.

Current and Next Stack

Kayenne uses a current and next stack approach for transitions that involve multiple elements. The current stack is the current ME output including any keys that are on. The next stack is defined by the current stack and whatever next transition elements have been selected. Look ahead preview always displays the next stack. Next transition elements affecting stacks are Keys 1 - 6, background, and key priority.

Kayenne transitions always occur from the current stack to the next stack. For example, if the current stack has Key 1 over Background A, and the next stack specifies Key 2 over Background B, a mix transition will occur between the composites (Key 1 over A to Key 2 over B). This is different from mixing Key 1 off, Key 2 on, and mixing between A and B at the same time, which would cause the keys to go transparent over their background during the transition. On the Kayenne system, opacity is retained throughout the transition, so midway through this example Key 1 remains fully keyed over Background A, and Key 2 is fully keyed over Background B. The transition occurs between these two fully keyed composites.

Key Priority and Transitions

The six keyers on a Kayenne ME can be assigned priorities. This determines the layering of the keys. The highest priority key appears on top, while

keyers with lower priority may be partially or fully hidden behind those with higher key priorities. The backgrounds always have the lowest priority. Changes in key priority can be included as a part of a transition. Like any other transition, the current stack will transition to the key priority of the next stack. For example, suppose the current stack has Keys 1, 2, and 3 in that key priority order over Background A, and the next stack specifies key priority order 3, 2, 1. A mix transition will occur between the 1, 2, 3 composite order to the 3, 2, 1 composite order. All three keys will remain fully keyed over the background, and will mix to their new key priority order.

Keying

Keying inserts part of one picture into another to create a composite picture. Keying involves three signals:

- background,
- key cut, used to specify where to cut a hole in the background, and
- key fill, used to fill the hole in the background. The fill can be an incoming video signal or it can be an internally generated matte.

A separate key cut input signal is not necessarily required for keying. For example, a self key (also called a video key) uses the same input signal for both key cut and key fill.

The Kayenne system supports the following types of keys:

- Linear Key (fixed and adjustable)
- Luminance Key
- Preset Pattern
- Chroma Key (option)

The Kayenne system also supports self keys and split keys.

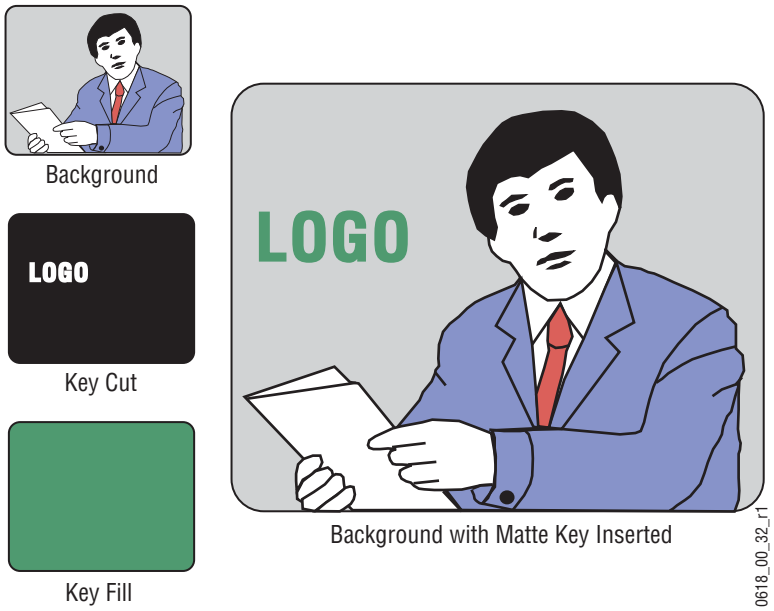
Matte Fill Key Example

One of the earliest keying techniques was to use an art card and camera to perform a luminance key with a matte fill. This type of key is a good example for explaining basic keying principles because three separate and independent incoming signals are used.

To insert a green logo into background video, the logo can be printed in white on black paper and a camera can be focused on it. The signal from the camera can be selected as the key cut signal and green matte video can be selected as the key fill signal sent to the keyer. The key cut signal is then adjusted (clipped) to ignore the black paper and use only the white logo

shape to cut a hole in the background video. The keyer then shapes the key fill to precisely match the logo-shaped hole cut in the background and fills it with green matte video. This creates a green logo inserted into the background (Figure 13). Because luminance values of the key cut signal are used to cut the hole in the background this is called a luminance key.

Figure 13. Matte Fill Luminance Keying Example



In this keying discussion illustrations rather than actual screen images are used for simplicity, and because the printing process has difficulty capturing the subtleties of soft key edges.

Shaping Video

In the matte key example above, the key fill signal was a full raster color that did not match the shape of the key cut signal. This key fill signal is accurately called *non-shaped* video, but may also be referred to as *unshaped* video since both signal types are processed identically during keying.

Some external devices (e.g., character generators) provide a key cut signal and an already processed companion key fill signal. A key fill signal that correctly matches the key cut signal is called *shaped* video. During keying, properly shaped key fill video can be summed with a background signal (with a hole cut) and achieve the desired result. When the shaping is performed by the source device, the Kayenne system can use a standard clip and gain setting defined during system configuration to create the key cut control signal, and so relieve the operator of having to adjust clip and gain manually.

If a key fill does not match the hole in the background (like in the matte key example above), the key fill needs to be shaped by the switcher. By multiplying the key fill signal with the key control signal the unwanted areas of the fill can be made black, shaping the video to match the hole before it is summed with the background. Key fill video must be shaped using the key cut signal actually used to create the hole in the background. Video shaped with a different key cut signal will not key correctly.

The Kayenne system, as well as some external devices like DPMs, can also divide a shaped video signal by its own key signal. The result is called *unshaped* video. For optimum image quality, shaping and unshaping operations should be minimized. In general, devices should be installed and configured in a manner that prevents them from having to unshape incoming video just to reshape it again afterwards.

Specifying whether source signals are shaped or unshaped is part of the Kayenne system configuration process (source definition). Properly shaped video is an important aspect of keying. See *Properly and Improperly Shaped Video on page 51* for more information.

Note that an unshaped signal viewed directly will show harsh edge artifacts due to dividing by a small number. This is normal and expected. Keying this signal will clean up its appearance.

Key Control Signal Adjustment

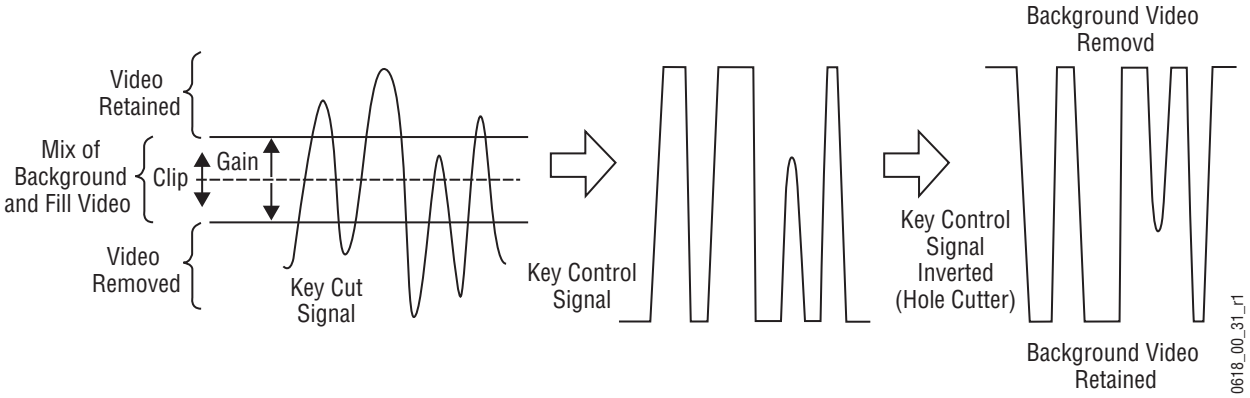
During keying, the selected key cut signal can be converted into a key control signal. It is the key control signal that actually cuts the hole in the background video. Adjusting the key control signal (Clip and Gain) is essential in the keying process. The art of setting up a good key is to use just enough Gain to suppress any imperfections in the incoming key signals. Setting Gain too high can cause ragged key edges.

The Kayenne system provides two methods for adjusting the key control signal, Clip and Gain, and Clip Hi and Clip Lo. Note that the same basic keying process is controlled by either of these methods.

Clip and Gain

The Clip and Gain operation selects a threshold of the selected key cut video that will be used to cut the hole in the background video. Clip controls the threshold, and Gain controls the softness of the key edges and any translucent areas. High portions of the key cut signal specifies what video is retained, and low portions determine what video is removed. Intermediate levels specify a soft blend of the background and fill video (Figure 14).

Figure 14. Key Clip, Gain, and Key Control Signal

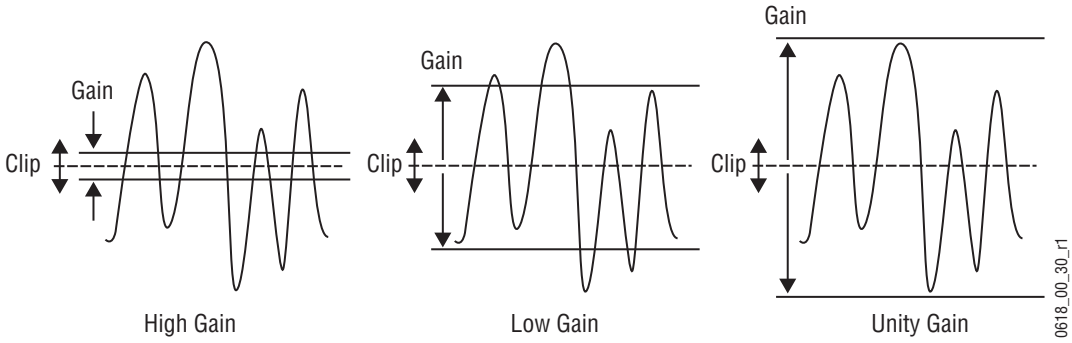


Clip and Gain control is appropriate for high gain keys (see below), to easily adjust where the relatively hard transition from background to fill occurs. In this mode, changing the Clip control moves the threshold up and down without affecting Gain, which is adjusted separately with its own Gain control.

High Gain, Low Gain, and Unity Gain

A high gain key has a narrow range, creating harder key edges. A low gain key has a wider range, creating softer key edges. Linear keys typically use minimal gain (also called unity gain) to completely preserve the soft edges of the keys (Figure 15). Note that the Kayenne system also supports keys that go below unity gain.

Figure 15. Keying Gain Values

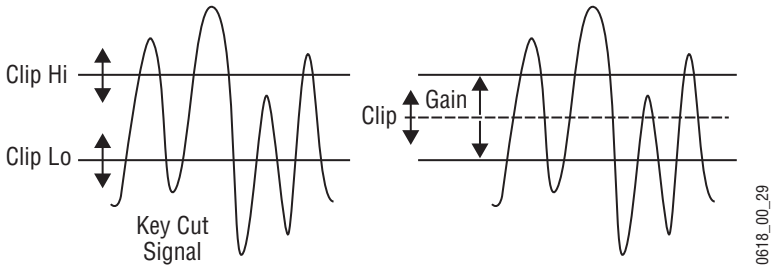


On the Kayenne system, Gain has a percentage value. A Gain value of 50% requires a luminance change of 50% of the distance between black and white to produce a keying signal ranging from transparent to opaque. A gain value of 100% (unity gain) uses the entire range between black and white for this transparent to opaque transition. A gain value of 0% produces the hard key edges (a high gain key).

Clip Hi and Clip Lo

The Kayenne system also supports a Clip Hi and Clip Lo mechanism. With Clip Hi and Clip Lo, two thresholds are established. The upper threshold specifies at what point video will be completely removed from the background, and the lower threshold determines at what point background video will be retained completely intact (Figure 16).

Figure 16. Key Hi, Clip Lo vs. Clip and Gain



In this mode, Gain changes when either control is adjusted. The difference between the upper and lower keying thresholds is equivalent to gain:

Clip Hi = Clip + Gain/2

Clip Lo = Clip – Gain/2

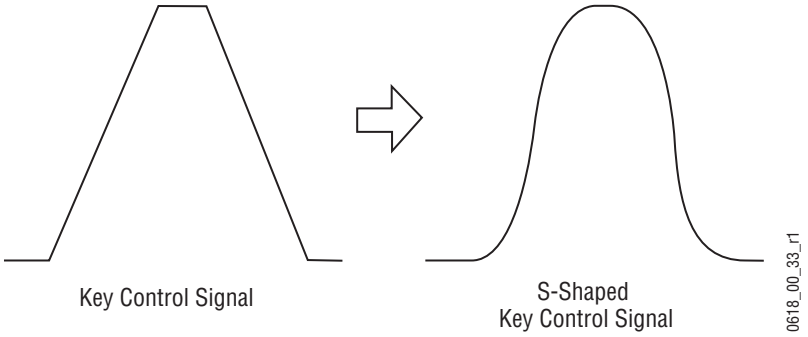
Clip Hi and Lo control is more appropriate for low gain keys, to allow independent control of the two thresholds. For example, when adjusting a linear key the operator wants to control where the fill becomes opaque (Clip Hi) and where the fill becomes transparent (Clip Low). In Clip Hi/Lo mode adjusting the point of opacity does not change the point of transparency, and vice versa.

Clip, Gain, Clip Hi and Clip Low adjustments always interact. Changing one always results in changes to two other values. Changing Clip Hi or Clip Low changes both Clip and Gain, not just Gain.

S-Shaped Key Signals

On the Kayenne system, an S-shaping function is applied to the edges of luminance keys. S-shaping smooths the sharp corners of a luminance key control signal, which helps prevent banding artifacts. S-shaping a signal minimally affects the key edges, and does not move key thresholds or affect the overall gain of the key (Figure 17).

Figure 17. S-Shaped Luminance Key Control Signal



S-shaping is generally not applied to linear keys because the external device usually applies an S-shaping function when it generates the key cut and key fill signals. S-shaping should not be applied twice.

Additional Keying Controls

The following additional controls are available for keying.

Key Invert

Keys can be inverted, causing holes to be cut in the background where a normal key retains the background, and vice versa. Key invert makes the white areas of the key cut signal produce transparency, and the black areas produce opacity, the opposite of a standard key.

Borderline

The Borderline feature generates borders around keys. The key signal is delayed and/or enlarged, and the extra bordering space can be filled with matte or video. Borderline can be adjusted in size, and in horizontal and vertical placement.Variations on Borderline include Shadow, Extrude, and Outline.

Masking

Masking defines areas that are protected from keying (Inhibit Mask) or always key (Force Mask). The shape of the mask can originate from a wipe pattern generator or by a selected mask signal (typically a key fill signal delivered via one of the Utility buses).

With the Kayenne SuperStore option, the mask signal can be a frozen page of video or a key fill. Complex mask shapes are often easier to draw by hand than to create with multiple wipe patterns. The Kayenne system supports drawing masks into a SuperStore page using a third party graphics tablet.

Opacity

The opacity of a key can be adjusted. When opacity is reduced below 100% some background video is allowed to show through areas where it is normally excluded. Key opacity is an adjustment to the overall intensity of the key, and is separate from Clip and Gain controls. Note that a common mistake is to set opacity to zero and forget that adjustment was made, which can cause confusion later when that key is selected but not visible.

Key Positioning

Key positioning allows slight adjustment of the horizontal position of the key cut signal relative to the key fill signal. This is useful if the timing of the two signals at the switcher inputs are not matched properly. This is generally only a problem if the cut or fill follow analog paths from source to switcher or if the source has video/key timing adjustments which have been set to compensate for other delays within the facility.

Key Size

Key size allows the key cut signal to be narrowed slightly. This can greatly enhance self keys and chroma keys that have been reshaped.

Coring

Coring helps reduce video noise in Chroma keys. Coring is used when a key fill signal has noise in areas that are supposed to be transparent. When noise exists in these areas it can appear in the background portion of the keyed composite. Coring replaces the noisy black areas outside the shaped fill with clean black before it is summed, eliminating the noise.

Show Key

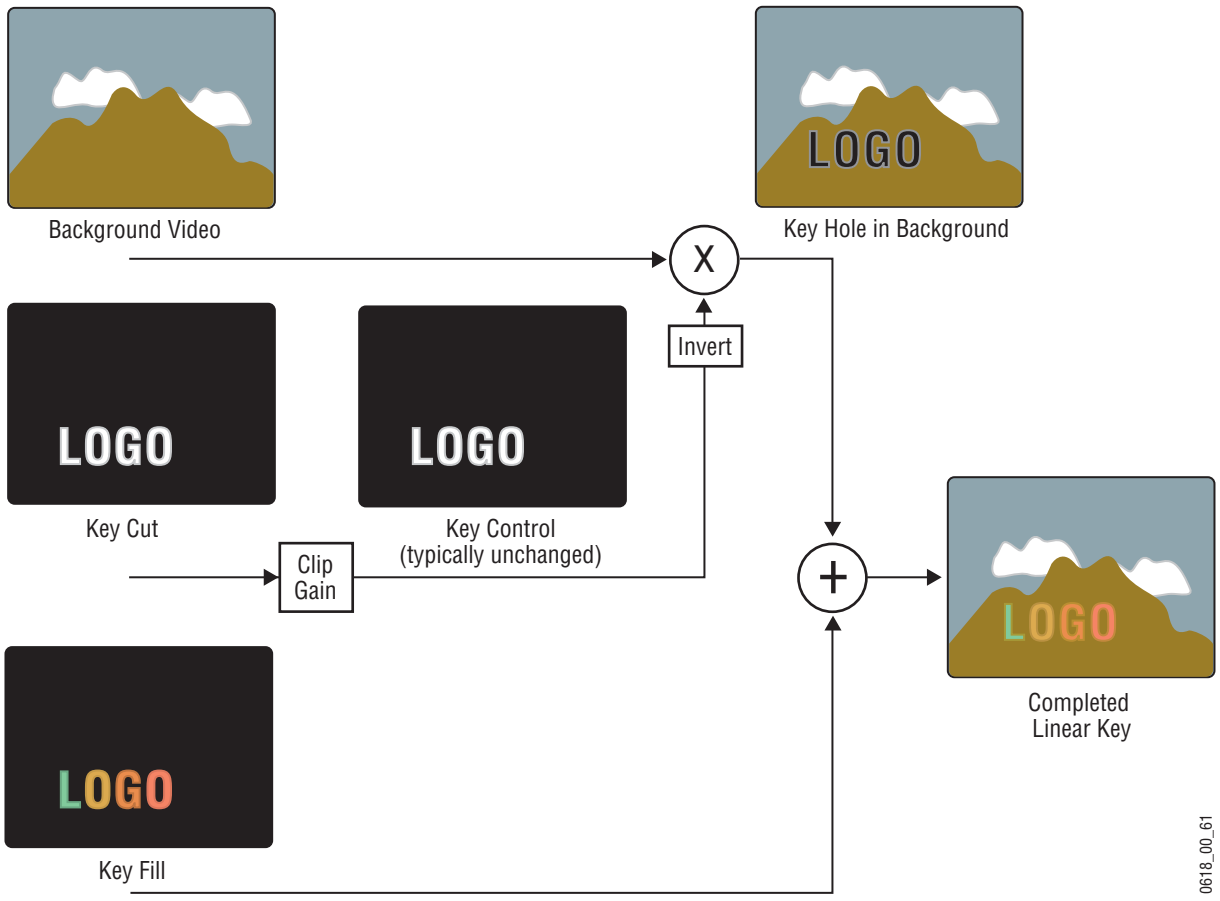
Although the key control signal is not directly visible in the final video output, this signal can be previewed as a black and white image using the Show Key function. White areas of a show key indicate areas of complete opacity, black indicate complete transparency, and gray areas indicate translucent areas of the key. The whiter the show key signal, the more opaque the key will be. This key preview signal reflects all the adjustments that have been made to the key control signal.

Linear Key

A linear key typically uses separate key cut and key fill input signals that are intended to be used for linear keying. The key cut and key fill are usually anti-aliased (soft edged) shaped signals created by a character generator or graphics system. There may also be translucent areas intended to

allow some background to show through the key (watermarks). The level of the key cut signal determines where and how deeply the hole will be cut into the background. The intended soft edge and translucency of the key can then be faithfully reproduced (Figure 18).

Figure 18. Linear Keying



Note The soft edges in the illustrations in this part of the manual are simulated. The key edges are actually gradients, which allows these edges to blend smoothly with the background.

Fixed and Adjustable Linear Keys

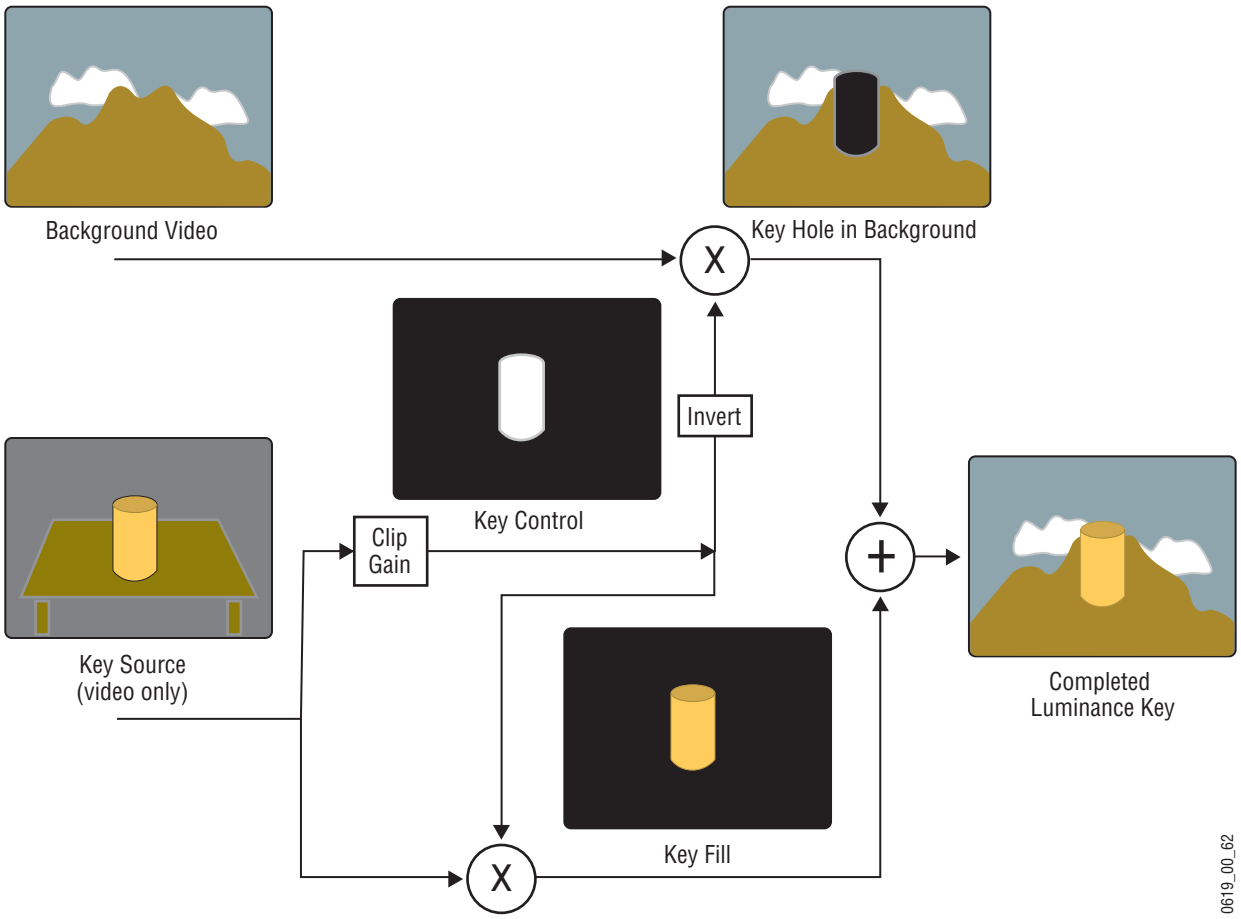
The Kayenne system supports both fixed and adjustable linear keys. A fixed linear key uses clip and gain values defined in system configuration to create the key cut signal. Typically these values are Clip 50% and unity Gain (equivalent to Clip Hi 100%, Clip Lo 0%). Once fixed linear key values are defined, these sources can be used easily without the operator having to set up the key every time it is used.

An adjustable linear key provides the operator limited control over Clip and Gain (or Clip Hi/Lo) values. This lets the operator fine tune the settings if the normal fixed linear values are not producing a good enough key.

Luminance Key and Self Key

A luminance key uses the luminance of an incoming source to specify where to cut the hole in the background. The earlier example of a matte fill key is a type of luminance key. Luminance keying is typically done on sources that do not have an accompanying key cut signal, like a video camera. The key cut signal must be generated from the incoming video signal, using clip and gain controls. When only one source is used for both key cut and key fill, the key is called a Self key or Video key. The same key source signal is multiplied by the key cut signal to create the key fill, and then the signals are summed (Figure 19).

Figure 19. Luminance Keying (Self Key)

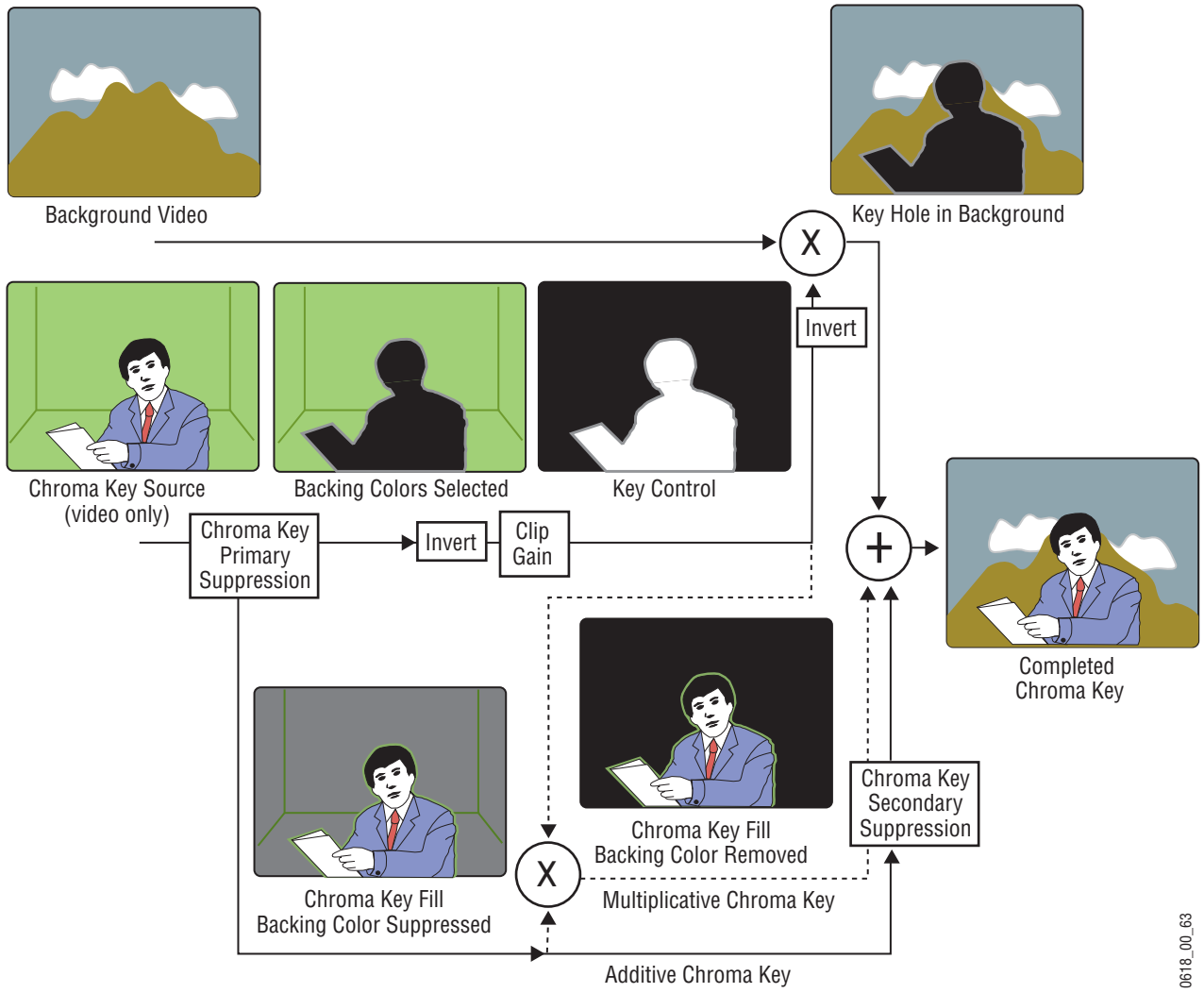


Clip and Gain (or Clip Hi/Lo) controls for luminance keys offer wide adjustment ranges. On the Kayenne system, an S-shaping function is also applied to the edges of luminance keys.

Chroma Key

A chroma key is a key that detects color (rather than luminance) in a video image and replaces it with a new background. For example, a reporter may be in a studio sitting in front of a backdrop with a blue or green backing color, and the new background can be a mountain scene. The completed chroma key contains the mountain scene replacing the backing color, creating the illusion that the reporter is sitting in front of the mountain (Figure 20).

Figure 20. Chroma Key (Additive or Multiplicative)



The terms foreground and background are often a source of confusion when used for chroma keys. Foreground refers to the people or objects in a chroma key scene that are in front of the colored backdrop. Background refers to the scene that will replace the backing color (same as a linear or luminance key) in the final picture. Background does *not* refer to the backdrop of the foreground scene.

Chroma keys are performed by suppressing the backing color in the foreground scene, cutting a hole in the background, and then combining the two processed signals. When conditions are ideal, complete suppression of the backing color is possible and the hole cut in the background will match the suppressed foreground, permitting these two signals to be added successfully. This is called an additive chroma key (used when the Kayenne system Foreground Reshaping feature is off). When conditions do not permit adequate backing color suppression, the foreground with its backing color suppressed can be multiplied by the keying signal to prevent contaminating areas of the background outside the keyed area. This is called a multiplicative chroma key (used when the Kayenne system Foreground Reshaping feature is on). Setting up a successful chroma key setup involves many more adjustments than other keys. No amount of adjustment, however, can overcome problems caused by an improperly set up studio chroma key scene.

Primary and Secondary Color Suppression

As described above, chroma key primary color suppression replaces the old backing color with black before replacing it with the new background video. It usually has a very low selectivity and therefore suppresses a wide range of colors. The goal is to suppress as much of the backing color as possible without affecting foreground regions.

Secondary suppression is essentially a second chroma keyer that can be used to deal with areas where the backing color passes through some translucent portion of the foreground object, like smoke or liquid. This also includes hair since fine detail often mixes with the backing color. The goal of secondary suppression is to restore the natural color of the foreground object. In general, medium to high selectivity values will be used.

Primary and secondary suppression adjustments are used to select the hue to be replaced and for adjusting the luminance and chrominance levels in the areas of the picture where suppression is applied.

Flare Suppression

Flare suppression can be used to compensate for backing color reflected onto foreground objects, or for lens flare (backing color reflections within the camera lens). In these cases, the foreground object will take on a slight greenish or bluish tint. Flare suppression subtracts a slight amount of the primary suppression color from the foreground.

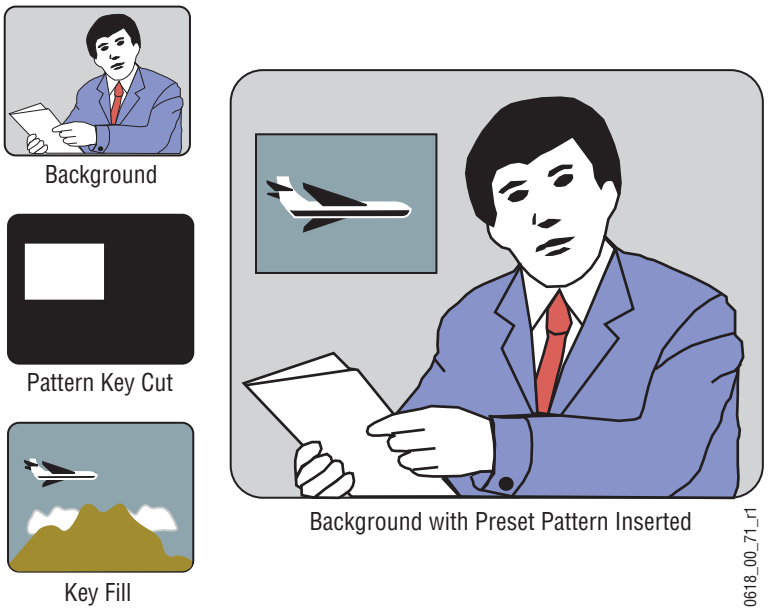
Chroma Key Shadow Generator

The Kayenne system has a shadow generator that can be used to include shadows that fall on the backing area of the scene in the background. Shadow offset, range, and density controls are also available that offer control over the placement and appearance of the added shadow.

Preset Pattern

A preset pattern uses a wipe pattern generator, rather than an incoming key cut signal to define the hole cut in the background (Figure 21). Key clip and gain controls are not available for a preset pattern, but controls over the location, size, border, opacity, and edge softness are available.

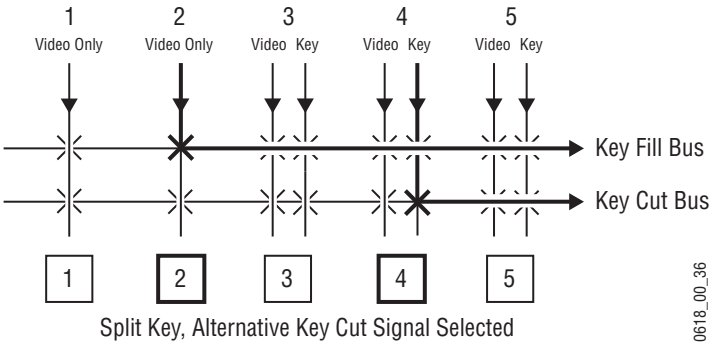
Figure 21. Preset Pattern



Split Key

A split key uses an alternative key cut signal for keying. On the Kayenne system, a key split is performed by selecting the desired key fill signal, then selecting an alternative signal to be used as the key cut (Figure 22).

Figure 22. Split Key



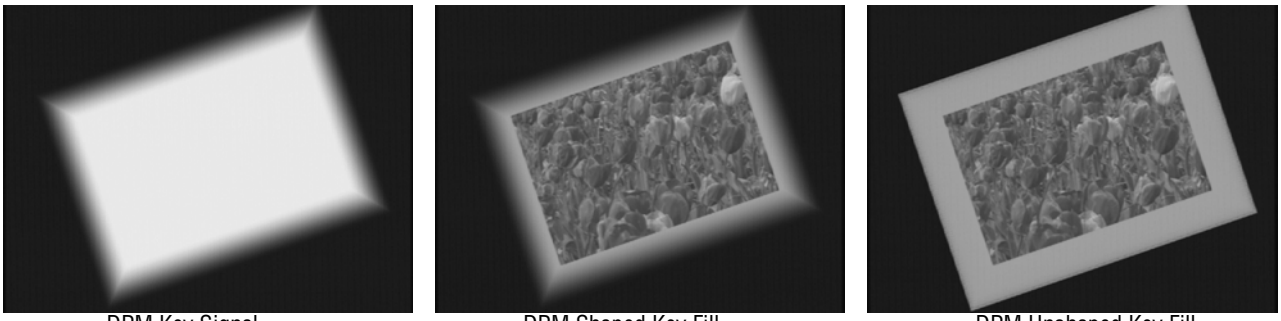
Note that if the key fill video has been shaped by an external device, this previously shaped video will not match the different key cut signal selected

for the split key. Split keys normally treat the fill as unshaped since by definition a split key uses a fill that is not related to the cut. The Kayenne system gives the operator the ability to override this assumption for use when a cut and fill are brought into the switcher from two separate sources, such as a pair of DDRs producing related video and key signals.

Properly and Improperly Shaped Video

The following illustrations show the results of using correctly and incorrectly shaped video. In these examples, the video fill comes from a DPM that provides both a key signal and a fill video signal (a linear key). The DPM's key signal, fill video that has been set as a shaped output, and fill video set as unshaped is shown in Figure 23.

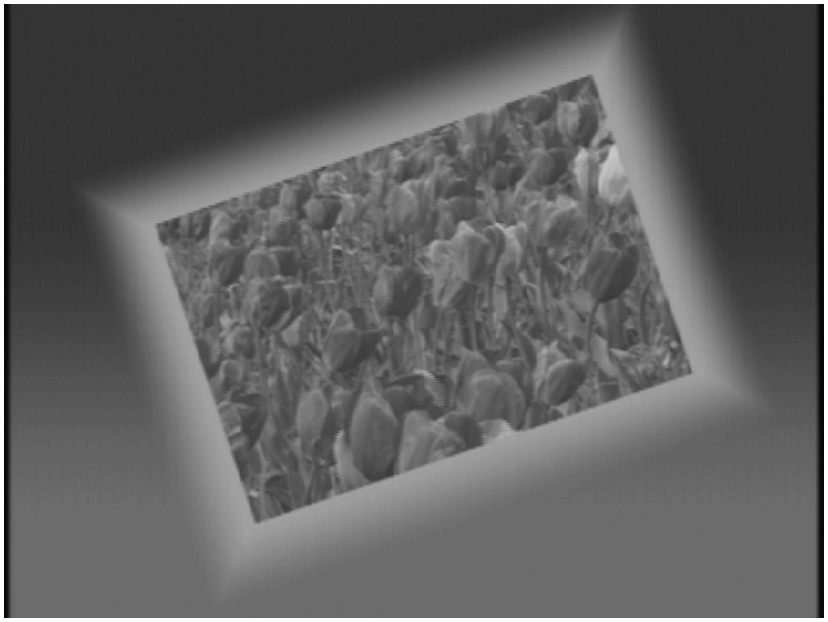
Figure 23. Video and Key Signals from DPM



DPM Key Signal | DPM Shaped Key Fill | DPM Unshaped Key Fill

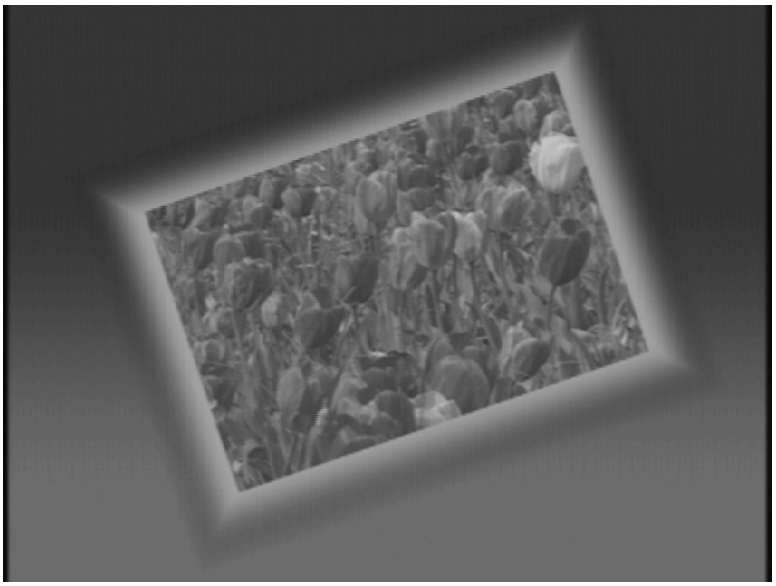
When the shaping is configured properly (using either shaped or unshaped key fill) the desired output is the result (Figure 24).

Figure 24. Correctly Shaped DPM Key Example



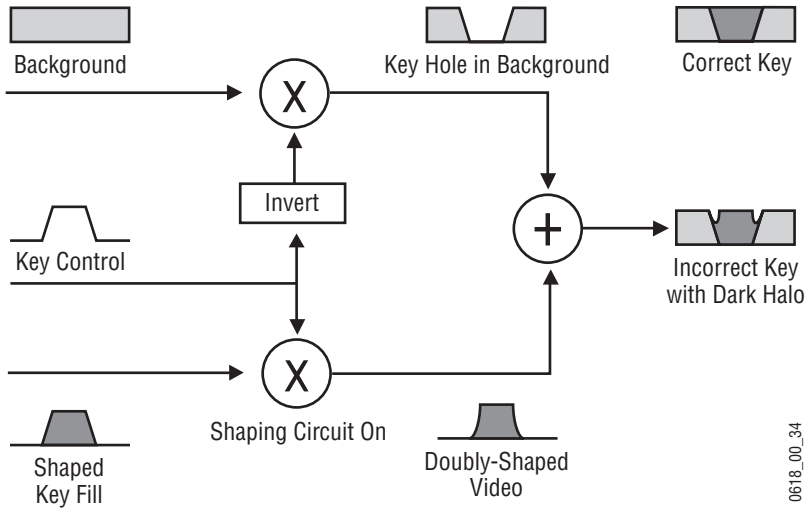
When the DPM provides a shaped video output but the key is processed as though it were unshaped, the shaped video does not completely fill the key hole in the background so a dark halo appears around the key (Figure 25).

Figure 25. Incorrect Key with Dark Halo



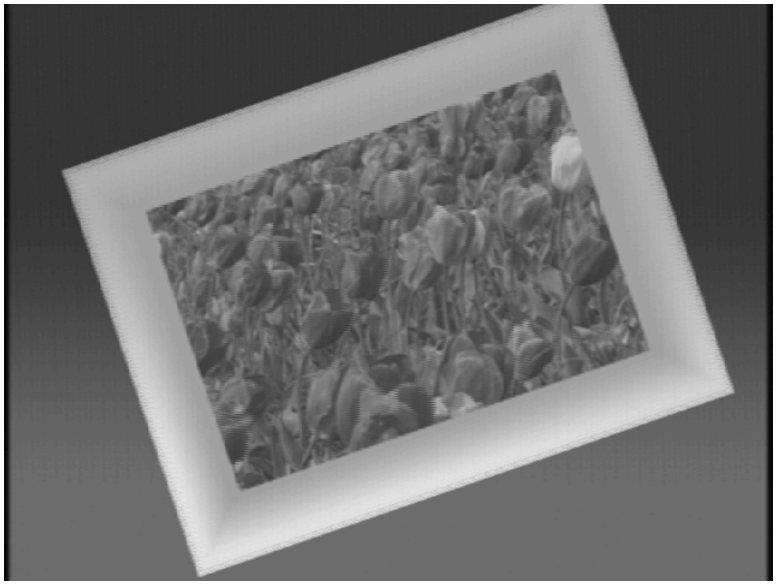
In this case the shaped input is incorrectly shaped again, sometimes called a double-multiply (Figure 26).

Figure 26. Incorrect Keying with Shaped Input



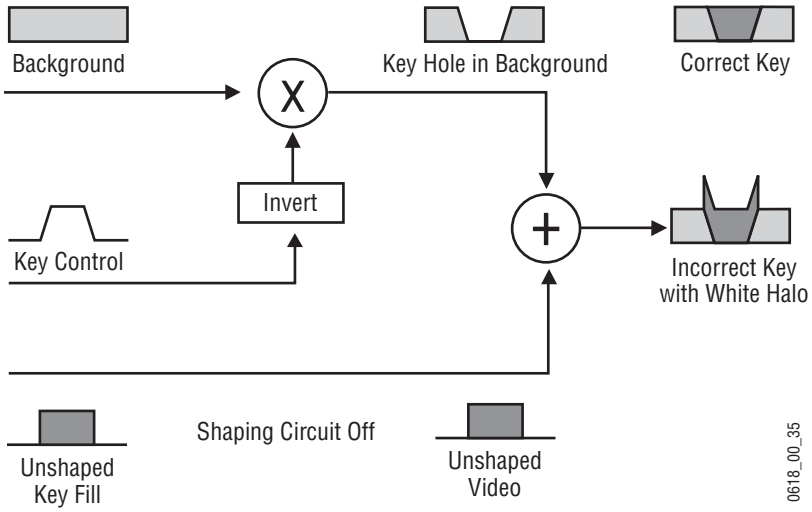
When the DPM provides an unshaped video output but the key is processed as though it were shaped, excessive luminance occurs where the key fill video and key hole edges overlap, producing a white halo around the key (Figure 27).

Figure 27. Incorrect Key With White Halo



In this case the unshaped video fails to be shaped at all (Figure 28)

Figure 28. Incorrect Keying with Unshaped Key Fill



Recognizing the appearance of improperly shaped video helps you know how to correct the problem should it occur.

E-MEM (Effects Memory)

Grass Valley developed the E-MEM (Effects Memory) system to provide a way of storing effects for later use. An effect defines parameter settings that determine how the selected video sources are processed. An E-MEM effect is *learned* into an effect *register*, and can then be *recalled* at a later time with a single button press. Effects can be edited after they have been learned, and effect data can also be saved to and loaded from disk.

Work Buffer

The *work buffer* is a fundamental aspect of system operation. The work buffer contains the current state of the system, specifying the sources selected and the video processing applied to those sources. The work buffer tracks all the system parameters, including those that do not have controls delegated. As the operator delegates and alters Control Panel and menu settings, the associated parameters in the work buffer change. If any altered work buffer parameters affect the video outputs of the switcher, the appearance of these outputs will change accordingly.

Keyframe

A single set of processing control settings can be called a *keyframe*. A keyframe defines the state of all or a portion of the switcher. Keyframes are stored in E-MEM effect registers. Two types of information are associated with a keyframe:

- On/off settings, including source selections, and
- Parameter settings.

For example, an effect can consist of a keyframe specifying source 1 on ME-1's background A bus, source 2 on its background B bus, a horizontal wipe transition type, and a border. These are button settings, as they can be turned on and off. The border could be thick and colored red. These are parameter settings because a range of continuous values are available.

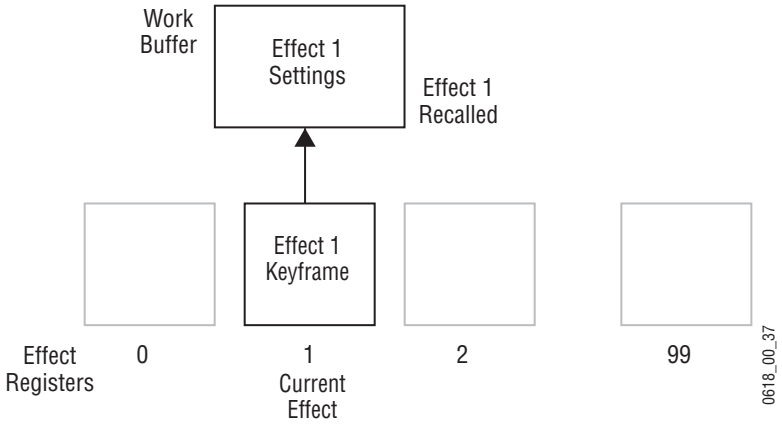
Effect Register, Work Buffer, and Current Effect

For clarity, the following description uses single keyframe effects. Multiple keyframe effects are discussed later (see page 57).

The Kayenne system has 1000 E-MEM registers (numbered 0 - 999) able to store operational settings for immediate recall. Effect register data must be applied to the work buffer before these settings can affect the system. When an effect register is recalled, keyframe data is loaded into the work buffer, and that register number becomes the *current effect* (Figure 29). The current

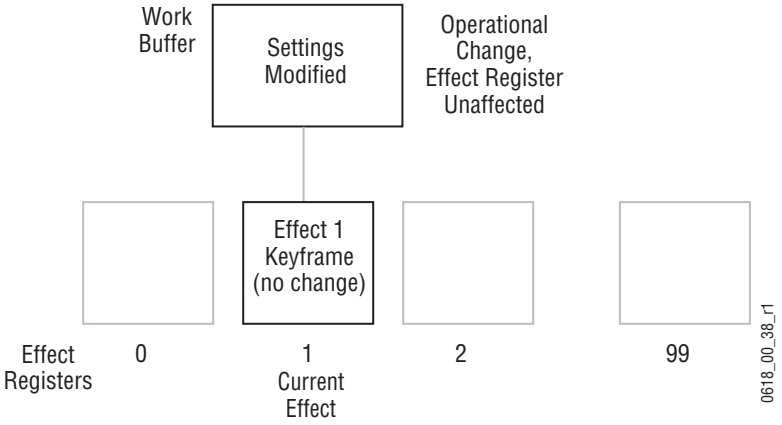
effect is an important concept, as it defines a relationship between the effect registers and the work buffer. Only a current effect can be run or edited.

Figure 29. Work Buffer and Current Effect



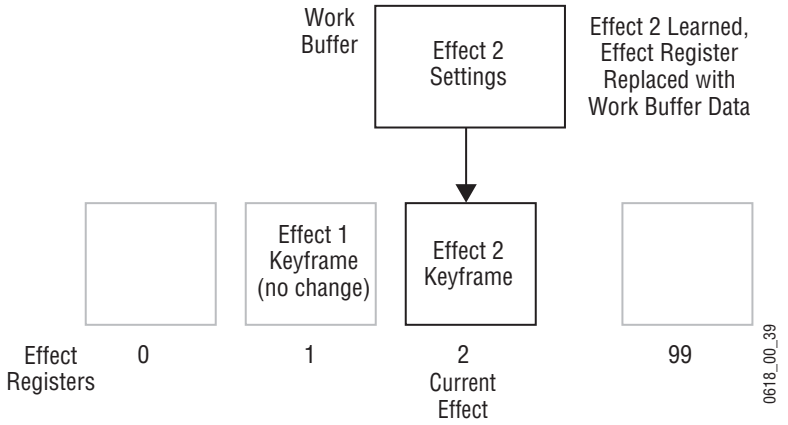
The work buffer actually holds a copy of some of the effect register information. When an operator changes a control setting manually, the work buffer settings change but the effect register data itself remains unaltered (Figure 30).

Figure 30. Work Buffer Operational Change



When an effect is learned, the current operational settings in the work buffer are loaded into the specified effect register, overwriting any information that was in that register. If a register different from the current effect is learned, the information is loaded into it and that register becomes the current effect. In this case the original effect register will not be altered, and can be instantly recalled to return the system to its earlier state (Figure 31).

Figure 31. Learn Operation Changes Effect Register



Effect registers can be saved to disk and reloaded and recalled for use at a later time.

Banks and Registers

The Kayenne Local E-MEM and Master E-MEM Modules are optimized for rapid recall of effects during live production. The Kayenne system's 1000 effect registers can be thought of as being organized into pages (numbered 0 (0-99) and 100-900) and banks (numbered 0 to 9), with each bank containing ten registers (also numbered 0 to 9). For example:

- register 46 means page 0, bank 4, register 6 or
- register 226 means Page 200, bank 2, register 6.

Note Pages 100-900 are accessed by pressing the **Page** hard button on the Local E-MEM Module or the **PAGE** soft button on the Master E-MEM Module in the E-MEM mode.

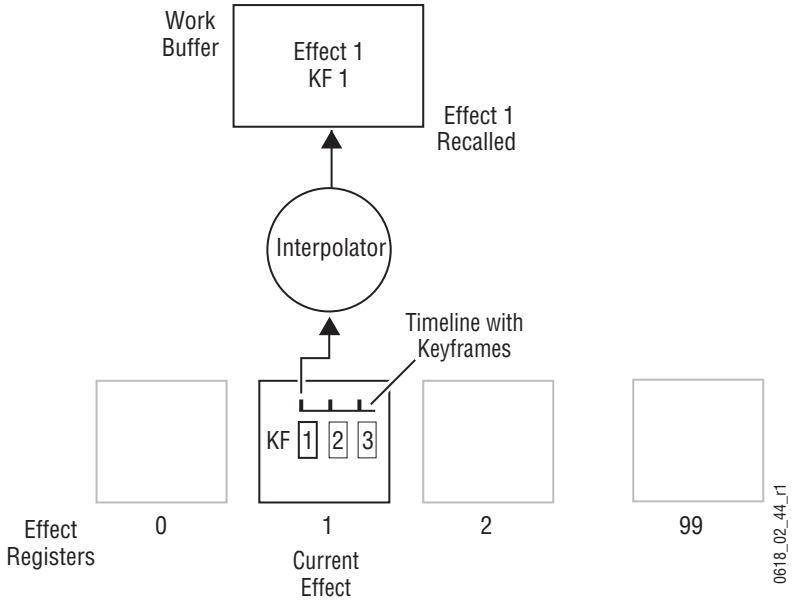
This organization is for user convenience, to allow immediate single button effect recall from ten different registers, and for clearing, copying, and saving to and from disk banks of registers with a single operation.

Multiple Keyframes and Timelines

A *timeline* is an arrangement of keyframes in linear time order. A multiple keyframe effect contains a series of two or more keyframes on a timeline. Each keyframe has a position on the timeline, specifying its location in time in the effect. The timespan from one keyframe to the next keyframe can be considered that keyframe's *duration*. The sum of these durations generally determine the total duration in time of the effect.

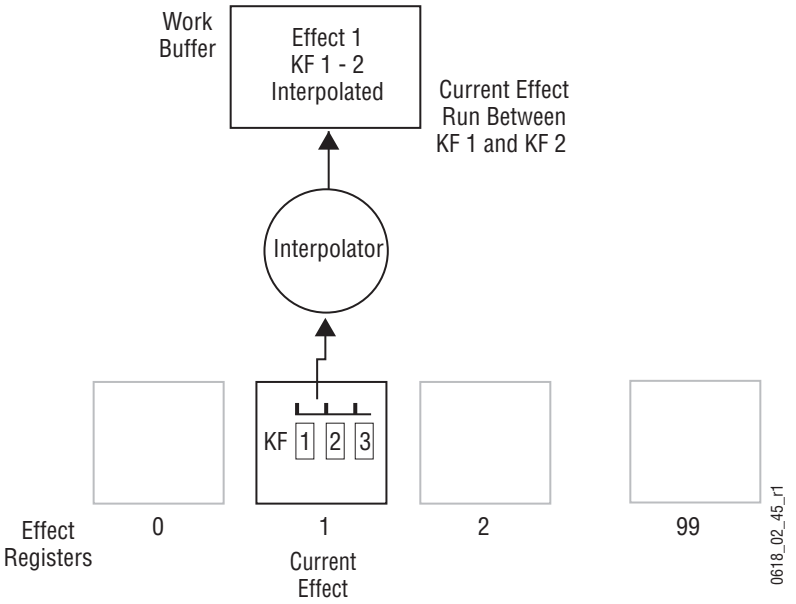
When a multiple keyframe effect is recalled from an E-MEM register, only its first keyframe is loaded into the work buffer (Figure 32). This is exactly the same as the recall of a single keyframe effect.

Figure 32. Keyframe Effect



The only difference between a single and multiple keyframe effect is a multiple keyframe effect can be run after it has been recalled. Running an effect changes the state of the system from keyframe to keyframe. During the effect run the values between the keyframes are usually interpolated (Figure 33).

Figure 33. Keyframe Effect Run



The interpolated work buffer values created during the effect run do not exist in the effect register. Instead, *path* information saved in the effect determines the type of interpolation to be used between each pair of keyframes.

As each keyframe location is encountered on the timeline, the work buffer values at that moment in time will exactly match those specified by that keyframe in the effect register. Note that this is very similar to an effects dissolve and effects sequence of multiple registers, but keyframing uses only one register and also offers path control.

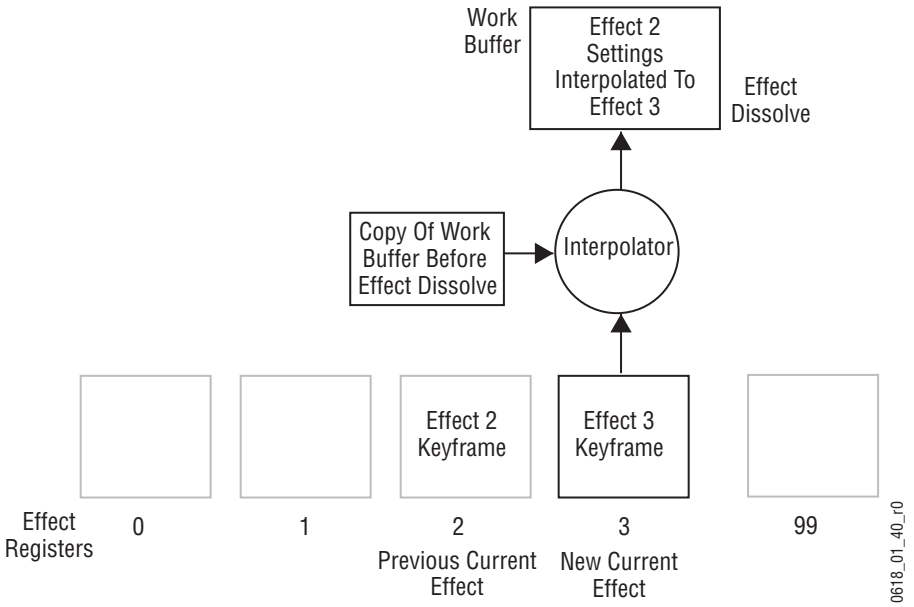
A keyframe in an effect can be changed by applying work buffer values back to the current effect register (Modify). The new values can modify an existing keyframe, or they can be inserted between keyframes (called *inserting on the path*). It is also possible to Learn, rather than Modify, an existing effect. However, the Learn operation overwrites all existing keyframes in the effect with one new set of work buffer values. A single keyframe effect is the result, and all the other keyframes in that effect are lost.

Effect Dissolve

Effect dissolve produces a smooth transition from the current state of the work buffer to the state defined in a recalled register. Effect dissolve first takes to the source and other button settings specified as a starting point in the effect register. The parameter settings in the work buffer then smoothly change so they match the settings of the recalled effect register. Effect dissolve can also simultaneously perform a transition to the specified ending sources at a specified duration. An interpolator is used to smoothly change the parameters settings involved in an effect dissolve. Before performing an effect dissolve, source and other button settings in the work buffer should be compatible with those in the effect dissolve register. This prevents an abrupt change when the new button settings are taken, and so permits smooth transitions between sources. One way this can be accomplished is by using two different, but complimentary, effect registers.

For example, if register 2 contains compatible button settings, it can be recalled into the work buffer. If an effect dissolve is then performed to register 3, the transition occurs and the parameters from register 2 in the work buffer are interpolated to those of register 3. Register 3 becomes the new current effect (Figure 34).

Figure 34. Effect Dissolve

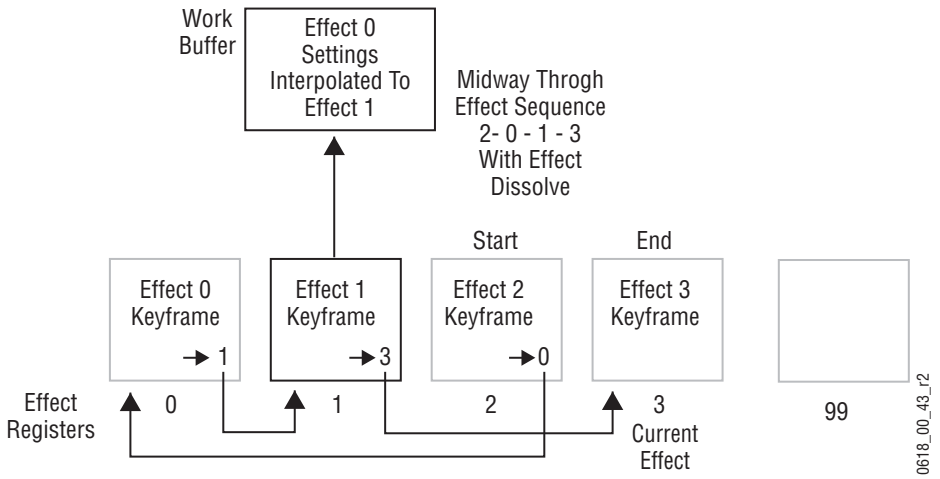


Note that the effect dissolve does not occur directly between two registers, and the transition aspect is handled separately from the interpolated parameter values. If work buffer parameter settings are changed before an effect dissolve, the current modified work buffer values (but not the source and button settings) will be smoothly interpolated to the new register values.

Effect Sequence

Effect sequence allows the operator to chain a set of specified effect registers together. Recalling the first register can initiate a sequential recall of all the registers in the sequence. As each register is recalled, its settings will be applied to the work buffer and the appearance of the system's output signals will change if they are affected. Delays can be programmed that determine when the next register in the sequence will be recalled. Effect dissolves can also occur as each register is recalled, though this is not required (Figure 35).

Figure 35. Effects Sequence



In the above example, recalling effect 2 as a sequence will proceed from register 2 to register 0 to register 1 to register 3. A sequence can begin from any of the effect registers in the sequence. For example, in the above example if register 0 is recalled, the sequence will proceed from register 0 to register 1 to register 3.

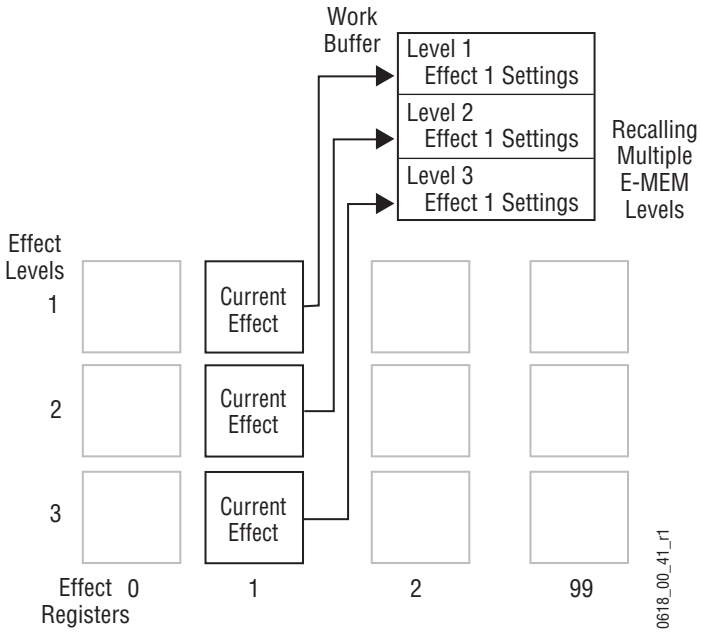
Effect dissolves can occur within a sequence. The interpolator described earlier is used to smoothly change to the next register in the sequence.

E-MEM Levels

The E-MEM system is divided into functional areas, called *levels*. Each effect level corresponds to a specific set of system operational controls, or to an individual interface to an external device. Effect levels are used to allow the operator to store and recall settings for specific system control areas without disturbing settings for other control areas. For example, on a 4-ME Kayenne system each ME has its own level. Each level also has its own set of effect registers. The settings for ME 1 can be recalled without changing the settings for ME 2, ME 3, or PGM PST. The work buffer is actually divided into sections that correspond to each effect level.

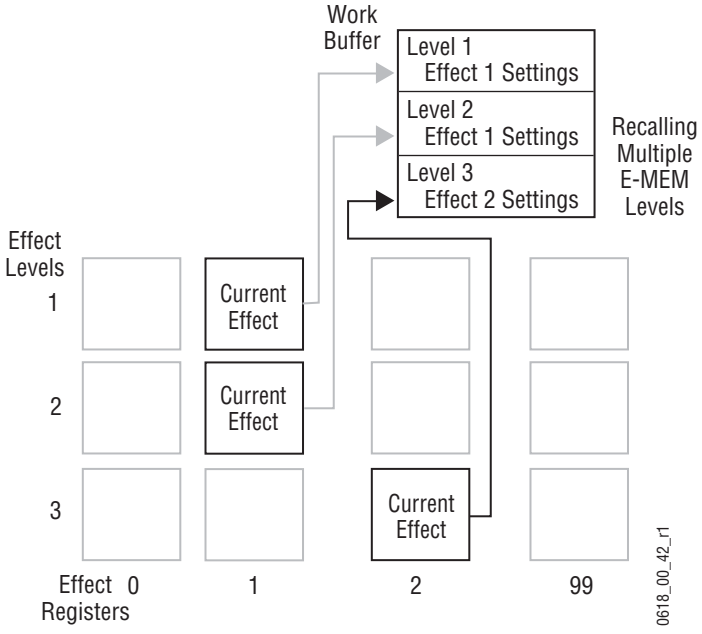
The earlier E-MEM discussion was simplified to explain basic concepts. Actually, register learn and recall operations and work buffer modifications apply to each level of an effect, though multiple levels of an effect can be changed simultaneously. Settings for each level's E-MEM register is applied to the corresponding level of the work buffer (Figure 36).

Figure 36. E-MEM Levels



If only one effect level is selected for a recall, the resulting change is only applied to its level in the work buffer. The other levels of the work buffer remain unaltered. Note that this makes is possible to have current effects from different registers, also called a *skewed effect* (Figure 37).

Figure 37. Single Level Recall

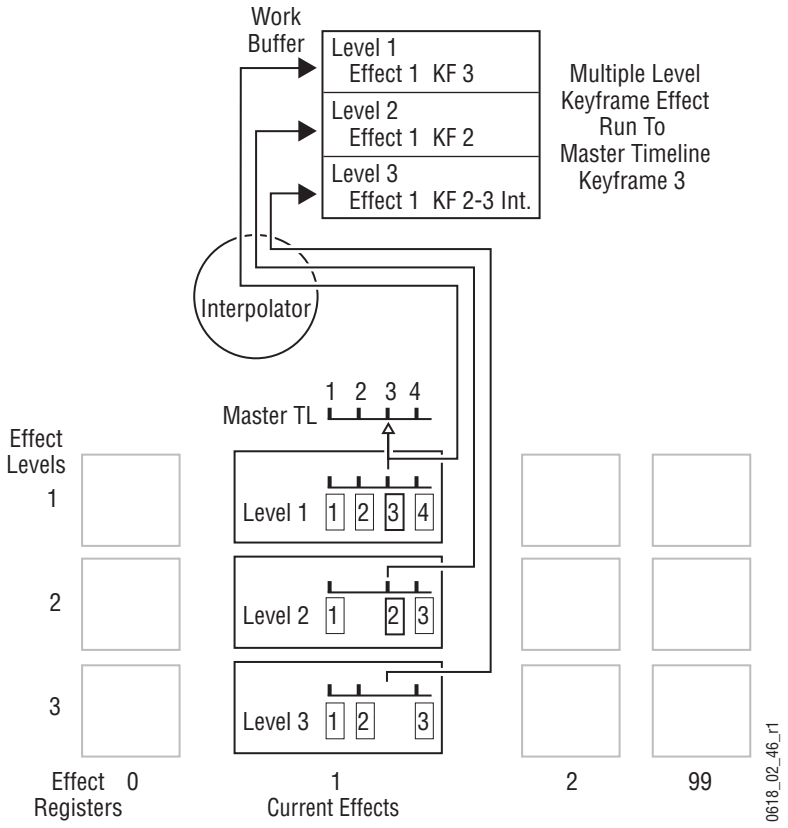


Master Timeline and Multiple Level Keyframe Effects

A *master timeline* exists to coordinate the activity of the individual level timelines. The master timeline contains a master timeline keyframe at every point in time where a keyframe exists on any of the level timelines. Keyframes from the levels are projected to the master timeline. If more than one level has a keyframe at a particular time, only one keyframe is projected to the master timeline. The master timeline keyframe can be considered a representation of the sum total of all the parameters in all the timelines that have keyframes at that point in time. However, the master timeline and its keyframes are an organizational tool only. Master timeline keyframes are not saved to a register or to the work buffer. The master timeline is constructed in real time, depending on what levels are in use by the effect.

When a multiple level keyframe effect is run, each level generally runs simultaneously, guided by the location of a *time cursor* on the master timeline. The time cursor represents the *current time* of the effect. As the time cursor moves, the work buffer is updated with the changing parameters. Figure 38 shows an effect with its time cursor located on master timeline keyframe 3.

Figure 38. Keyframe Effect and Master Timeline



An *edit cursor* is also available, which can be used during effect editing. Usually the time and edit cursors are superimposed on one another and move as one. When separated, editing actions occur at the edit cursor location.

Number of E-MEM Levels and Sublevels

The Kayenne E-MEM system has 31 levels with dedicated Enable buttons in the Master E-MEM Module (see *Master E-MEM Module* *on page 95*), including an independent secondary level (Split Mode). A secondary E-MEM level is attached to another level. This peer relationship is one directional. The Secondary level is controlled by the level to which it is attached, but not vice versa.

The Kayenne E-MEM system also has several sublevels. E-MEM sublevels can be assigned to an E-MEM level, which provides flexibility in configuring the Kayenne E-MEM system to control desired portions of the switcher and related devices.

Each Aux bus, Image Store output, GPI output, PBus device, External Device, etc. is a sublevel. The associations of sublevels to levels is completely flexible. Any sublevel can be assigned to any level. For example, a DDR or PBus device can be mapped to an ME level. This can be useful if, for example, a specific ME is always used for a replay effect. The external device playing back the animation, an Image Store output and possibly other sublevels can all be assigned to that ME's Primary level and the Local E-MEM Module will control the entire effect. Sublevels can also be disconnected from E-MEM control by assigning them to no level.

Each ME also has sublevels for each keyer, each complex wipe generator, each keyer's transform engine parameters, etc. Unlike other sublevels, all ME sublevels are always mapped to either the ME primary level or the ME secondary level, based on the DoubleTake ME partition information. The ME partition boundary information is itself a special sublevel, but contains no key frames since changing the ME partition within an effect is not possible.

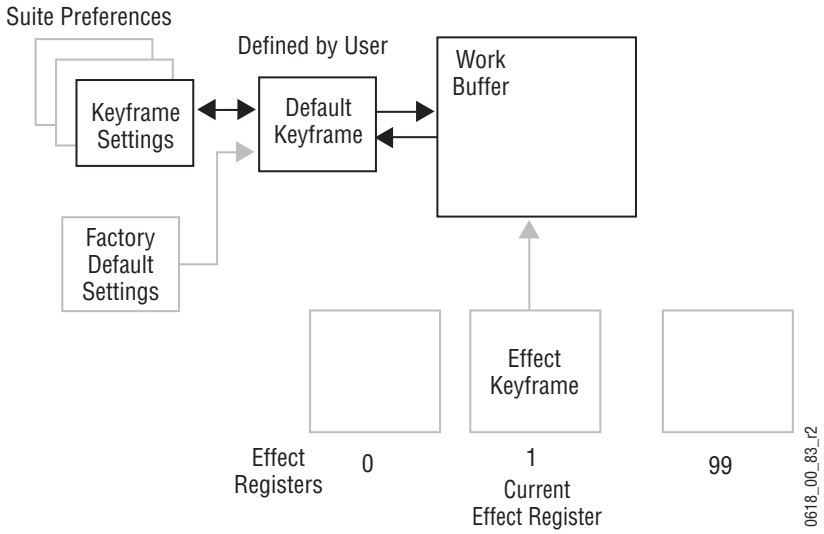
Auto Recall and Effect Levels

The Kayenne system has an Auto Recall feature. This feature makes a recalled effect automatically enable all the levels (and associated sublevels) that were involved in that effect when the effect was learned. This is a useful feature, since is can be difficult to remember all the levels involved in every learned effect, and time is required to manually enable levels before recall. The Auto Recall feature is on by default, but can be turned off to permit manual level enabling.

Default Keyframe

An important E-MEM concept is the Default Keyframe. A Default Keyframe is a standard collection of effect settings. When the work buffer is cleared, the initial settings it receives will be those defined as the Default Keyframe. The Default Keyframe does not alter effect registers and does not change current source selections or panel delegations, which should only be changed directly by the operator (Figure 39).

Figure 39. Default Keyframe



The operator can define exactly what these default settings should be (Suite Preference), and these settings can be stored and reused to meet varying requirements. A separate set of factory default settings also exist that cannot be changed, but may be loaded to the Default Keyframe and then to the work buffer, typically for system test and initial system installation.

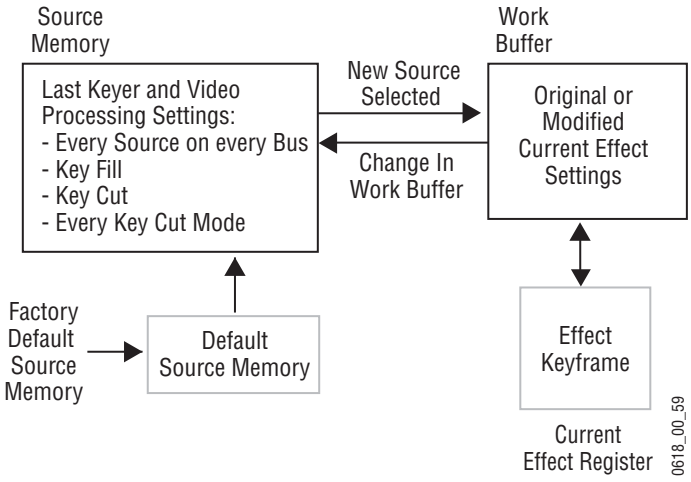
Source Memory

Source memory is a Kayenne system feature that retains the last settings of keying and video processing parameters used for each source on each bus. Source memory permits the operator to hot cut from one key to another and retain the settings for each source. Source memory keying settings include Clip, Gain, Borderline, Mask, and many other parameters used for various keying functions. Video processing (proc amp) settings include Luminance, Chrominance, DC Offset, etc. The source memory feature can be turned on and off by the operator.

Work Buffer, E-MEM, and Source Memory

When source memory is on, it tracks the work buffer's source selection for each bus. Whenever a new source is selected on a bus, the last settings used by that new source are loaded into the work buffer from source memory. Source memory settings are automatically updated when corresponding values in the work buffer are changed. For example, suppose Source 1 has a clip level of 50%, and Source 2 has a clip level of 70%. Selecting Source 1 applies its last used source memory setting to the work buffer (50%). Adjusting its Clip level to 40% in the work buffer also modifies the corresponding source memory of Source 1. Selecting Source 2 recalls its last used source memory settings (70%), not those used by Source 1. Selecting Source 1 again applies its modified setting of 40%, not its earlier setting or the setting used by Source 2 (Figure 40).

Figure 40. Source Memory and Work Buffer

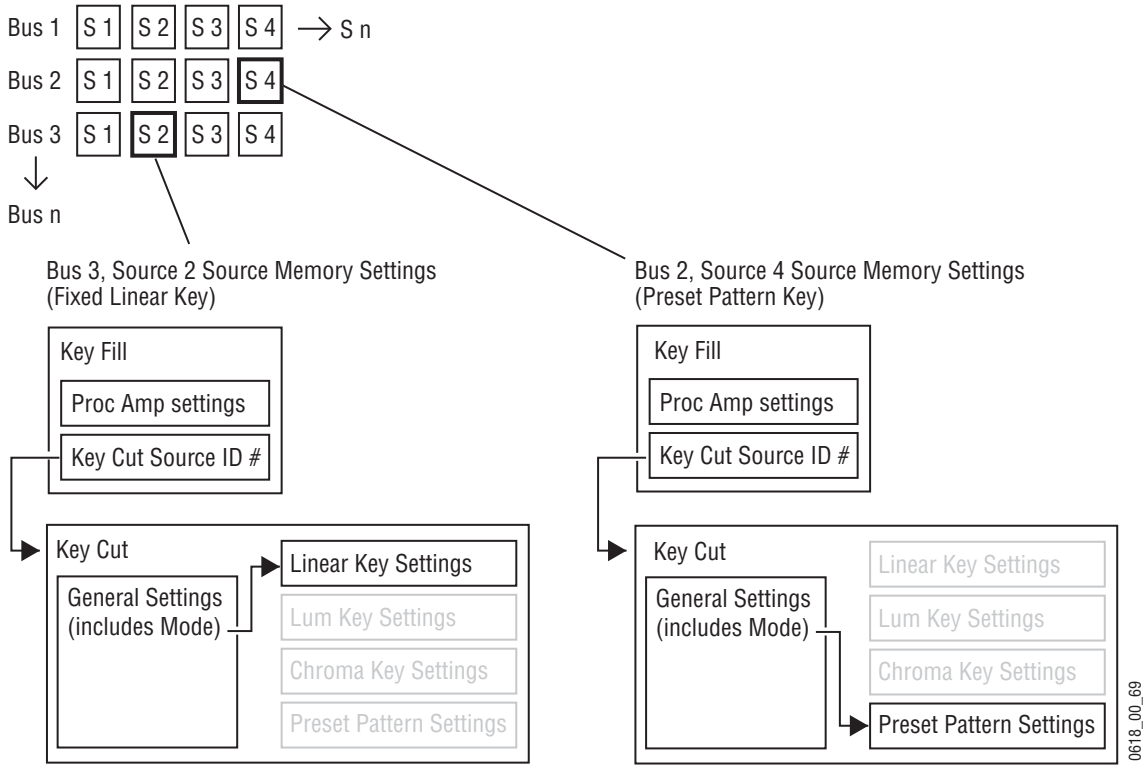


Source memory is separate from the E-MEM system, though they are related to one another through the work buffer. When an effect is learned to a register, the keyer and video processing settings for the sources involved are saved to that register. When an effect register is recalled, the sources selected on a bus will use settings from the recalled register, not from source memory. This recall changes the work buffer. When source memory is on, the source memory for each source involved in the recall is updated with the changed work buffer values, and so each source memory will initially have the same values as the recalled register. Subsequent changes to work buffer settings will update the source memory of each source, but these changes are only saved to an E-MEM register if the effect is learned.

Source Memory Organization

Each source on each Kayenne bus has its own source memory. Source memory parameters for each source are organized into groups to allow some settings to be remembered and applied independently to meet different requirements (Figure 41).

Figure 41. Source Memory Organization



Because a Kayenne source may have two signals (key cut and key fill), different groups of source memory parameters are associated with each signal. The Kayenne system key buses always have key cut and key fill signals. The background A and B buses that do not have key cut signals do not use the key cut group of source memory parameters.

Source memory for the key fill signal has video processing (proc amp) parameters, and also specifies which key cut signal to use. Source memory for the key cut signal contains all the keying parameter settings. Some of these keying parameters are in turn organized into four subgroups, or key modes. These modes correspond to linear key, luminance key, chroma key, and preset pattern. A parameter specifying which of the four modes is being used is included in the key cut portion of source memory. This means with source memory on, selecting a source with a key fill and a key cut signal will automatically apply any proc amp settings to the key fill, select the last used key cut signal which specifies the key mode, and the last used key memory settings for that key mode will be applied to the key cut signal.

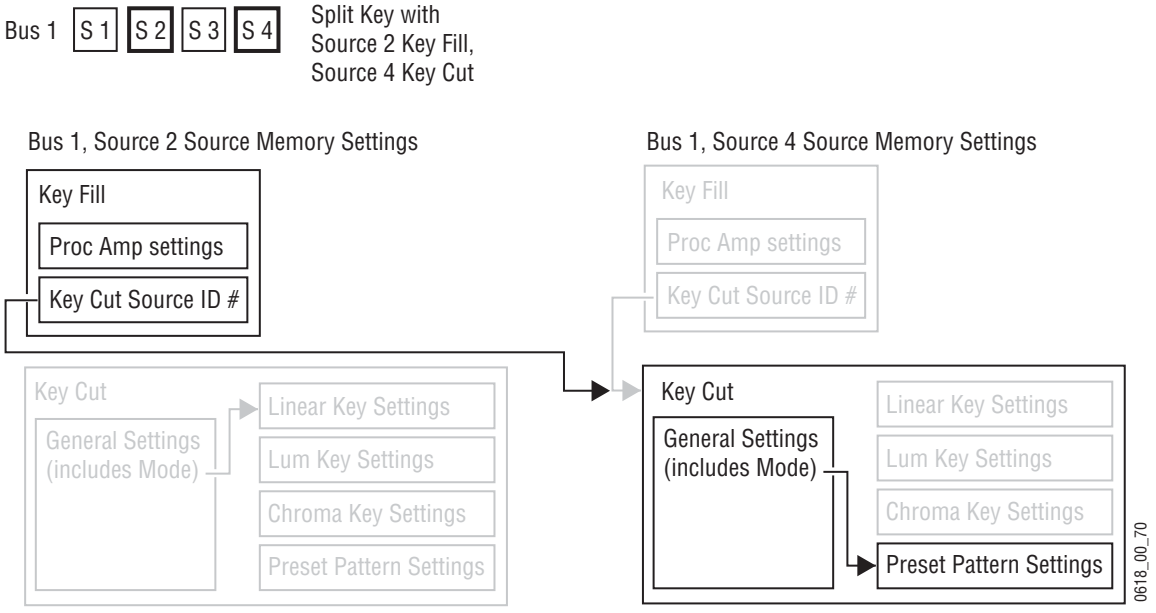
This organizational structure allows source memory to retain different settings for the same source, and it also accommodates split keys.

Because each source on each bus has its own source memory, different settings can be used for the same source on different buses. For example, Camera 1 on ME 1 Key 2 can be set up as a chroma key. At the same time, Camera 1 on ME 1 Key 3 can be set up as a luminance key with a black and white proc amp setup. Calling up that same source on different buses provides different keying effects.

Different source memory settings are retained for the different key modes. These different settings can be applied to the same source on the same bus, as needed. For example, a camera source on ME 1 Key 1 can be setup for both a chroma key and a preset pattern. The operator can choose the key type for that source as the session requires. Choosing a chroma key will recall its latest chroma key source memory settings, which can then be altered without changing the preset pattern source memory settings. Choosing preset pattern on that same source and bus later in the session will recall its unaltered source memory settings.

When a key split is performed a different key cut signal is selected for use. On a Kayenne system with source memory on, that new key cut source's key mode and keyer settings will be used for the split key (Figure 42). This is different from the Grass Valley 4000 switcher, which associated its source memory only with the key fill signal.

Figure 42. Source Memory and Split Key



Default Source Memory and Factory Default Source Memory

Default source memory settings can be set for every Kayenne source, and these defaults can be restored by an operator when desired (Figure 40). The defaults for a source are not bus specific. The same default values for a source are used on every Kayenne bus. Default source memory is a Suite Preference.

A fixed factory default source memory that cannot be changed by the end user is also included in every Kayenne system. Factory default source memory is provided to be a starting point for building a custom source memory set.

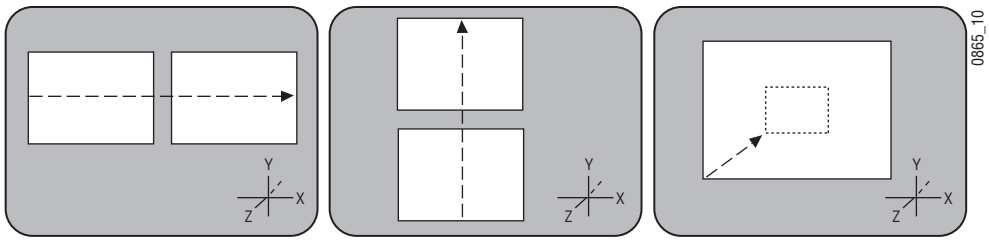
3-D Digital Effects Concepts

The Kayenne Transform Engine option provides 3-D planar image translation and transformation from within the Kayenne system. Image translation has special basic concepts and terminology you should understand in order to get the most out of using the option.

Translation and Transformation

Translation is a subset of transformation, and involves picture movement along the X, Y, and Z axis. The picture is simply relocated to a different place and does not change in actual size or shape (*Picture Translation on page 69*).

Figure 43. Picture Translation

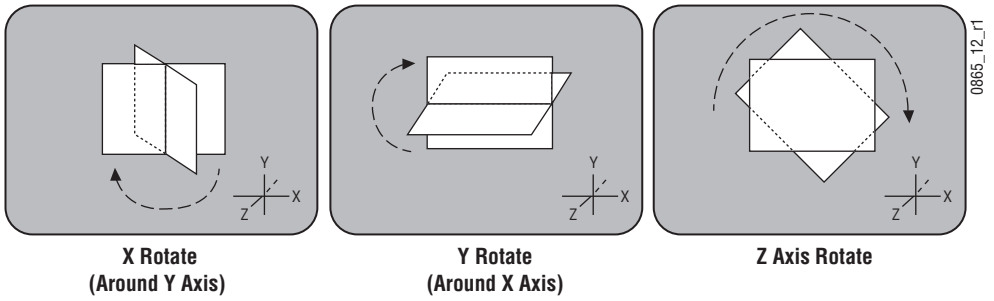


Transformation includes translation, and also includes these other functions:

Size — Enlargement and reduction of the picture area while it remains in the same plane in 3-D space. This is different from picture translation in the Z axis, where the picture retains its original size, but appears smaller when moved away, and larger when moved closer.

Rotate — Picture rotation about the reference axis in the X, Y, and Z dimensions (Figure 44). Rotate is limited to ± one half revolution, and will always take the shortest path to the new position. Rotate uses Quaternian math to calculate the move with increased accuracy. Multiple rotations are performed with the Spin function.

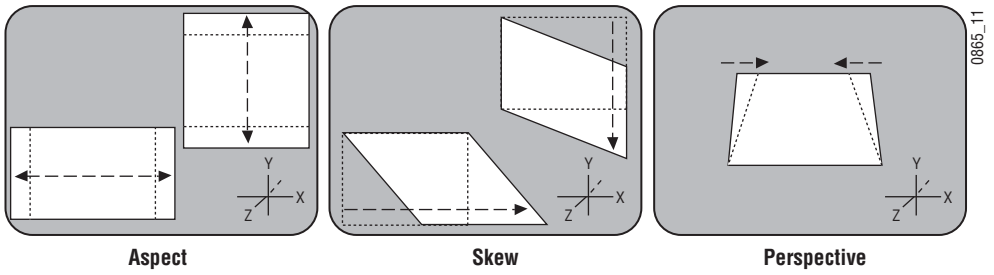
Figure 44. Rotate



Spin — Supports multiple rotations about the reference axis in the X, Y, and Z directions. Spin supports fractional values, and is similar to Rotate when the move is less than ±. one half revolution. Spin uses Euler math to calculate the move, which is not quite as precise as Quaternian, but permits multiple rotations. Spin applies transform values in Z, X, Y order, so editing effects in this axis order provides the best control of the effect.

Note Following broadcast conventions, moving the Joystick forward or back along the Joystick's Y axis rotates the top of the picture forward or back (a rotation about the X reference axis). Similarly, moving the Joystick left or right along the Joystick's X axis rotates the side picture left or right (a rotation about the Y reference axis).

Figure 45. Aspect, Skew, Perspective



Aspect — Scaling the X or Y components of the picture. X axis changes affect horizontal size, Y axis changes affect vertical size (Figure 45). Z axis changes affect both X and Y dimensions, and is the same as Size.

Skew — Slanting the picture in the X (horizontal) and Y (vertical) directions (Figure 45).

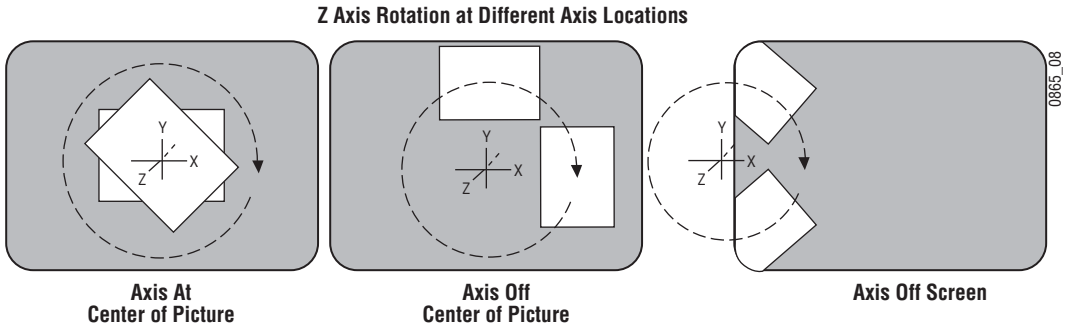
Perspective — Changing the viewer's apparent viewpoint of a picture. This only applies when a picture is tilted so part of it is farther from the viewer.

The farther portion appears smaller than the closer portion, and the amount of perspective controls how much smaller the distant part is (Figure 45). Multi-channel perspective is discussed later in this section.

Axis Location

The axis location of the channel determines the center point of translations, spins, and rotations for that channel. You can move the axis to a new location to change the behavior of that channel. The axis location can be within or outside the screen area (Figure 46).

Figure 46. Frame of Reference Axis Locations



Source and Target Space

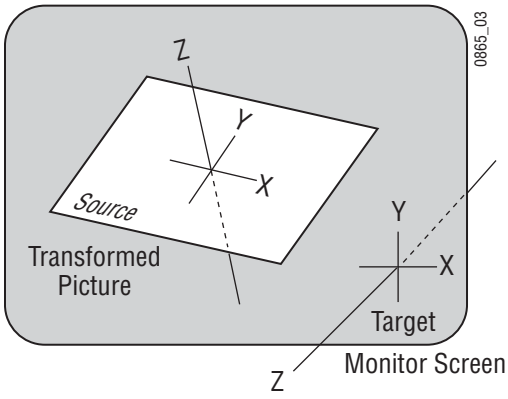
The Kayenne Transform Engine uses source and target space frames of reference.

- Source space for a control channel uses that channel's coordinate system for reference.
- Target space for a channel uses the next higher level's coordinate system for reference.

Being able to use both source and target space can help make effects editing easier. One frame of reference may offer a simple and easy to understand context for a picture transform, while in another frame of reference the same transform may be difficult to understand and control. Kayenne Transform Engine effects can also employ both source and target space directed transforms simultaneously, which can create complex and beautiful effects.

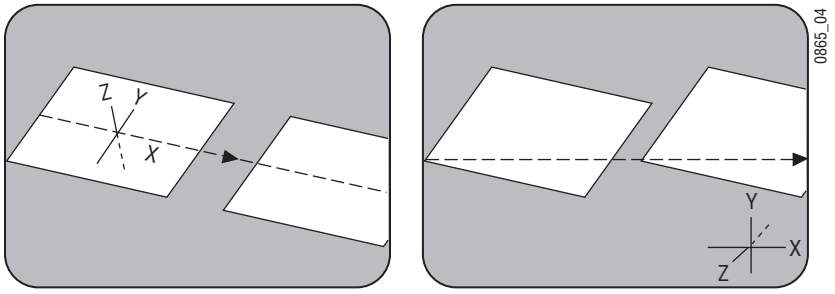
The simplest example for source and target space concerns a channel that has been rotated while the global channel remains unchanged (Figure 47).

Figure 47. Source and Target Space



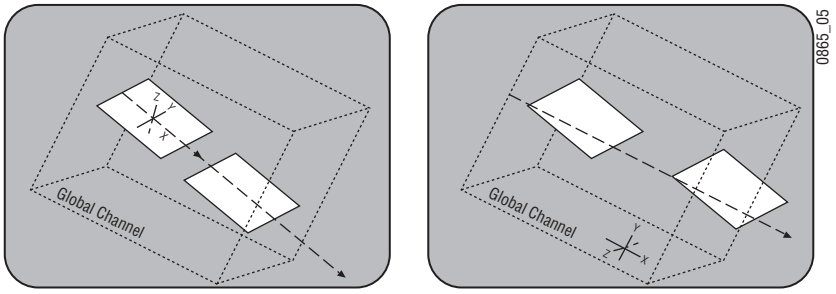
In this example the source space for the channel is referenced to the picture itself (tilted back at an angle) while the target space is referenced to the monitor screen (straight). X axis translations will move this picture differently, depending on whether source or target space is being used (Figure 48).

Figure 48. Source and Target Space Translation



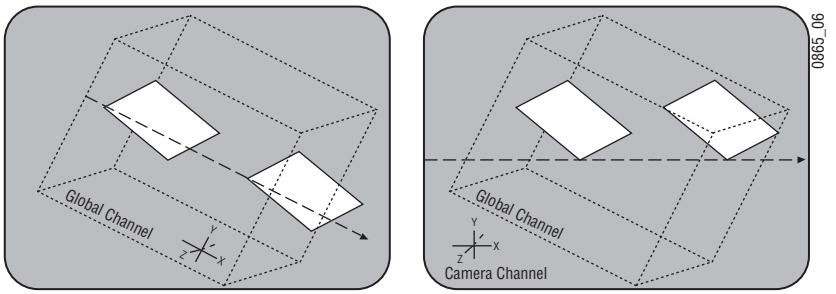
If the channel is controlled by a global channel, and the global channel itself has been rotated, an X axis translation will depend on whether the channel itself or the global channel is being manipulated, and whether source or target space is being used (Figure 49 and Figure 50). Note that the target translate of the channel is the same as a source translate of the global channel.

Figure 49. Channel Translate with Global Rotated



Logical Channel Source Translate Along X-Axis | **Logical Channel Target Translate Along X-Axis**

Figure 50. Global Channel Translate with Global Rotated

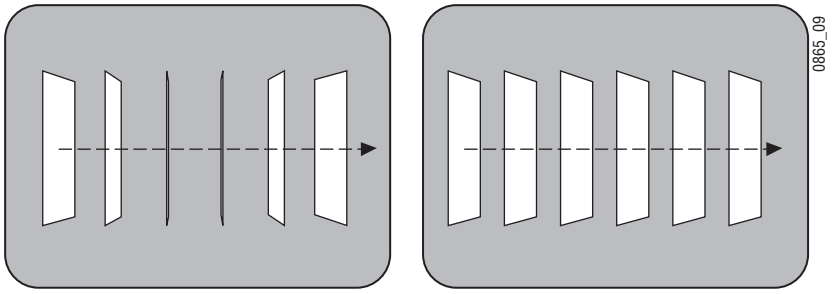


Global Channel Source Translate Along X-Axis | **Global Channel Target Translate Along X-Axis**

Post Transform Space

Post transform (**Post Xform**) is a special transform function that only affects size and location operations. It does not change the perspective of the image (Figure 51). This can be used as a convenient method to quickly project pictures onto new locations of the screen. For example, if an image has the right perspective but is partially off screen, it can be brought back on screen without changing the perspective.

Figure 51. Post Transform Translation



X Axis Translation with Locate 3-D | **X Axis Translation with Post Xform**

All post transform functions are made relative to the monitor screen frame of reference. For example, a positive X post transform always moves to the right side of the screen.

Front and Back, Near and Far

Pictures manipulated by a Kayenne Transform Engine have front and back sides, each of which is revealed in turn as the picture spins or rotates. After a picture has been translated it can be difficult to determine which side was originally on the front and which was originally on the back. This distinction can be important when, for example, different sources are being selected for different sides of an effect.

The Kayenne system uses a “Near” and “Far” convention to ease system operation. Near is always the side of the picture that is visible (facing toward the viewer), and Far is the hidden side of the picture (facing away from the viewer). The current Near side can be either the front side or the back side of the picture, depending on orientation. For example, to change the source on the visible image, just change the Near side. To change the source on the hidden side, change the Far side. You don’t need to know whether the image being changed is actually the front or back side.

Transform Numbering Systems

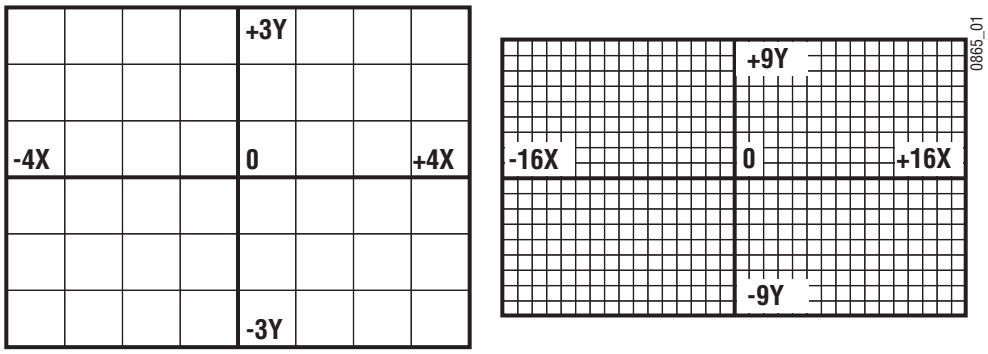
The Kayenne Transform Engine uses the following numbering systems to precisely define picture locations, picture size, and picture rotation and spin.

Screen Coordinates

The Kayenne Transform Engine accommodates two different aspect ratios, 4 x 3 and 16 x 9, selectable via the Video Standards menu. In 4 x 3 mode, the screen is six units high and eight units wide. In 16 x 9 mode, the screen is 18 units high and 32 units wide. The numbering system begins in the center of the screen, and has the standard horizontal X axis and the vertical Y axis (Figure 52). For simplicity, examples in this manual use the 4 x 3 aspect ratio.

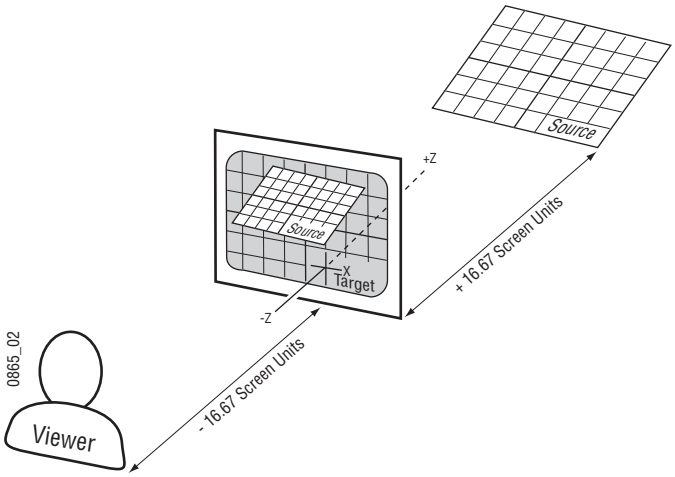
These coordinates can be used for monitor screen locations (channel target space with default global channel), or they can be applied to picture locations (channel source space).

Figure 52. Screen Coordinates



Screen units are also used to define Z axis dimension depth in 3-D space. Positive Z axis values are back behind the picture, and negative values are in front of the picture (Figure 53).

Figure 53. Viewer Location in 3-D Space



For perspective calculations the factory default viewpoint places the viewer -16.67 screen units from the monitor screen surface (4 x 3 aspect ratio). In this case, moving a full screen image 16.67 screen units back behind the screen makes the picture appear half its normal size to the viewer.

Size

Picture size is defined relative to picture screen units. A size of 0.50 indicates a picture is one-half its full size.

Rotation

Rotation is measured fractionally with respect to 360°. A value of 0.25 indicates a rotation of 90 degrees; 0.50 indicates 180 degrees (maximum rotation). Rotation values can be positive or negative, which determines the direction of rotation.

Spin

Spins are measured in number of 360° rotations (up to 999). Fractional spin values are also supported. A single axis 0.50 spin is the same as a single axis 0.50 rotation. Spin values can be positive or negative, which determines the direction of spin.

Skew

Skew supports values of ±999, though extreme values will probably rarely be used.

Aspect

Aspect values are in percentage of the original size, with 1.0 = 100%, 0.5 = 50%, etc.

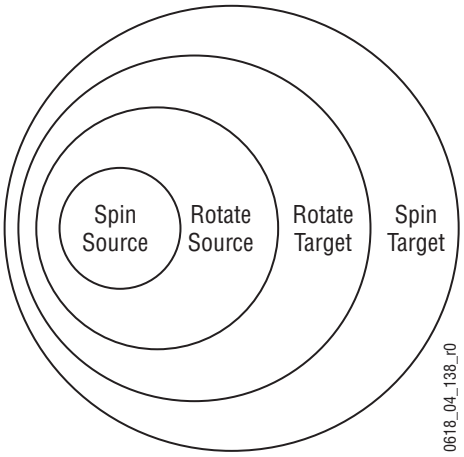
Perspective

Perspective supports values from 0-100, with 0.06 as the default.

Spin and Rotation Relationship

It is possible to use both Spin and Rotation at the same time in an effect. When both are used, the transforms are nested so that the values of one transform are applied after the previous transform values have been calculated. This nesting provides increased control of the effect dynamics. Source and Target space also affects the transform nesting order Figure 54.

Figure 54. Spin and Rotate Transform Nesting



Path Control

Paths

Keyframes specify parameter values at specific times in an effect. Most of the duration of an effect, however, occurs between these keyframes. The Kayenne system interpolates parameter values between keyframes (inbetweening). The trajectory, or path, a manipulated picture travels between keyframes is determined by how these inbetween values are interpolated. The Kayenne system offers you several path controls (Figure 55):

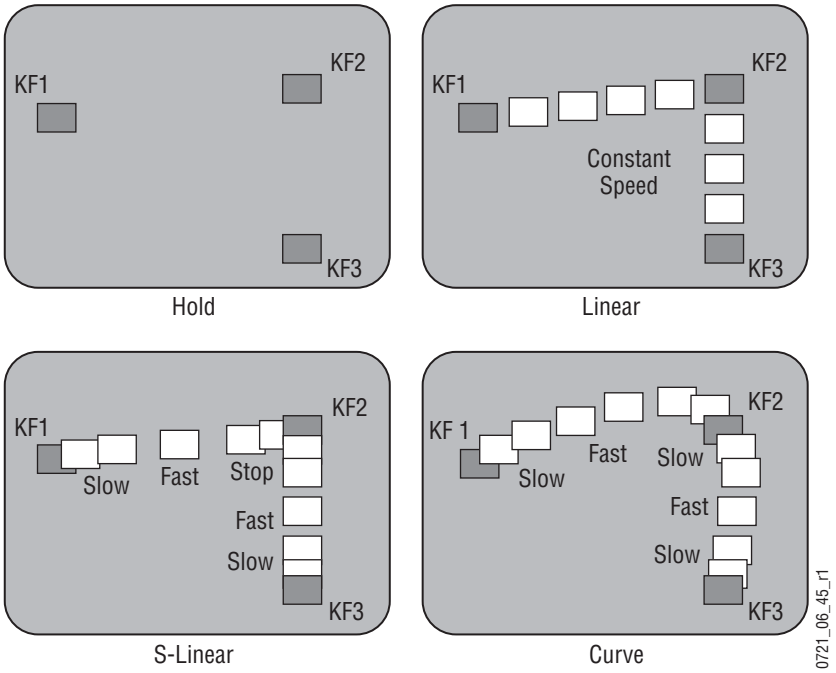
HOLD — No interpolation. Keyframes hold their values for their durations, then change all at once for the next keyframe.

LINEAR — Applies a linear interpolation between keyframes; no acceleration or deceleration is applied. Movement is mechanical with a constant velocity.

S-LINEAR — Applies a linear or straight line motion between keyframes, with acceleration and deceleration applied at the beginning and end of each keyframe.At each S-Linear keyframe the motion is stopped for two fields.

CURVE — This selection causes a rounded path through the keyframe. Paths are user adjustable with path modifiers (tension, continuity, and bias) described below.

Figure 55. Path Types



The path concept can also be applied to functions that do not move a picture across the screen, like matte hue changes. For these functions, the rate of change of the parameter follows the same path types above. For example, an S-Linear hue rotation will accelerate and decelerate the speed of the hue change at the beginning and end of the keyframe.

Tension, Continuity, and Bias Controls

When the **CURVE** parameter is selected, additional fine-tuning path controls become available:

TENSION — Controls the length of the tension vector. At a setting of 0.0, this imaginary line extends an equal distance into and out of the keyframe, and the path through the middle keyframe is curved.

CONTINUITY — Determines the angle of the path into and out of the keyframe.

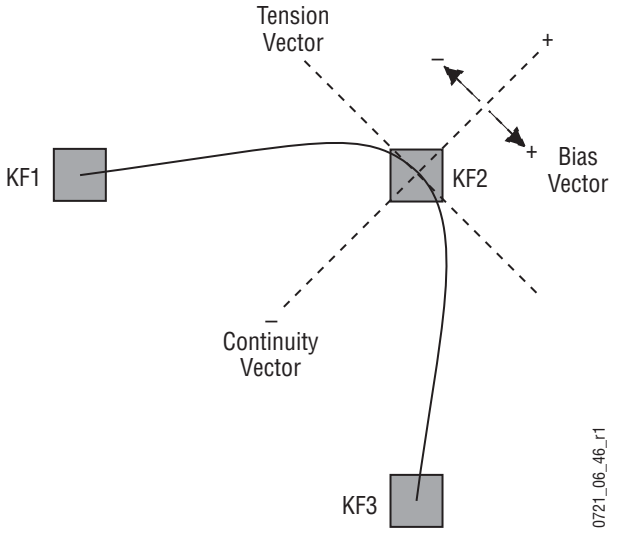
BIAS — Determines whether the path will be pulled towards the previous or the following keyframe.

In the following examples, a physical path is shown between three keyframes. The first keyframe (KF1) is the upper left square; the last keyframe (KF3) is the lower right square. The adjustments in these examples are applied to the middle keyframe only (KF2).

Path Vectors

With respect to the path between keyframes, each keyframe is made up of three vector parameters as shown below. The soft knob controls act on these vector parameters to adjust the path into (entry) and out of (exit) the keyframe. The path through KF2 is parallel to an imaginary line drawn between KF1 and KF3 (Figure 56).

Figure 56. Path Vectors



Vector Values

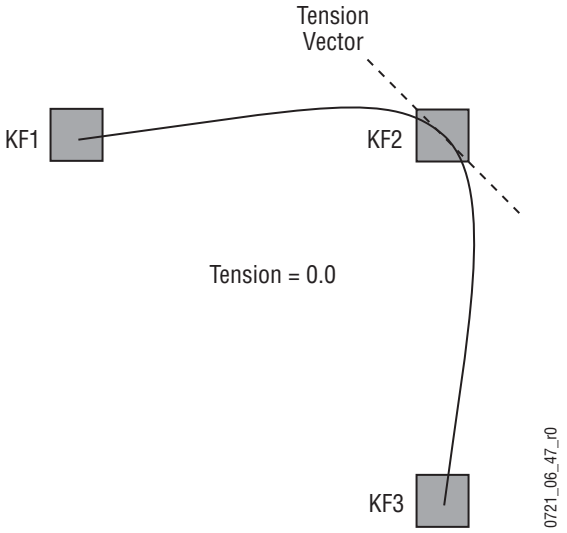
Path vector setting values of ± 1.0 are available, same as the Grass Valley Kaleidoscope DPM.

Tension Control

In the example below, the keyframes comprise a right angle, so the **TENSION** control operates on a 45° line drawn through the keyframe. This line is referred to as the Tension Vector and is parallel to a line drawn between adjacent keyframes (Figure 57).

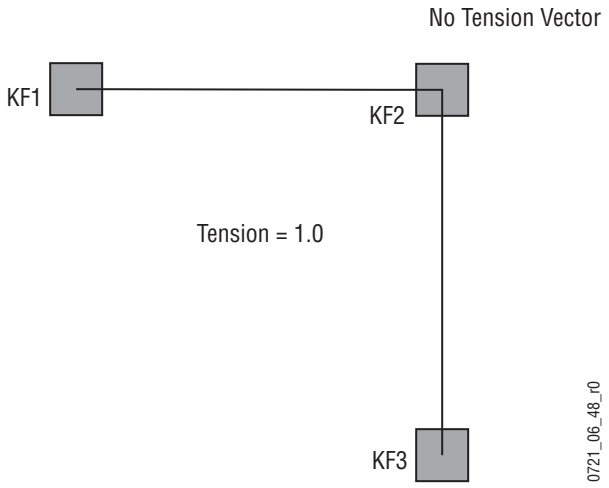
The **TENSION** soft knob controls the length of the tension vector. The length of the tension vector is inversely proportional to its parameter value. For example, at a Tension setting of 0 (zero), this imaginary line extends an equal distance into and out of the keyframe, and the path through the middle keyframe is curved. The unmodified KF2 is said to have a correction value of 0.0.

Figure 57. Tension Control Setting Zero



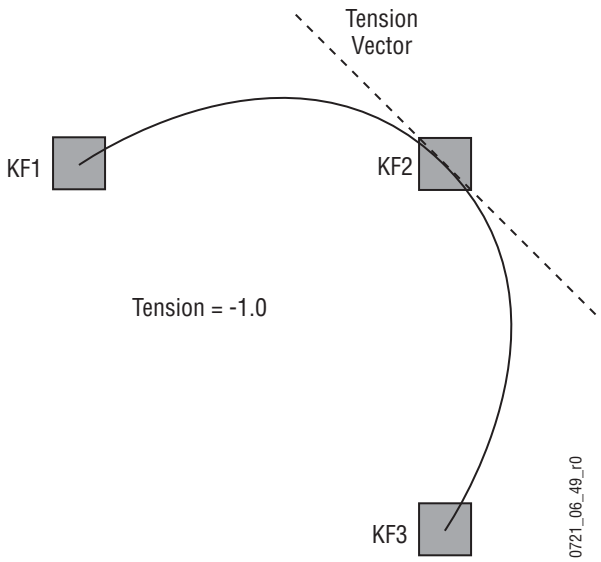
In the example below, the **TENSION** control is increased to 1.0, so that the Tension vector is shortened to non-existence through KF2 (Figure 58). The path enters and leaves the middle keyframe in a straight line as it takes on an S-Linear motion; decelerating as it enters the middle keyframe and accelerating as it leaves.

Figure 58. Tension Control Setting 1.0



In the example below, the **TENSION** control has been set to -1.0. This lengthens the Tension vector, causing the path through the middle key-frame to be longer and broader (Figure 59). The longer path will appear to make the image speed up through KF2 as it travels from KF1 to KF3.

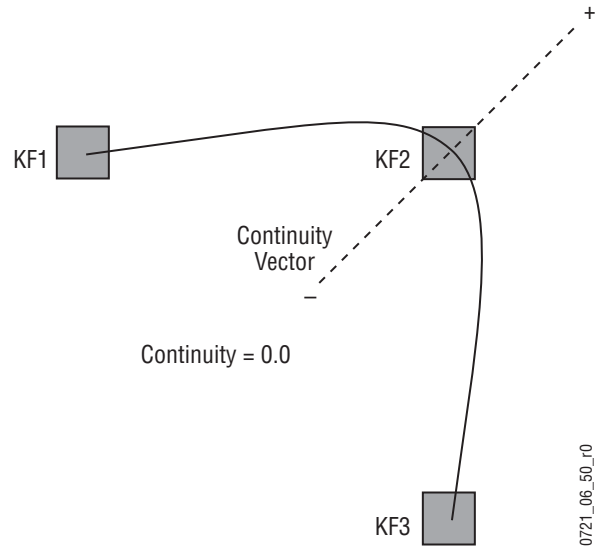
Figure 59. Tension Control Setting -1.0



Continuity Control

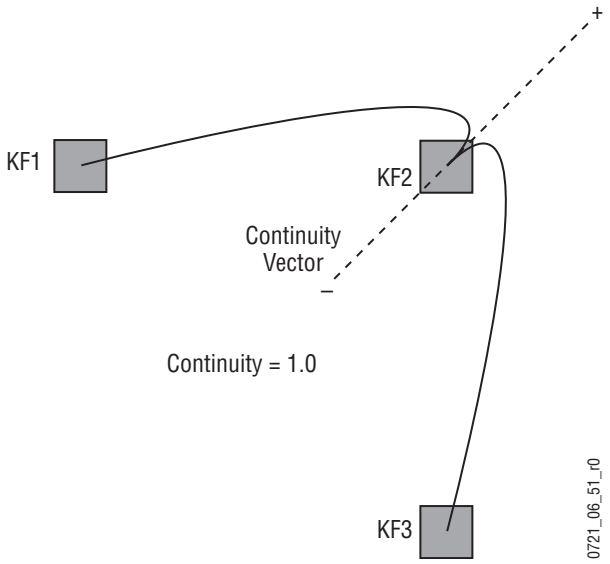
The continuity adjustment determines the angle of the path into and out of the keyframe. It is represented by a vector 90 degrees to the tension vector (Figure 60). The unmodified path shown is identical to the unmodified path of the other controls.

Figure 60. Continuity Control Setting Zero



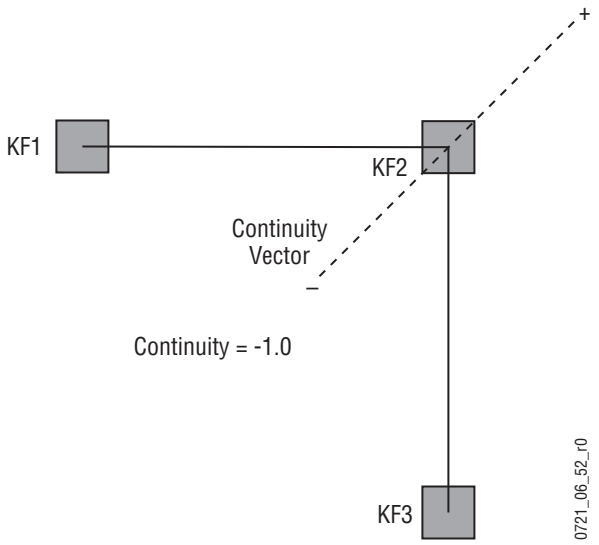
With continuity set to 1.0, the entry path through the keyframe is pulled positively along the continuity vector. The effect of 1.0 continuity is that of motion dropping into and then out of the keyframe, similar to a bouncing ball (Figure 60).

Figure 61. Continuity Control Setting 1.0



With continuity set to -1.0, the paths between the keyframes become straight lines, accelerating into the keyframe and decelerating as it leaves the keyframe (Figure 62).

Figure 62. Continuity Control Setting -1.0

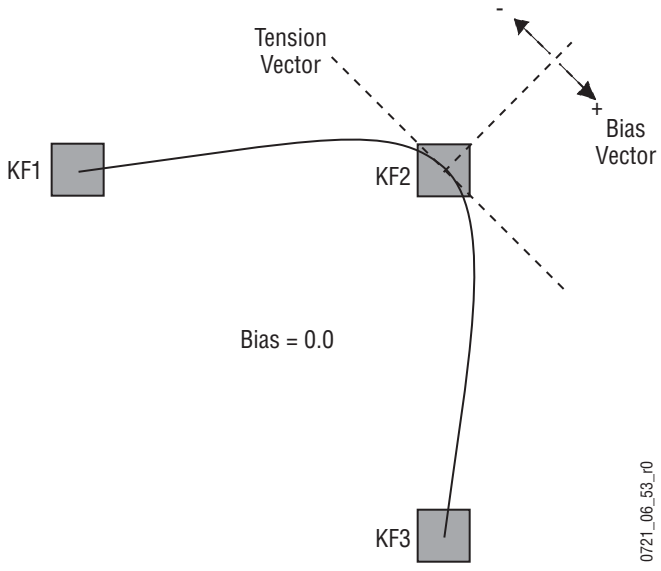


Bias Control

The **BIAS** control determines whether the path will be pulled towards the previous or the following keyframe. With extreme settings, all of the biasing will occur either before or after KF2. With bias set to 0 (zero), the curve through the keyframe is gentle as shown in Figure 63.

Note A Tension vector must be present for Bias control to be available.

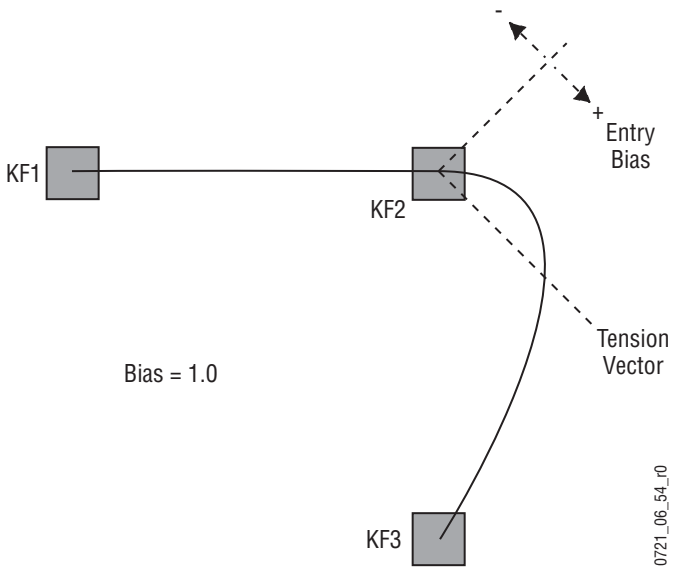
Figure 63. Bias Control Setting Zero



With the bias set to 1.0, the path is pulled towards the following keyframe. Entry into and exit from the keyframe is a straight line from the previous

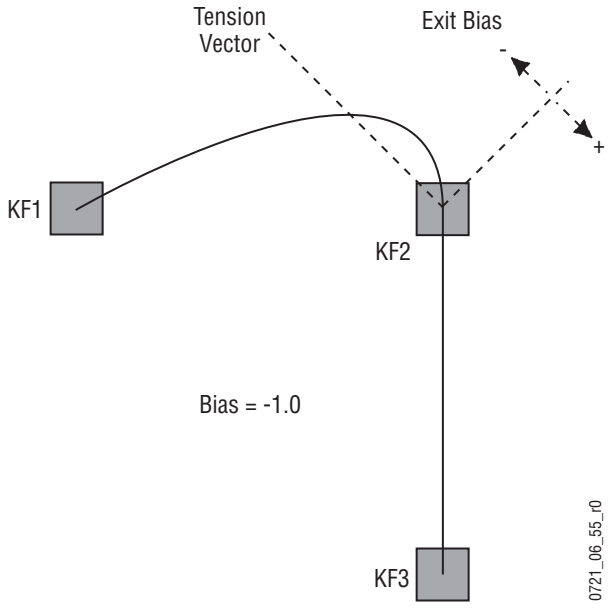
keyframe, and the path of the effect travels completely through KF2 before turning towards KF3 (Figure 64).

Figure 64. Bias Control Setting 1.0



With the bias set to -1.0, the path is pulled towards the previous keyframe. Entry into and exit from the keyframe is a straight line to the following keyframe (Figure 65).

Figure 65. Bias Control Setting -1.0



Section 3

System Operation

A basic Kayenne system is equipped with a Control Panel and a Menu Panel. These separate control components make up a Kayenne *control surface*. A control surface is typically used by a single operator. Interactions occur between the components of the control surface. For example, changing controls on the Control Panel can change the status of soft buttons on the Menu Panel, and vice versa. Remote Aux Panels are also available as an option. These remote panels are typically used by different operators at different locations.

The basic Kayenne system is operated using button, knob, and lever controls on the Control Panel and Aux panels, and touch screen and knob controls on the Menu Panel. Text and number entry is also possible via a standard PC computer keyboard. The Control Panel is used during live operation for fast, real time control. The Menu Panel is generally used in conjunction with the panel controls to set up effects and for system configuration. Effects can be saved for future recall, allowing fast and precise control of complex visual effects in real time.

The Kayenne Video Production Center is an extremely powerful and flexible production tool, but also provides basic operations available on a typical production switcher.

Control Panel Overview

4-ME Control Panel

The 4-ME Kayenne Control Panel is designed for large scale live productions. Sources are selected in the Source Select Modules on the left side of each Stripe. Delegated controls for various Hold, Row Delegation, and ME Bus selection are at the right of each Source Select Module (Figure 66).

Transition, Keying, Local/Master E-MEM, and device control selections are made on the following:

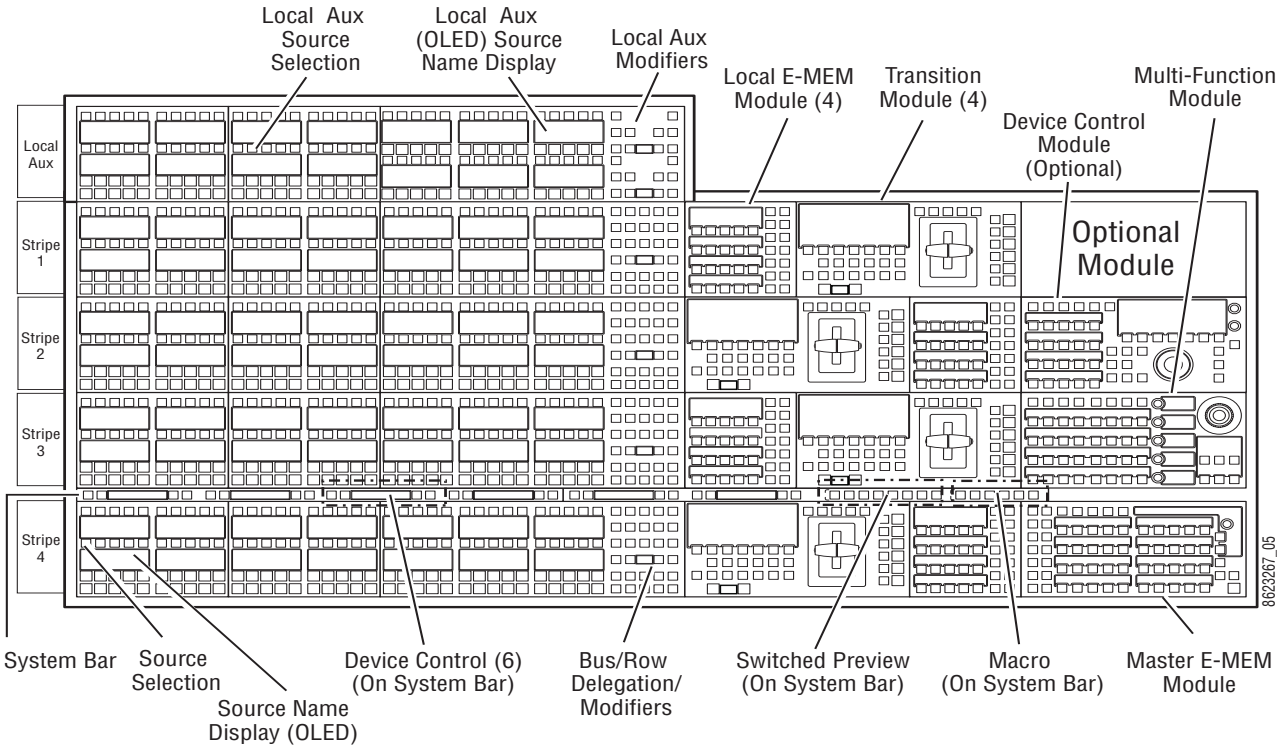
- KAYN-PNL-TRM - Transition Module
- KAYN-PNL-LEM - Local E-MEM Module
- KAYN-PNL-MEM - Master E-MEM Module
- KAYN-PNL-MFM - Multi-Function Module
- KAYN-PNL-SRC-35, 25, 15 - Source Select Module, available in 35, 25, and 15 button widths.

Note 15 button widths are only available with 1-ME Control Panels.

- KAYN-PNL-BAR-35 and 25- System Bar, available in two sizes to match various Control Panel widths.
- KAYN-PNL-DCM - Device Control Module, available as an option for 3 and 4-ME panels and as a satellite panel module.

The Kayenne Control Panel is shipped in a default configuration (Figure 66), however module configuration can be customized. For more information about module configuration options, refer to the *Kayenne Installation & Service Manual*.

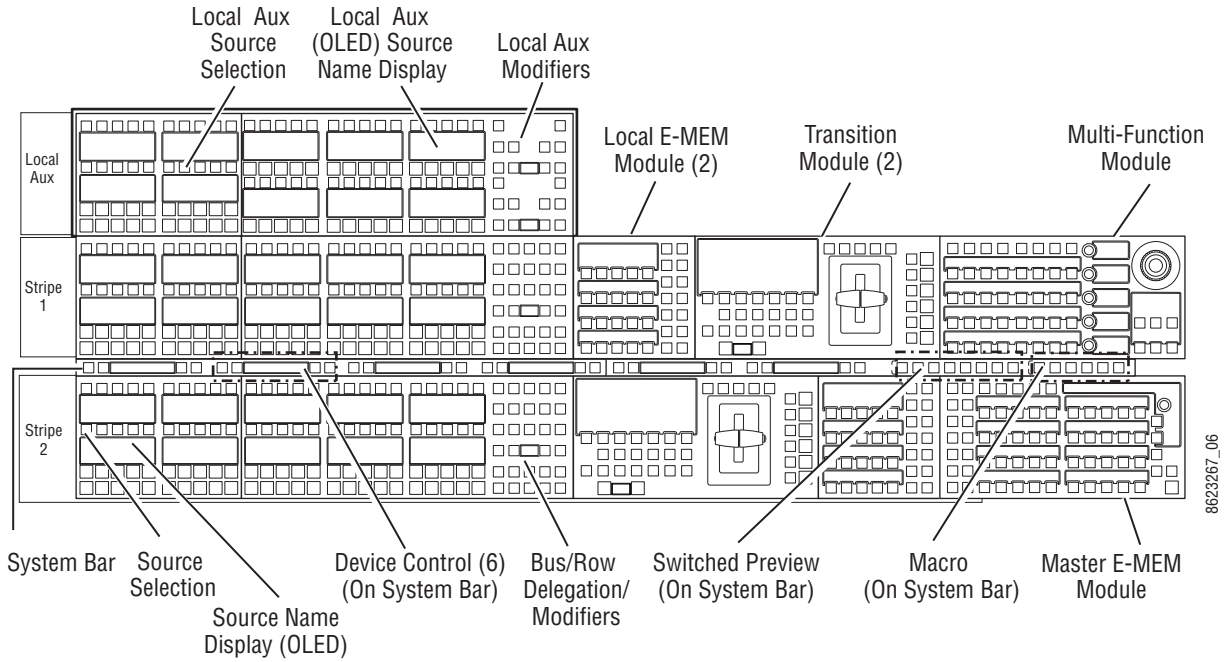
Figure 66. 4-ME Control Panel and Modules



2-ME Control Panel

The 2-ME Control Panel is similar to the 4-ME panel (Figure 67). Delegated controls for various Hold, Row Delegation, and ME Bus selection are at the right of the Source Select Modules.

Figure 67. 2-ME Control Panel and Modules



Other Control Panel configurations are available for the Kayenne system, including 1-ME and 3-ME.

Panel Saver Mode

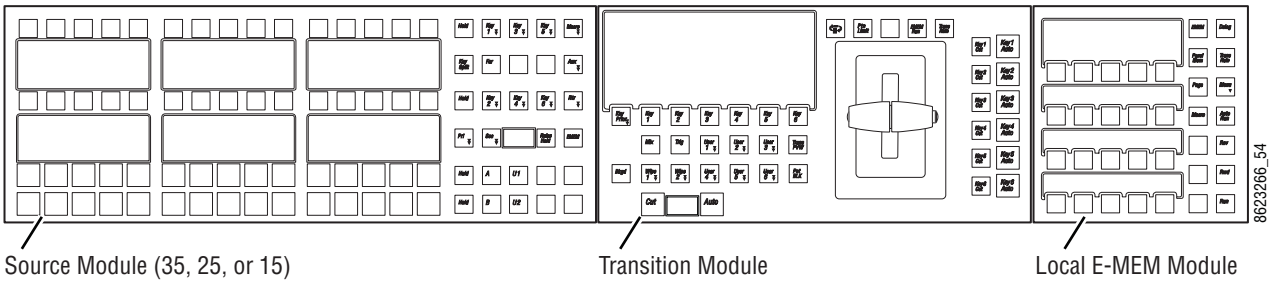
The Kayenne Control Panel will go into Panel Saver or “Sleep” mode, if no Control Panel buttons are pressed. The Control Panel goes into Panel Saver mode after 10 minutes of inactivity.

The Panel Saver mode for the Control Panel can be set to 10, 20, 30, or 60 Minutes (default is 10 minutes), in the Multi-Function Module, by pressing from Home: **Panl**, **Bri**, and turning the bottom soft knob labeled **Panel Saver Delay**, **Minutes**.

Module Overview

An ME Stripe has a module for source selection, transition, and individual E-MEM control (Figure 68). Additional Master E-MEM, Device Control (optional), Multi-Function, and Local Aux modules are populated to complete the control surface functionality. System operation information and procedures will be covered more thoroughly later in this chapter.

Figure 68. Portion of Control Panel ME Stripe



Transition Module

The Transition Module is organized into two control groups, the main transition controls, with status display and transition lever arm, and Keyer transition controls (Figure 69). For information about using transitions, see *Transitions on page 165*.

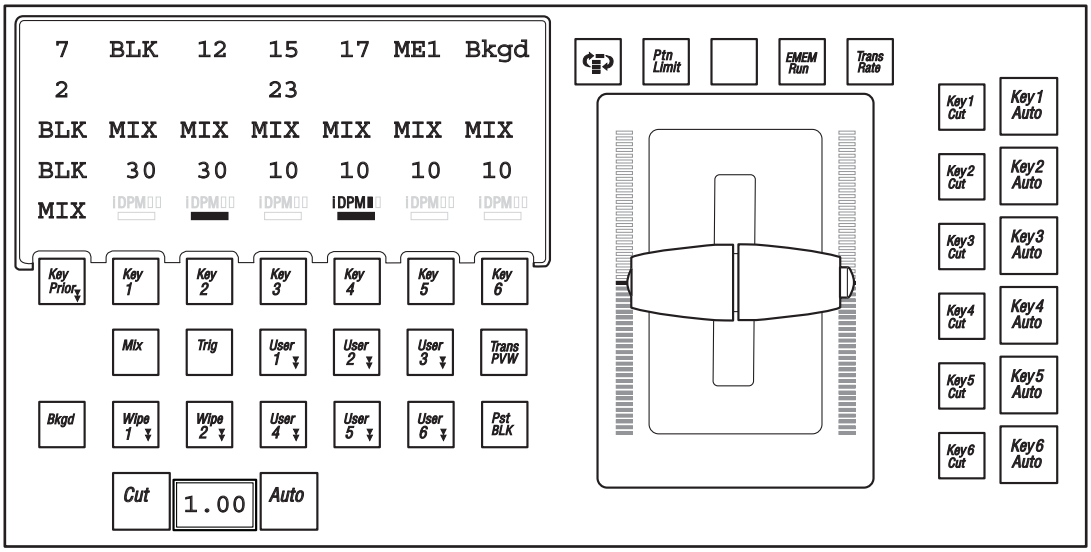
Main Transition controls:

- Lever Arm—For manual transitions
- Status Display—Displays bus and keyer delegation and status
- Next Transition Element buttons
- Next Transition Type buttons
- Cut/Auto Transition buttons with Trans Rate display
- Transition Preview and Preset Black buttons

Keyer transition controls:

- K1-K6 (Keyer) Cut buttons
- K1-K6 Auto Transition buttons

Figure 69. Transition Module Overview



Lever Arm and Bar Graphs

The Lever Arm is used to perform manual transitions, giving the same result as an Auto Transition and is generally used for manual control of the next selected transition. However, when the **E-MEM Run** button is enabled, the lever arm is delegated to controlling Local or Master E-MEMs.

When the Transition Module is delegated to running Local or Master E-MEMs, the scaling of the bar graph tracks the percentage of completion for the entire effect as the effect runs.

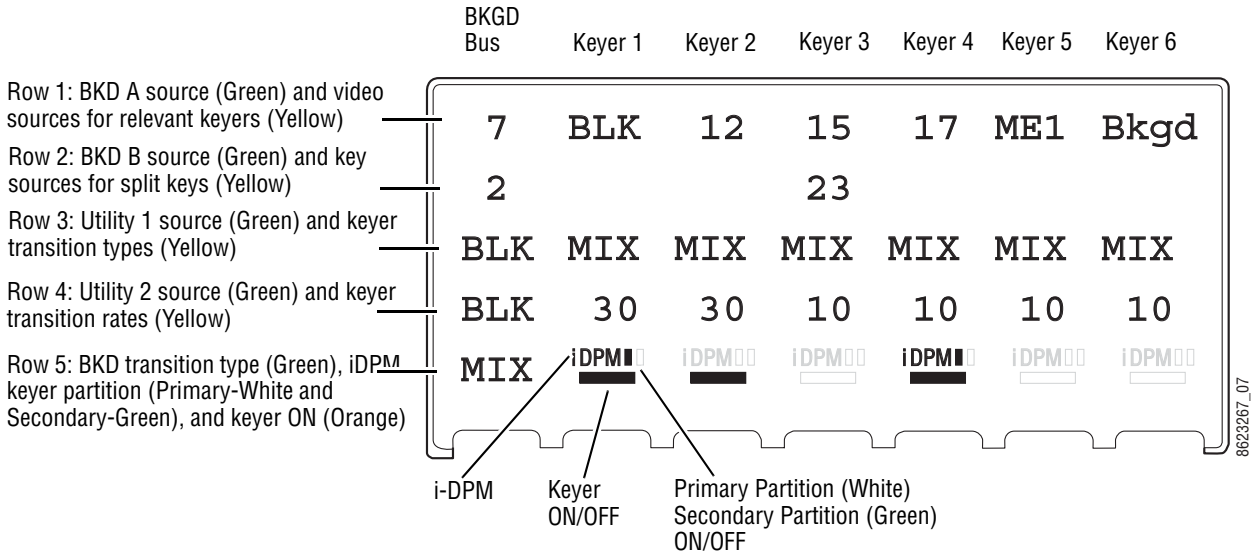
The Bar Graph shows the percentage of completion of the transition, per partition (Primary and Secondary). Manual transitions display bars, auto transitions are tracked with a single indicator, displaying from 0-100 percent showing the percentage complete of the current transition and the direction of movement required to complete the transition. The bar graph is not necessarily identical to the lever arm position. For example, when the **Auto** button is pressed, the bar graph will track the transition. For auto transitions, the bar graphs similarly track the percentage of completion of the transition (per partition in Split Mode).

The Lever Arm can be split into two separate arms to allow each partition to be transitioned separately (Primary and Secondary). To unlock the two lever arms, push the button in on the left arm. To lock, align the two sections and push the button in on the right.

Transition Module Status Display

The Transition Module Status Display has seven columns with four character rows plus one row with both BKGD bus text (column 1) and two rows of status indicators for keyers 1-6 (Figure 70).

Figure 70. Transition Module Status Display Example



Additionally, when the **Key Prior** button (Keyer Priority) is pressed on the Transition Module, Row 4 changes from displaying transition rates to Keyer Priority for Keyers 1-6 and shows the differences between the current and next priority stacks.

Function Buttons

The top button row, above the lever arm (Figure 69) provides the following functions (from left to right):

Figure 71. Exchange ME Button Icon

Exchange ME (button icon, left)—Toggle button for fast exchange (temporary delegation) of an ME not delegated to a Stripe (see *Exchange ME on page 109* for more information).

Pat Lim—Inactive.

EMEM Run—Runs an E-MEM from the Local or Master E-MEM Module.

- SPOP (single button push) of the **EMEM Run** button delegates the lever arm to control the local E-MEM.
- DPOP (double button push) of the **EMEM Run** button delegates the lever arm to control the Master E-MEM timeline.
- Pressing the E-MEM Run button again, exits the mode.

- **Trans Rate**—Allows Auto and Key Mix 1-6 buttons having an associated transition rate to be altered, set, or queried. Once the Trans Rate button is selected, the associated buttons flash and the Local E-MEM Module changes to Trans Rate Mode for input. Pressing one of the flashing buttons indicates that its transition rate is to be set. While holding down this button any of the other flashing buttons can be pressed for multiple selection.

Next Transition Buttons

The Next Transition Element buttons are located just below the status display: **BKGD**, **K1-K6**, and **Key Prior**.

The **Next Transition Type** buttons are located below the Next Transition Element buttons: **Mix**, **Wipe 1**, **Wipe 2**, and **User 1-User 6** (radio buttons). Selecting one turns the others off if a next transition element button is not held down.

Cut and Auto Buttons

The **Cut** and **Auto** buttons are located at the bottom, middle of the Transition Module.

- **Cut**—Executes a cut on the buses selected as being in the set of next transition elements.
- **Auto**—causes the selected next transition type to be executed with a Next Transition Duration.

A press and release of a Next Transition Element button high tallies the button and low tallies the others.

To multi-select next transition element buttons:

- Press more than one button at a time or,
- Press and hold down any of the eight transition element buttons and then select one or more of the remaining buttons.

The rule is that while any next transition button is held down, other next transition buttons can be added or removed from the next transition by toggling that button.

Additional Buttons

- **Trans PVW** (Transition Preview)—When a transition is performed in this mode, it occurs only on the LAP output. At completion of the transition, the Transition Preview is auto-cancelled.

  Pressing the **Trans PVW** button causes the button to flash. Both the PGM and LAP outputs show the current PGM out stack.

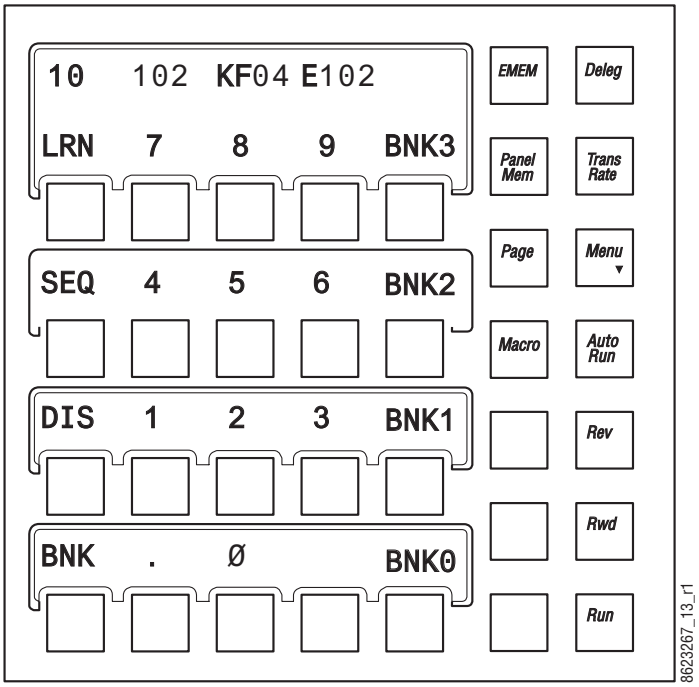
- **Trig** (Trigger)—Inactive
- **PST Black** (Preset Black)—Pressing the **PST Black** button, then pressing the **Cut** button, **Auto** button, or using the lever arm, will delegate the first transition using Mix or Wipe to black.

Local E-MEM Module

The Local E-MEM Module is part of an ME Stripe and is organized into two sections, the mode area (left), with supporting buttons and status display, and two rows of function buttons (right) for mode selection and effects control (Figure 72). For more information about using E-MEMs, see *E-MEM Operations* *on page 181*.

Bank buttons **BNK 0** - **BNK 3** in the Local E-MEM Modules (right side of keypad) provide faster access to banks (Figure 72). A single press of the button delegates to the bank indicated, a DPOP of the button takes you to the bank indicated + 4, e.g. one press for Bank 0, DPOP for Bank 4. The highest bank available is Bank 7 (DPOP of **BNK 3** button). The buttons will be unlit for Banks 8 and 9. A DPOPed selection high tallies cyan (blue) color.

Figure 72. Local E-MEM Module Example

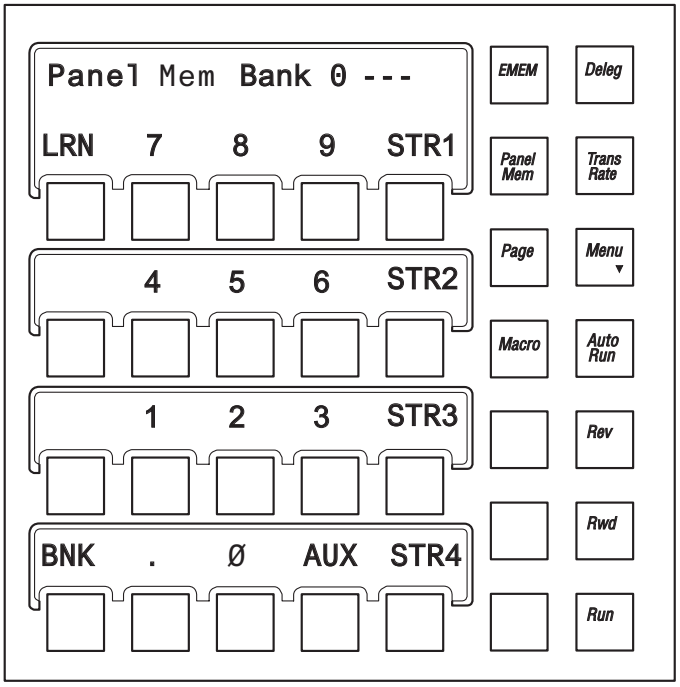


There are several modes available with the Local E-MEM module, accessed by pressing the following buttons:

- **EMEM**—Local ME E-MEM recall and edit mode,
- **DELG**—Change ME control on selected Stripes,
- **Panel Mem**—Learn and recall panel memory,
- **Trans Rate**—Set transition rates for ME,
- **Macro**—20 Macro recalls can be set to any page using the **Page** button in this mode,
- Dissolve Rate—Press **Learn**, **Dis**, **Trans Rate** buttons

The Local E-MEM Module display shows specific information for each mode, for example if the **Panel Mem** button is pressed, Panel Memory information is displayed as shown in Figure 73.

Figure 73. Local E-MEM Module, Panel Memory Example

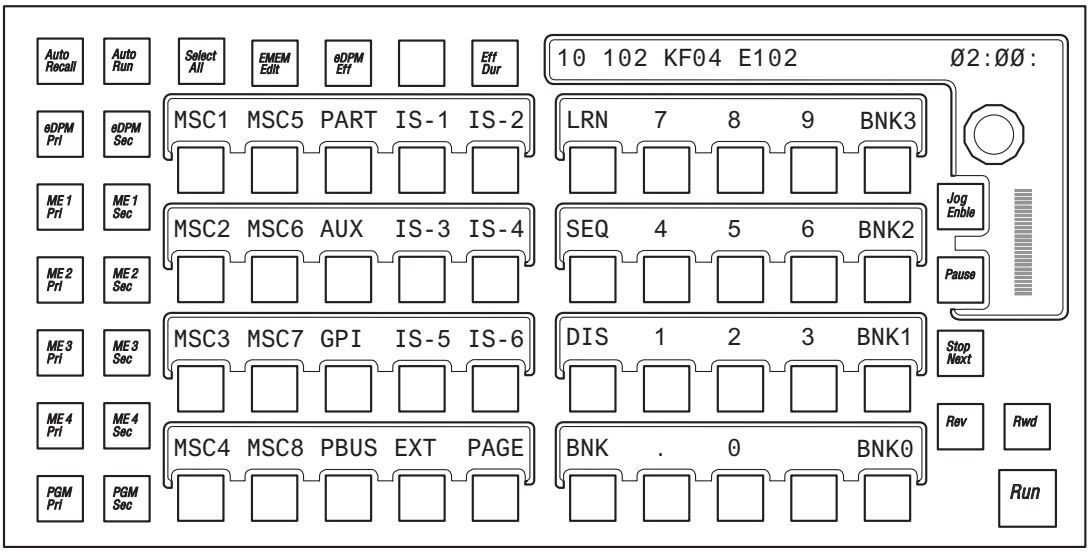


Master E-MEM Module

The Master E-MEM Module (Figure 74) is not part of a Stripe, it provides E-MEM control across the Control Panel and Local Aux Module. The Master E-MEM Module can control the entire Kayenne effects system, including e-DPM. The 19 Enable/Delegate buttons (**MISC 1-8**, **PART, AUX, GPI, PBUS, IS 1-6, and EXT)** are used to both enable and delegate, which is determined by the mode selection (Run control verses Edit).

The Bank buttons **BNK 0** - **BNK 3** have been placed in the Master E-MEM Module (right side of keypad) to provide faster access to banks (Figure 74). A single press of the button delegates to the bank indicated, a DPOP of the button takes you to the bank indicated + 4, e.g. one press for Bank 0, DPOP for Bank 4. The highest bank available is Bank 7 (DPOP of **BNK 3** button). The buttons will be unlit for Banks 8 and 9. A DPOPed selection high tallies cyan (blue) color.

Figure 74. Master E-MEM Module Example



The following describes the Master E-MEM Module organization (Figure 74):

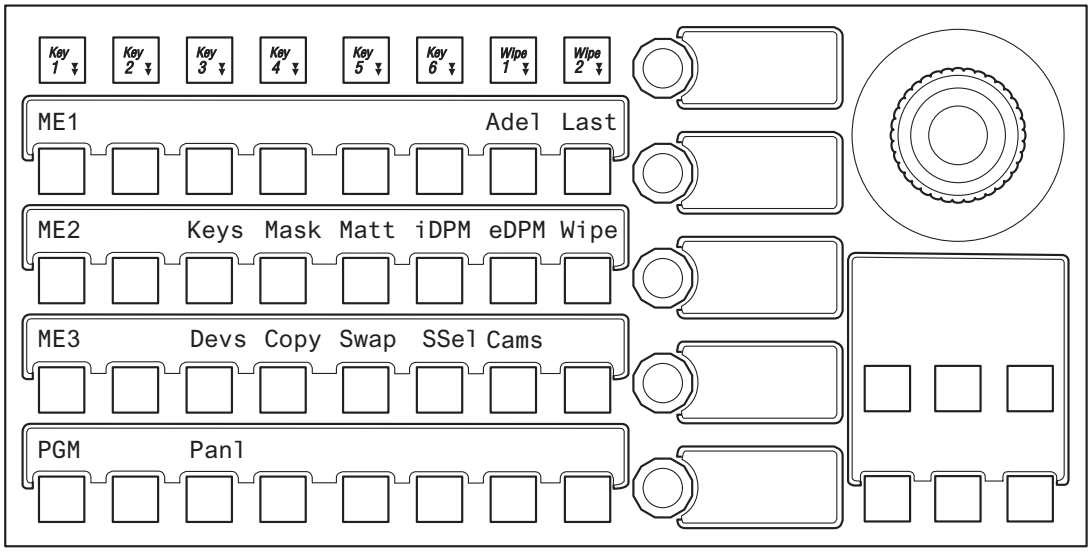
- Two rows of delegation buttons (left side),
- One row of Function and Mode buttons across the top (left),
- Jog Knob with LED (top right)—Rotating this knob clockwise advances through the effect. Rotating the knob counter-clockwise moves the effect position backwards. The degree of rotation advances the current effect position (time) proportional to the effect duration (not to keyframes). Two full rotations moves from one end of an effect to the other. The status display above the Jog Knob displays the current effect's position (M-SS-FF).
- Below the Jog Knob (right side) is the Bar Display that also shows the current effect position, and the **REW** and **Run** effects buttons.
- Just left of the Bar Display is the Jog Enable button (enables the Jog Knob) and the **Pause**, **Stop Next**, and **Rew** effects function buttons,
- In the center are the Level buttons with displays. The Level buttons have two modes:
  - Enables for run control and
  - Delegates for keyframe editing.

Multi-Function Module

The Multi-Function Module with positioner, delegates to the following functions:

- Keyer Modifiers,
- Mask Modifiers,
- Matte Modifiers,
- Wipes,
- e-DPM,
- i-DPM,
- Copy/Swap utilities,
- Device control, and
- Source Selection.

Figure 75. Multi-Function Module Example



The following describes the Multi-Function Module organization (Figure 75):

- Function button row (top left), with six Keyer (**Key 1-Key 6**) buttons and **Wipe 1** and **Wipe 2** buttons for delegating to a keyer for the selected ME.
- Below the function row is the main delegation area with buttons and status display:
  - The first column (left) are radio buttons for delegating the MEs, for example **ME 1**, **ME 2**, **ME 3**, and **PGM** as shown in Figure 75.
  - **Adel** button (right)—ON supports 'Auto Delegation' of this module when selecting a source on a key bus, delegating a keyer in the bus control section of any Source Select Module, selecting a keyer in any Next Transition section of any ME, and selecting Wipe 1 or Wipe 2 in any Transition Module,
  - **Last** button (far right)—Toggles between current and previous delegation modes,
  - **HOME** button (only displayed when not at the Home position)—Moves the display to the top or 'Home' level,

Note The **HOME**, **Adel**, and **Last** buttons change position in some delegated modes, for example in Copy or Swap mode, these buttons move from the main delegation area to the Multi-Function area just below the joystick.

  - The other buttons in the main delegation area, when in the Home position, delegate to: Keys, Masks, Mattes, i-DPM, e-DPM Wipe, Device, Copy, Swap, Source Select, and Panel Preference. When pressed, the LEDs and buttons are delegated to those modes and modifiers,

- Knob row with LEDs (middle-right) provides adjustment and display of parameters for delegated functions (Figure 75),
- Joystick (top-right) performs multiple functions depending on the delegation, for example for keyers the joystick positions a delegated keyer (X,Y, and Z axis), but with device control the joystick performs jog control operations (Up, Down, Fast Forward, Rewind—center button performs Mark-In),

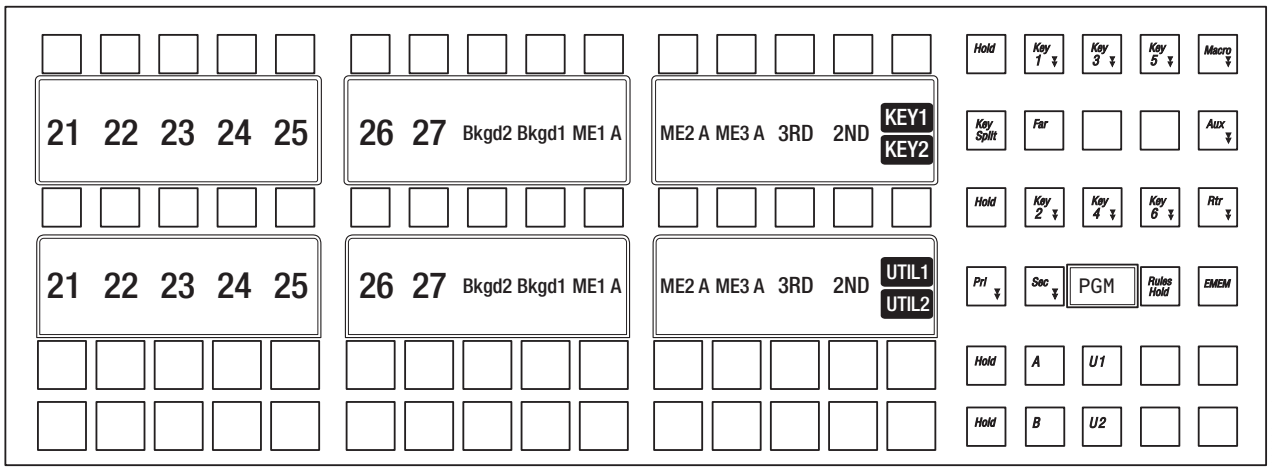
Note The joystick can be calibrated from the MFM: from Home, press **Panl**, **Cali** and follow the instructions displayed on the MFM.

- Multi-Function area, (bottom-right) below the joystick, supports various delegated functions, for example Copy/Swap and Devices.
  - The **XFER** button, displayed in the Multi-Function area when the Wipe menu is displayed, assigns control of values and status display for the five other buttons in the group to the five soft knobs. Pressing one of the soft knobs delegates control for numeric entry in the main delegation area. Pressing **Enter** completes the numeric entry operation.

Source Select Module

The Source Select Module is available in three configurations: 15, 25, and 35 button models.

Figure 76. Source Select Module Example



Text Display Outlines

Outlines border the display text; this is the default. Outlines can be toggled off/on in the MFM: from Home, press the **Panl**, **Bri**, buttons then toggle the **OUTL** (under Joystick) button.

Source Name Text Wraps

Inserting a space in the Source Name wraps the text to the second line. For example typing **CAM** then a space then the number **3** would wrap '3' to the next line of the OLED button display.

The Source Select Module can be viewed as being in two sections; left for source selection buttons, in groups of five, with SND (Source Name Display) display and right, with function and delegation buttons (and one display) for that ME (Figure 76).

Source Select Buttons and SND

The following describes the Source Select Module organization for source select buttons (Figure 76):

- Source Selection buttons (left)—Can be mapped and delegated to buses, macros, routers, etc. and there are no limits to mapping so the same function or source can be mapped numerous times, and saved in Panel Memory (Local E-MEM Module/File Ops, Panel Mem menu). Source selection buttons can be mapped as:
  - Switcher sources—Can be delegated to source selection for any ME bus, Aux bus/Aux selection, Router control, Macros, or E-MEM recall,
  - Shift function—There are four shift levels 1st (unshifted), 2nd, 3rd, and 4th,
  - Row Delegation function—Mapped to the right-most source select button (default). The SND (Source Name Display) associated with the row delegation button indicates the name of the bus or function, e.g. K2, MACRO, Router, U2, etc.,
- SND LEDs— SNDs have two modes, 'Full' and 'Split'. If both adjacent rows have identical text for a source, it is displayed in full, i.e. large text. If the two rows have different text, the SND is split into two rows of smaller text. SNDs show source names, macro names, router source and router destination names, Aux bus numbers, etc.
- Shift buttons—Shifts can be mapped anywhere on the Source Select Module (or nowhere) using the **User Prefs**, **Button Mapping** menu (default is 2nd and 3rd on the second and third source select buttons from the right).

Function and Delegation Buttons

The following describes the function and delegation buttons (Figure 76):

- **Hold** button—Sets a bus hold on the delegated row.
- ME bus select buttons—**K1-K6**, **A**, **B**, **U1**, and **U2** in columns 2-4, pressing one of these buttons delegates that bus.
- **Macro** select button—Delegates rows 1 and 2 of a Source Select Module to macros.

Note To delegate one row, hold down the Macro button and press a bus delegation button or hold down the bus delegation row button and press the Macro button.

- **Key Split** button—Creates a split key when a source is selected for the fill signal, the **Key Split** button is held down, and a source is selected on a row delegated to the key bus.
- **Far** button—The Far modifier is used for DPM rotation transitions. During DPM operations, the side that is seen by the user is defined as the 'near side'. To set the far side for the current delegation of a bus, press and hold the **Far** button (and shift button if necessary) and make a source selection for that side.
- **Aux** select button—Delegates Rows 1 and 2 of a Source Select Module to Aux bus control.
- **Router** select button—Delegates Rows 1 and 2 of a Source Select Module to Router selection.
- **Rules Hold** button—When pressed (toggle), Source Rules will not be applied to the ME delegated to that Source Select Module.
- **E-MEM** select button—Delegates rows 1 and 2 of a Source Select Module to E-MEMs.

Note To delegate one row, hold down the E-MEM button and press a bus delegation button or hold down the bus delegation row button and press the E-MEM button.

- **Pri** partition select button—Delegates all four rows of a Source Select Module to the primary partition (Rows 1 and 2 are delegated to the last delegation when **Pri** was used, Row 3 is delegated to the A bus and Row 4 is delegated to the B bus).
- **Sec** partition select button—Delegates all four rows of a Source Select Module to the secondary partition (Rows 1 and 2 are delegated to the last delegation when **Sec** was used, Row 3 is delegated to the U1 bus and Row 4 is delegated to the U2 bus).
    - Pressing the **Pri** and **Sec** buttons together causes both buttons to high tally. Both partitions are controlled but only tallies for the Primary partition will be seen on the Source and Local E-MEM modules.

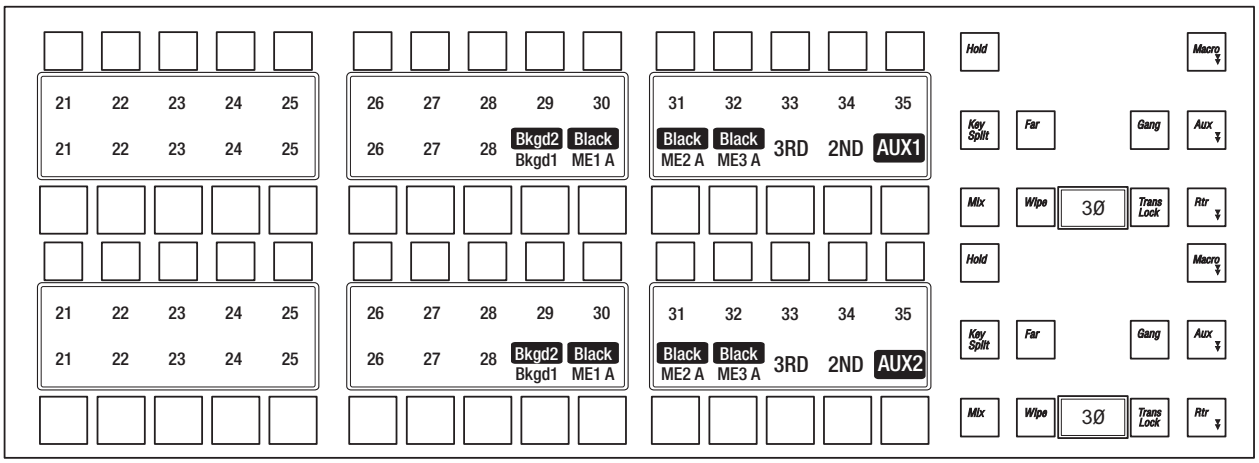
Note Pressing the **Pri** or **Sec** buttons delegates the Transition and Local E-MEM Modules in addition to the Source Select Module and modifies what wipe generators can be selected on the Matte and Wipe delegations of the Multi-Function Module.

- ME delegation indicator—Located between the **Sec** and **Rules Hold** buttons, displays the current delegation of the panel row to the logical ME (ME-1, ME-2, PGM, etc.).

Local Aux Module

The Local Aux Module is located at the top of the Control Panel, above the Stripes (Figure 77).

Figure 77. Local Aux Module Example



Included features:

- The following will tally button colors in the Local Aux Panel to more easily identify special sources:
  - eDPM=Blue,
  - IS (Image Store Channel)=Orange, and
  - Preview Primary=Yellow.
- Outlines border the display text; the default. Outlines can be toggled off/on in the MFM: from Home, press the **Panl**, **Bri**, buttons then toggle the **OUTL** (under Joystick) button.
- To allow a larger font, the Local Aux Panel OLED displays the ID *or* Name (if configured), only.
- Inserting a space in the Source Name wraps the text to the second line. For example typing **CAM** then a space then the number **3** would wrap '3' to the next line of the OLED button display.

Note If a name is configured, the Eng ID can still be seen in the Menu Panel.

The Local Aux Module is similar to the Source Select Module, the main differences are:

- Status displays (OLEDs) are located between the button rows (Figure 77), both at the top and bottom of the module,
- There are two rows of small buttons and two rows of larger buttons, and
- Different function buttons on the right side of the module, as shown in Table 1.

Table 1. Local Aux Panel Function Buttons

Function Button	Local Aux Module	Source Select Module
Hold	X (2)	X (4)
Macro	X	X
Key Split	X	X
Far	X	X
Aux	X	X
Rtr	X	X
Gang	X	
Mix	X	
Wipe	X	
Trans Lock	X	
Key 1-Key 6		X
Pri		X
Sec		X
Rules Hold		X
EMEM		X
A (Bus)		X
B (Bus)		X
U1 (Bus)		X
U2 (Bus		X

The Local Aux Module provides the following functionality:

- Aux Bus control (the default), including Aux Bus dissolves and wipes,
- Router control,
- Panel Ganging, and
- Macros.

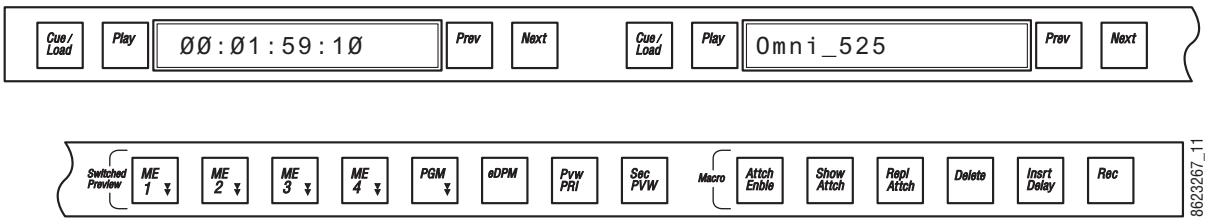
There are two identical sets of Aux Bus controls; upper and lower, both sets of controls operate identically. For each set of controls, pressing a button on the top row selects an Aux Bus destination and pressing a button on the bottom row selects a source for the selected top row Aux Bus.

System Bar

The System Bar provides (Figure 78):

- Switched Preview selection,
- Macro editing functions,
- Machine control, and
- Displays reboot indications.

Figure 78. System Bar Example



Switched Preview Button Group

The Switched Preview button group is the second button group from the right on the System Bar (Figure 78).

Switched Preview is a special output of the switcher that permits previewing any source. Typically this output is connected to a dedicated Switched Preview monitor. The Switched Preview button group is used to control what signal is routed to that output.

ME 1, **ME 2**, **ME 3**, **ME 4**, **PGM**, **eDPM**, and **Pvw PRI**, are radio buttons, and **Sec PVW** is a toggle button (on/off).

ME 1 - PGM buttons—Routes the primary preview of that ME to the Switched Preview output. When **Sec PVW** is toggled on, routes the secondary preview of that ME (if it has been split) to that output.

eDPM button—Routes the A output of the eDPM to the Switched Preview output. When **Sec PVW** is toggled on, routes the C output of the eDPM to that output.

Pvw PRI button— Preview Prime is a specially named bus that is available on the Switched Preview button group, and can be mapped as a delegation on the Local Aux Module. When the Switched Preview **Pvw PRI** button is on, the currently selected source on that Preview Prime bus is routed to the Switched Preview output. When the Local Aux Module has also been delegated to **PVW Pri**, any source mapped on the Local Aux Module buttons can then be selected for display on the Switched Preview output.

Sec PVW button—As described above, when the **Sec PVW** button is on, it selects the secondary preview of an ME, or the C output of the eDPM for display on the Switched Preview output. This button is inactive when **Pvw PRI** is selected, since that bus has only one output.

Macro Editing Button Group

The Macro Editing buttons (Figure 78) work in conjunction with the source select rows delegated to macros:

Attch Enble button—Turns on/off macro attachments.

Show Attch button—Flashes all source select buttons that have a macro attached.

Repl Attch button—Substitutes a macro for the button's normal action.

Delete button—Enables the macro delete operation. Pressing a button on a bus row delegated to macros deletes the macro and ends the delete operation.

Insert Delay button—Changes the delegated macro row(s) to display Time Delay on the SNDs in increments of seconds and tenths of a second (1st shift level—unshifted) or fields (2nd shift level).

Record button—Enables the record operation. Pressing a button on a bus delegated to Macros starts the recording, the recording is ended by pressing the **Record** button again or pressing the **Macro** button (on the Source Select Module) again.

Device Control Groups

There are six Device Control groups for 25 and 35 button Source Select Modules and two Device Control groups for 15 button Source Select Modules.

Each Device Control group (Figure 78) provides a:

Cue/Load button—Pressing this button after the Prev or Next buttons have been pressed, sends a load command if the clip is different from the clip currently loaded or a cue command if the clips are the same.

Play button—Sends a Play command to the selected device (pressing **Play** a second time pauses the device).

Display—Displays the current clip.

Prev button—One button press steps backward through the current directory of clips.

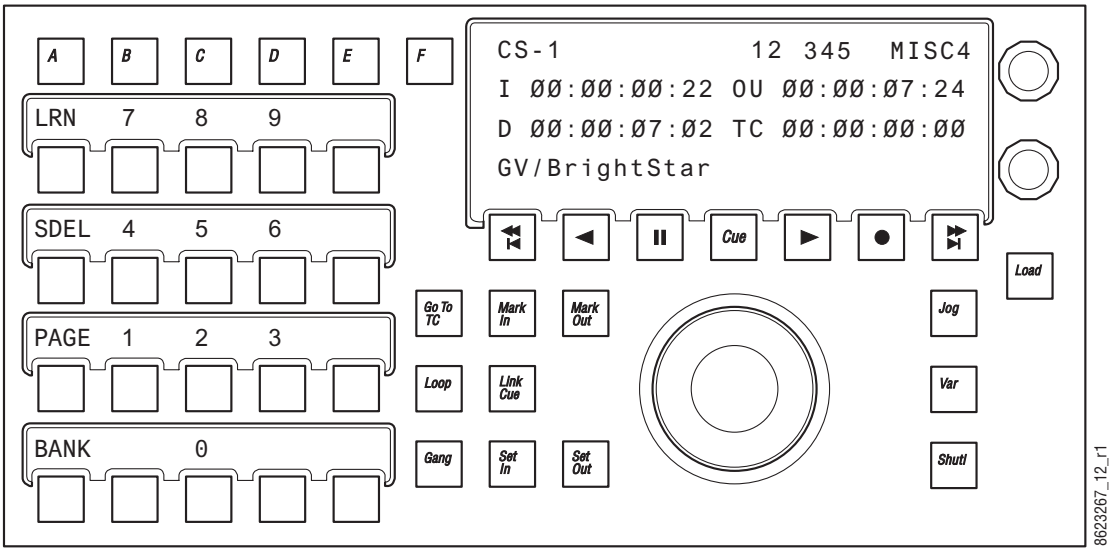
Next button—One button press steps backward through the current directory of clips.

Reboot indication—The left-most Device Control display is used as a frame reboot indication and the next (to the right) Machine Control display is used to indicate a Control Panel reboot.

Device Control Module

The Device Control Module brings together essential machine controls that are currently being performed by auxiliary devices, into a single point of control.

Figure 79. Device Control Module Example



The Device Control Module controls all configured devices including:

- Serial control of VTRs and DDRs,
- Ethernet control of VTRs and DDRs,
- Image Store, and
- ClipStore.

Device Control Functionality

The Device Control Module supports the following functionality:

- Run control:
  - Play,
  - Cue,
  - Stop/Pause,
  - Jog +/-,
  - Fast Forward, Rewind,
  - Variable speed play,
  - Mark in/out,
  - Loops,
- Library of cues (Q-MEM),
- Record, and
- Ganging.

Device Control Module Organization

The Device Control Module is organized as follows (Figure 79):

- Device Select button group (buttons A-F), located at the top-left of the Device Control Module, has six buttons labeled **A-F**. These buttons select devices for control by the Device Control Module and when selected, show status for that device in the Status Display (top-left).
- Status Display, located top-middle-right (right of the Device Select button group),
- Run Control button group (with Cue button), located middle-right (just below the status display),
- The two soft knobs (Knob 1 and Knob 2), at the far right of the Device Control Module (right of status display), are:
  - Knob 1, Device select knob (top)—turn to scroll through and delegate devices, and
  - Knob 2, Clip select knob (bottom)—turn to scroll through and select clips (parameters for both knobs are shown on the right in the status display.),
- Clip Editing button group, located in the middle of the Device Control Module, has eight clip control buttons:
  - **Go To TC**—Device jumps to keypad entered numeric time code data.
  - **Mark In**—Captures the current Time Code of the selected device and stores it as the 'Mark In' position.
  - **Mark Out**—Captures the current Time Code of the selected device and stores it as the 'Mark Out' position.
  - **Loop**—If Mark In/Mark Out points are set, causes the selected device to loop from the Mark Out point to the Mark In point, if points are not set, causes the device to loop from the end of a clip to the beginning.
  - **Link Cue**—Allows you to learn more than one device into a cue.
  - **Gang**—Works with Device select button group to 'Gang' devices.
  - **Set In—**Allows you to set a Mark In into a clip using numeric keypad entry.
  - **Set Out**—Allows you to set a Mark Out into a clip using numeric keypad entry.
- Jog knob—The Jog knob (middle-right) is associated with the Jog, Var, and Shuttle mode buttons (middle, right of Jog knob). The jog knob operates in the three modes (with button on) as follows:
  - **Jog**—Complete 90 degree rotation of the Jog knob represents one frame (forward or in reverse),
  - **Shuttle**—Rotating the Jog knob causes forward (or backward) play at

a rate starting from unity speed to the maximum shuttle speed of the device. A complete 360 degree rotation of the Jog knob causes the device to be at its maximum shuttle speed, and

- **Var**—Starting from a pause condition, the first 360 degree forward rotation of the Jog knob scales play speed from zero to 1.0, then the next 360 degree rotation scales between 1.0 and 3.0, the maximum.

- **Load**—Loads selected clip to delegated device.

Delegation

Delegation permits a single group of buttons and knobs to control a large number of identical system functional areas, or *objects*. Delegation connects a group of controls, to a particular object. Delegation makes it possible to control many more system functional areas than would be possible using dedicated, single function Control Panel buttons.

ME Delegation

Any stripe can control any ME, delegation can be saved in Panel Memory.

DELG Button

The light blue **DELG** button on any Local E-MEM Module puts that module into Panel Delegation mode and displays ME-1 thru ME-4 (on 4-ME systems) and PGM PST in rows that correspond to the top to bottom Stripes on that Control Panel. Current ME selections are high tallied with the defined ME color. Pressing the button for an ME or PGM PST ME delegates the corresponding Stripe to the selected ME. The same selection can be made on more than one row.

Note Only those MEs for which there is an ME board present in the frame are displayed in Delegation mode on the Local E-MEM Module.

If the Control Panel has fewer than four Stripes, then only rows for those Stripes present will be shown. If the Control Panel has more than four stripes, then pressing the **Page** button on the Local E-MEM Module will show the ME delegations for those additional Stripes.

Exchange ME

The **Exchange ME** button (see *Transition Module on page 89*) allows you to delegate MEs that are not assigned to a Stripe. For example on a 4.5-ME Kayenne system with four Stripes, the fifth ME can be 'exchanged' with a currently delegated ME on that Stripe by pressing the **Exchange ME** button. The function is global for all Stripes, i.e. if ME-4 is unassigned, pressing the **Exchange ME** button on the current PGM PST Stripe assigns ME-4 to that

Stripe and PGM PST is available for exchange (delegation) on each Stripe's **Exchange ME** button.

For Kayenne systems with more than one additional ME than available Stripes, an ME can be preassigned to the **Exchange ME** button by holding down the button and selecting the ME for exchange on the Local E-MEM Module. Only one ME for exchange can be assigned at a time.

The **Exchange ME** button displays the color of the unassigned ME. For the example above with PGM PST and ME-4, when PGM PST is red and ME-4 is purple, after ME-4 is exchanged with PGM PST the **Exchange ME** button changes from purple to red (for each **Exchange ME** button on all Stripes in that suite).

Automatic Delegation

With the **ADel** button toggled on in the Multi-Function Module, when an operator activates any object on a Stripe, the Multi-Function Module will automatically delegate to control the specific object involved. For example, selecting a key for the next transition, automatically delegates the other modules in that Stripe, and the Multi-Function Module to control that keyer. Automatic delegation only occurs when the operator presses a button on a Stripe, and does not occur if the panel's state is changed by an external interface, like an edit controller.

Automatic delegations can be quickly disabled at any time on the Multi-Function Module by toggling the **ADel** button to off.

Multiple Keyer Delegations

The ME Keyer Delegation buttons on the Multi-Function Module can delegate the Keyers, Mattes, and Masks to more than one keyer. If the Multi-Function Module's controls have been delegated to multiple keyers, the Multi-Function Module delegation buttons will go off, to indicate a single keyer is not being controlled. The remaining Multi-Function Module buttons can only display status for one of the keyers (the first one pressed). Any changes made will be applied to all the keyers involved. Any context sensitive delegation inside the Multi-Function Module will be based on the first keyer selected. For example, if Key 1 is a Chroma Key and Key 2 is a Preset Pattern, adjusting Clip should change the clip for both Key 1 and Key 2. However, since Key 2 does not use Clip (being a Preset Pattern) it is unaffected. The size of the Preset Pattern will not change.

Similarly, in the Source Select Module, you can select and hold down multiple keyer delegation buttons, then select a source, and that source will be selected for all keyers in the selection. The multiple selection is applied to the Multi-Function Module.

DPOP and SPOP Menu Delegation

DPOP stands for Double Press Open. This is a form of automatic delegation where a specific menu is displayed on the Menu Panel when a panel button is pressed twice in rapid succession. A menu can contain controls that do not exist on the Control Panel. DPOP makes these additional menu controls readily available. If further delegation exists within the menu, for example to a specific keyer, that delegation occurs as well. If the menu is already open, a single press performs the menu delegation (a second button press is not required).

SPOP stands for Single Press Open. SPOP buttons operate similar to DPOP, but only a single button press is required.

Active DPOP and SPOP buttons and their menus are listed in Table 2.

Table 2. DPOP and SPOP Buttons

DPOP Button	Module	Menu Displayed
Key 1, 2, 3, 4, 5, 6	Source Select /Multi-Function	Keyer Mode Menu selected keyer delegated
Macro	Source Select /Local Aux	Macro Catalog
Aux		Aux Delegation
Rtr		Router Assign
Pri	Source Select	ME Mode
Sec		ME Mode
Row 1, 2, 3, 4		Defined in: User Setups, Panel Prefs, Bus DPOP Prefs
Wipe 1, 2	Transition/Multi-Function	Wipe Pattern
User 1-6 and Key Prior	Transition	Keyer/Priority
Key 1-6		Keyer Mode
Menu	Local E-MEM	E-MEM&Timeline, Timeline View
SPOP Button	**Module**	**Menu Displayed**
Menu	Local E-MEM	E-MEM&Timeline, Timeline Edit
SzLc	Multi-Function (for iDPM and eDPM MFM menu delegations)	iDPM/eDPM, Transform
3dLc		
ROT		
SPIN		
Axis		
ASPT		
SCEW		
PGLB		
SGLB		
Sngl		Events List
MULT		Device Control
ME 1, 2, 3, 4, and PGM	System Bar	User Setups, Suite Prefs, Safe Title Prefs

Many, but not all of the 'hard' buttons (with legends) supporting DPOP on the Modules are indicated with two triangles on the lower right of the button legend.

Menu Panel Overview

Menu Panel Description

The Menu Panel includes a touch screen display, five knobs for adjusting parameter values, and four USB ports (two on lower right side and two on the bottom of the Menu Panel).

Touch Screen

CAUTION Do not apply any sharp or rigid object (no pens or pencils) to the touch screen display surface.

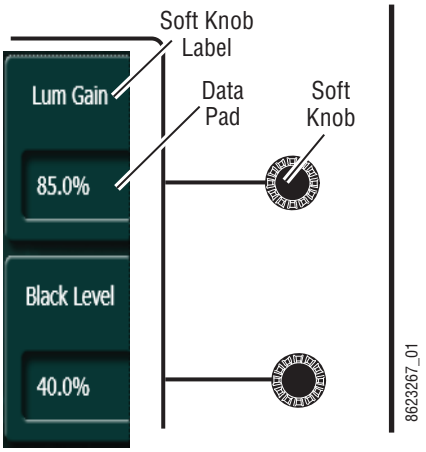
The Menu Panel touch screen allows direct interaction with menu controls displayed on the screen. The screen is designed to work with a finger or other soft object. The touch screen is sensitive to a single pressure location only, so only one touch surface control can be adjusted at a time.

Menu Selection

Various Kayenne system operating menus are selected using the menu buttons at the bottom of the Menu Panel touch screen. When a menu is accessed, it is initially displayed in the state it was in when last used.

Soft Knobs

Figure 80. Soft Knob and Pad



Knobs along the right side of the Menu Panel can be used to dial in parameter values for functions displayed on the touch screen. When a knob is active, the touch screen displays the parameter name and its current value on a data pad (Figure 80, left). The parameter can be adjusted by turning the knob, or the data pad can be touched to bring up a numeric keypad.

Menu Screen Organization and Components

Kayenne system menus are context sensitive. They display different information and provide various types of controls depending on what area of the system is involved.

Backgrounds vary for each menu type:

- Green for User
- Red for Engineering
- Light Brown for e-DPM (optional)

A representative menu screen (Keyer Mode menu) is shown in Figure 81 and Figure 82.

For clarity, the menu screen examples are divided into two areas:

- Navigation and
- Content and Messaging

Figure 81. Keyer Mode Navigation Menu Example

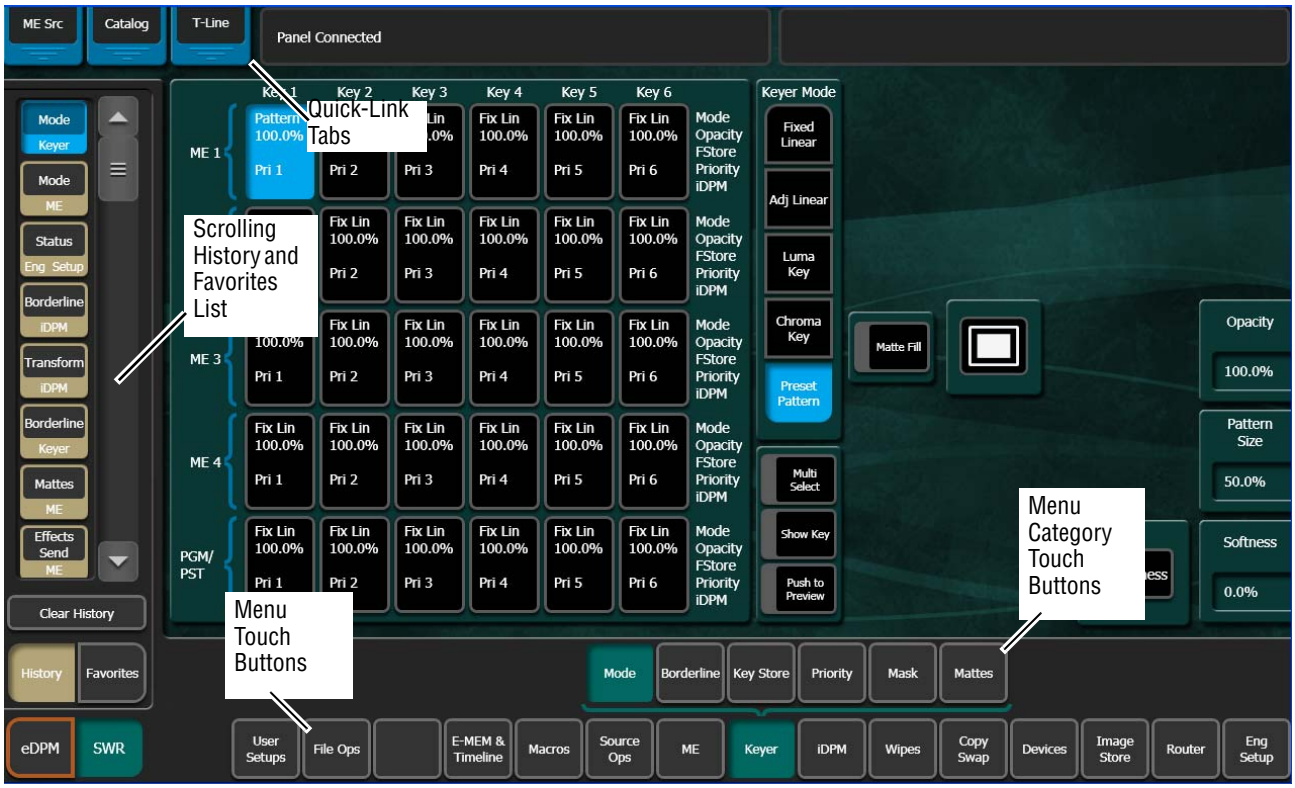
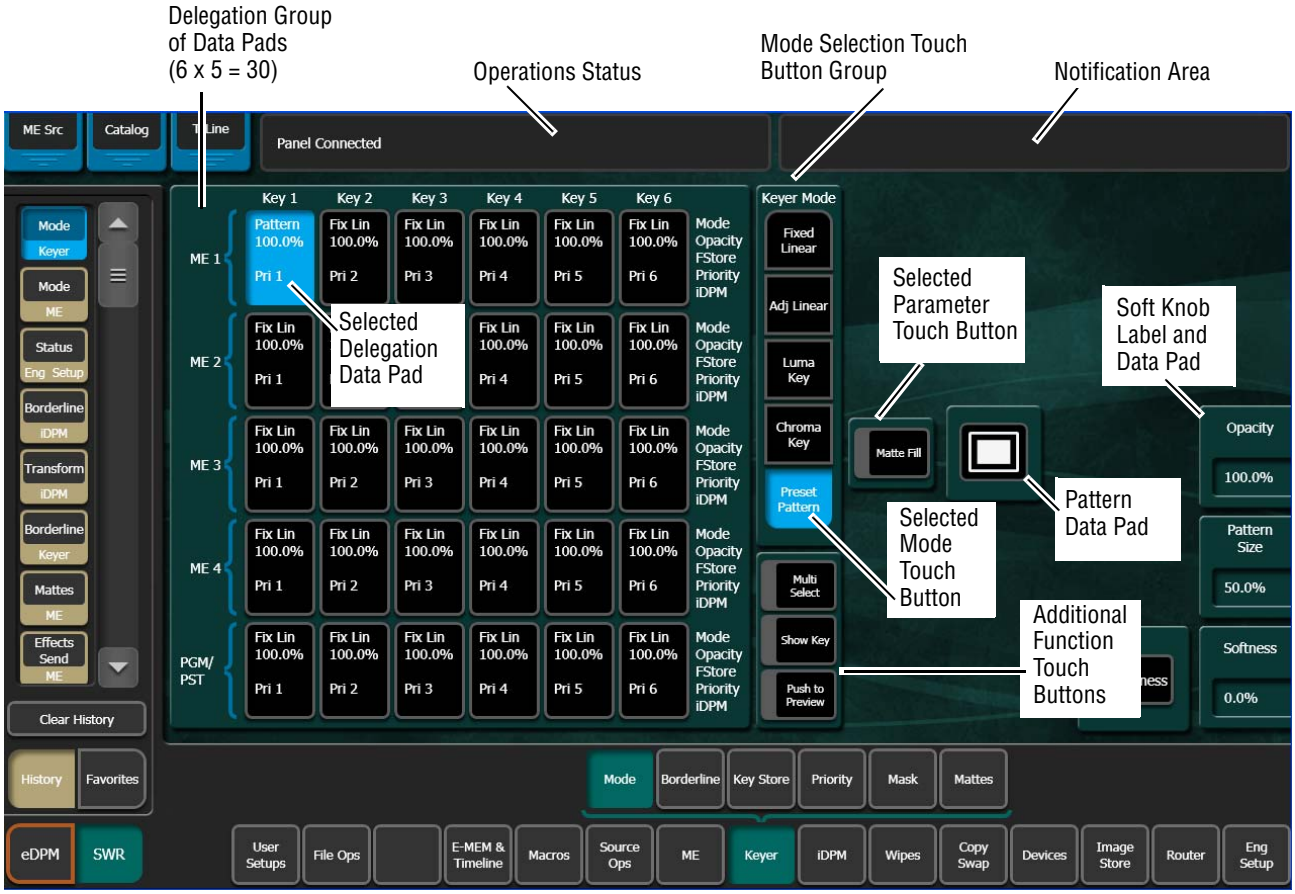


Figure 82. Keyer Mode Content Menu Example

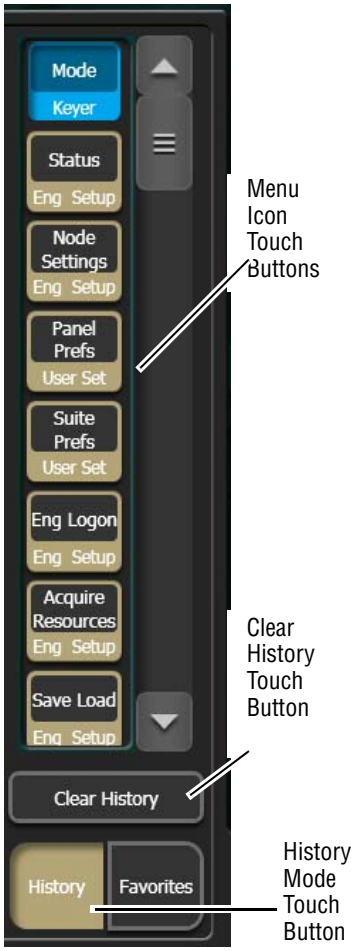


History and Favorites Modes

The **History** and **Favorites** touch buttons are provided for fast navigation to previously visited system menus and user-defined favorite menus.

History Mode

Figure 83. History Mode Example



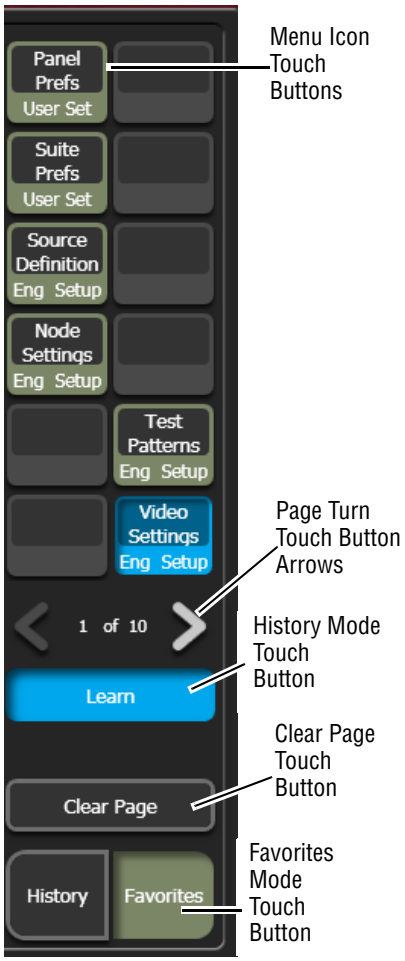
When the **History** mode touch button is selected, up to 45 previously visited menus can be quickly accessed by clicking on the representative menu Icon. The scrolling menu icon window can be cleared by selecting the **Clear History** touch button (Figure 83, left).

History menu icon buttons appear light brown and black until selected, then change to blue.

Use the scroll bar to see more History menu icon choices (Figure 83, left).

Favorites Mode

Figure 84. Favorites Mode Example



When the **Favorites** mode touch button is selected, up to 10 pages of 12 menu icons each can be stored to quickly access often visited menus, or sets of menus for repetitive tasks (Figure 84, left).

Favorites menu icon buttons appear light green and black until selected, then change to blue.

Use the **Left** and **Right** arrows (Figure 84, bottom-left) to navigate through Favorites pages.

To create a Favorites list, perform the following steps Figure 84, left):

1. Choose a Favorites page (1-10), using the **Left** and **Right** soft touch button arrows.

2. Navigate to the menu to be added to the list.

3. Select a grayed out or existing menu icon from the two side-by-side rows of six you wish to create (a previously learned icon can be overwritten).

4. Touch the **Learn** button.

To clear a Favorites page, select the **Clear Page** button (Figure 84, bottom-left).

Last Menu Assignment in Favorites Mode

In Favorites mode, you can create a **Last Menu** icon button so you can return to the last menu of your choosing.

Figure 85. Favorites Last Menu Icon

To create a **Last Menu** icon button and assign a menu:

1. Touch the **Learn** button.
2. Touch the **History** button.
3. Touch the target menu button (for example **E-MEM & Timeline**, **Timeline Edit**).
4. Touch a favorite button on any page 1-10.

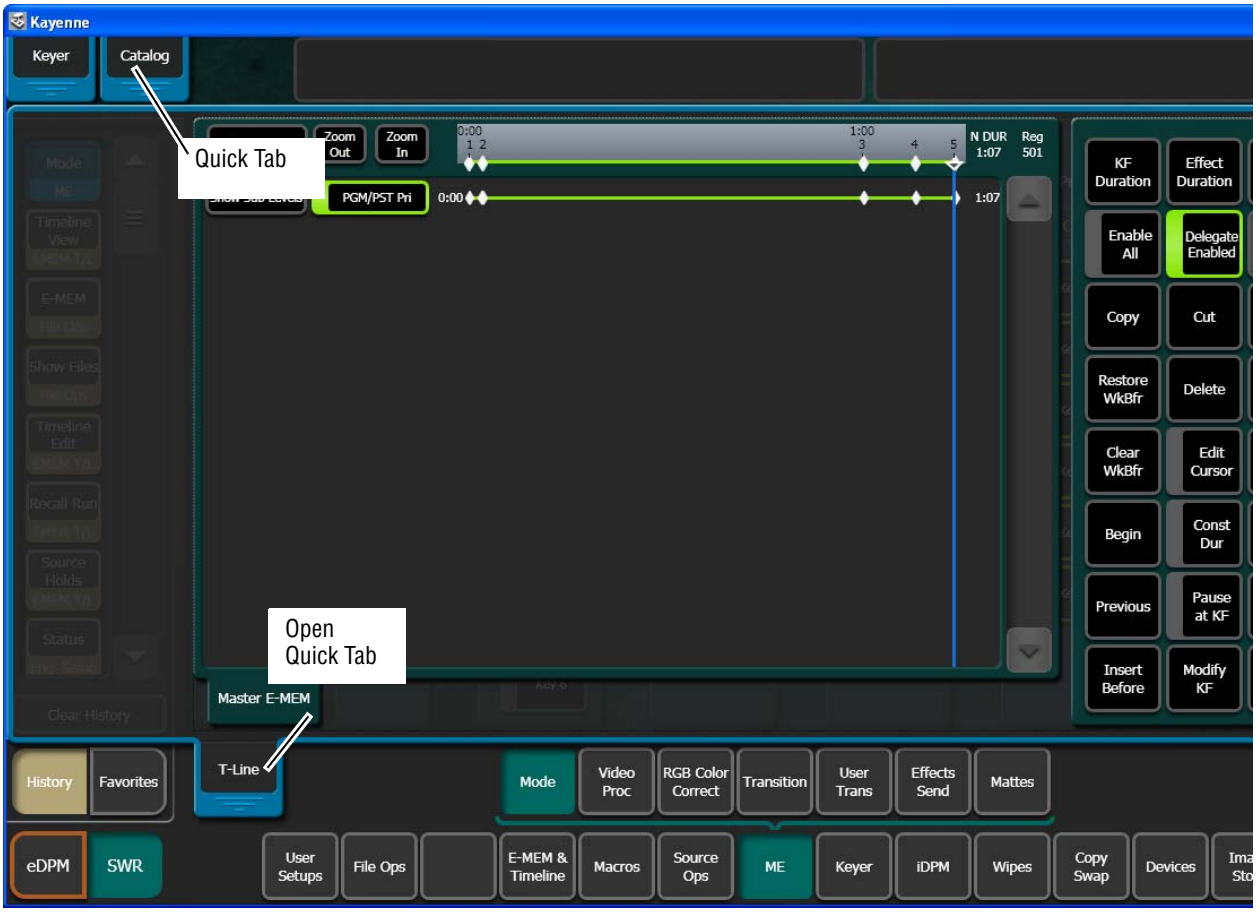
   The button changes to the Last Menu icon.

Quick Tabs

Quick tabs provide fast access to related menus in addition to the History and Favorites mode. Each tab with a label provides a semi-transparent, pre-determined menu that appears over the current menu when touched (Figure 86), to allow fast access when performing operations like setting parameters, selecting delegations, choosing functions, etc.

Click on the tab, upper left of the menu, to open the Quick Tab, the tab moves to the bottom. Click where the tab was or on the tab again to close it. In the example in Figure 86, the E-MEM & Timeline (T-Line) menu Quick Tab has been selected.

Figure 86. Menu Quick Tabs Example



Data Pads and Touch Buttons

The Kayenne system menus make extensive use of data pads. Data pads are active areas on the screen that display a summary of the status of an object, and when touched bring up additional controls and information for that object. In Figure 82, the data pad for ME-1, Keyer 1 has been selected, causing the rest of the screen to display settings and controls for that keyer. A special pattern data pad also exists, which displays the shape of the

current pattern (the square shape in Figure 82). Touching this data pad brings up a wipes palette, from which wipe pattern generator shapes are selected.

Touch buttons are labeled by their function and do not display data. Examples of touch button functions include selecting an operating mode (**Preset Pattern**), or turning on an attribute (**Matte Fill**) (see Figure 82). Touching these buttons will immediately activate their function. Touch buttons can control on/off functions, and have an indicator on the left side (**Matte Fill**, Figure 82), or they can select from a group of parameters, and turn light blue to indicate the state of that parameter (**Preset Pattern**, Figure 82).

Menu Top Line

The top line is identical in all the Kayenne system menus (Figure 82):

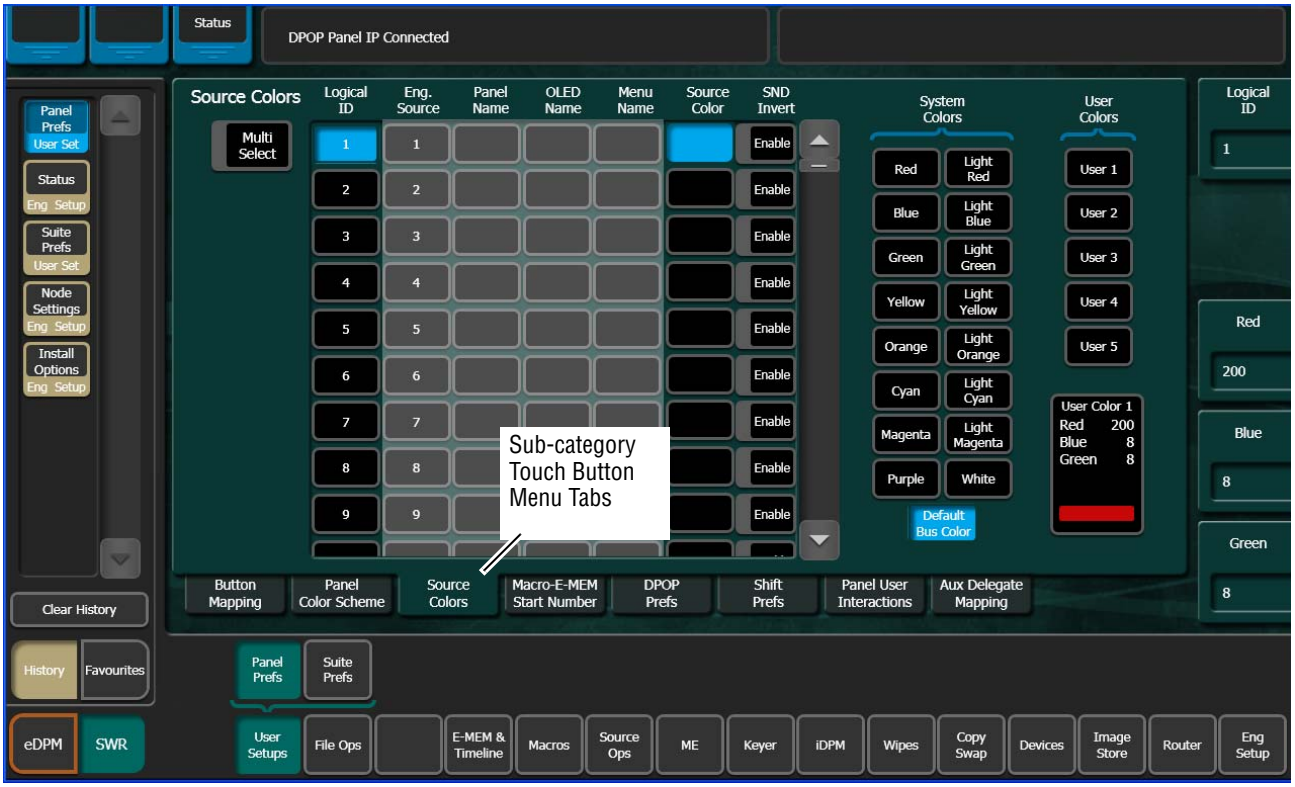
- The left portion of the top line has three **Quick Tabs** (see *Quick Tabs on page 119*),
- The center portion of the top line displays operations status messages, and
- The right portion of the top line is an operator notification area, where messages generated by the Kayenne system are displayed.

Menu Category Selection

Menu category selection touch buttons are arranged along the bottom of the screen (**Mode**, **Borderline**, **Key Store**, etc., Figure 82) directly above the menu touch buttons. Touching one of these buttons displays that category. The category button turns green when selected.

Some menus have additional subcategory touch button menu tabs available at the bottom edge of the menu (Figure 87).

Figure 87. Configuration Menu Tab Example



Delegation Group

Additional levels of delegation are needed in the Keyer menu, since it must control all 30 keyers. This highest level of delegation is located on the left side of the menu, as a 6 x 5 grid of data pads (five MEs, each with six Keyers). Data pads display limited status for a particular object. Touching a data pad delegates that object, and the rest of the menu will then display information and controls for only that object. The data pad of the selected object is colored light blue.

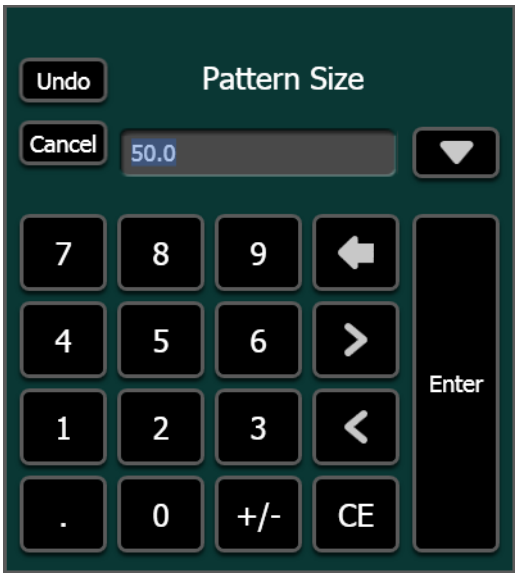
Parameter Control Area

In the Keyer menu example, Figure 82 on page 115, a Parameter Control area contains function selection touch buttons and soft knob pads for the selected operating mode. Function selection touch buttons either toggle on and off or are part of an interlocked group.The soft knob pads on the right allow individual parameter adjustments, as described earlier.

Numeric Keypad

Touching a soft knob pad or other single numeric parameter pad brings up a numeric keypad that can be used to enter exact values (Figure 88). You can also use a standard computer keyboard to enter information while this display is active.

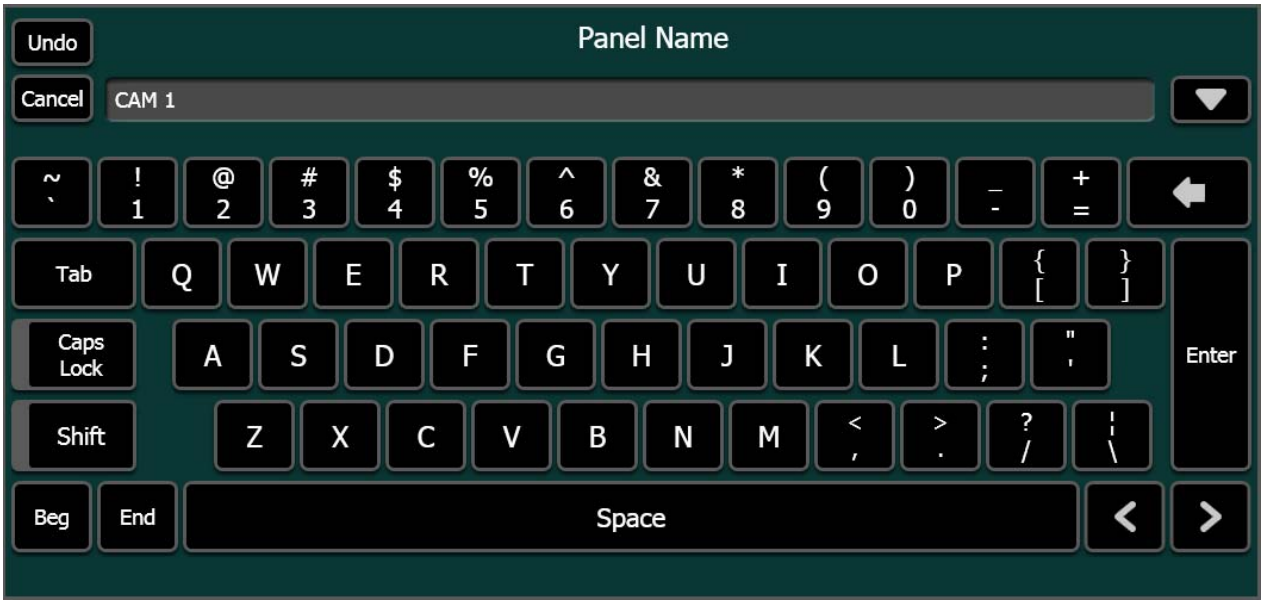
Figure 88. Numeric Keypad



Alphanumeric Keypad

Touching the pad for a text parameter brings up an alphanumeric keypad (Figure 89). You can also use a standard computer keyboard to enter information while this display is active.

Figure 89. Alphanumeric keypad



Scrolling Lists

When multiple items are available for selection, scrolling lists are used (Figure 90). On most menus, touching the up and down triangle buttons scrolls the list up or down one item. When the top or bottom of the list is reached, that button goes gray. Touching the green area above or below the white handle scrolls the list up or down one group of items. You can also drag the white handle to quickly scroll through the entire list on some menus.

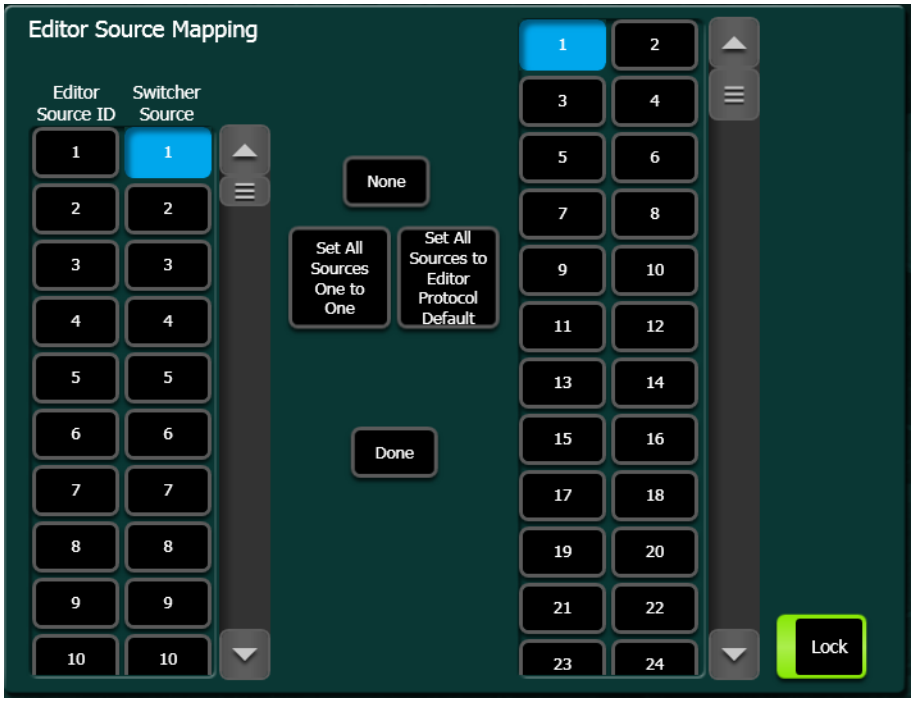
Figure 90. Scrolling List

Some menus have two scrolling lists, used to associate an item in one list to an item in the other list (Figure 91). Typically

you choose an item on the left list, and the system automatically selects the item currently associated with it on the right list. You can then choose a different item from right list to change the association.

Some of these menus have a **Lock** button for the right list. This prevents that list from scrolling to the currently associated item when an item on the left pane is selected. This does not prevent the selection of the associated item, but just keeps the list from scrolling. This allows you to quickly make multiple associations for items arranged near each other on the lists.

Figure 91. Paired Scroll Lists with Lock On



Menu and Panel Interactions

The Control Panel and Menu Panel operate as a single control surface, and so these components interact with one another. Many controls on the Control Panel are duplicated on the Menu Panel screens. For example, a keyer can be set to use a Chroma key with a Control Panel button or a menu touch button. Other controls are only available on the Menu Panel.

Double Press Open (DPOP) and Single Press Open (SPOP) are convenient ways to access related menus when working on the Control Panel. Double pressing or single pressing certain buttons bring up particular menus.

Once that menu is displayed, delegation changes affecting that menu that are made on the Control Panel will be tracked on the Menu Panel. For example, if ME 3 Key 1 is selected on a menu, and then ME 3 Key 2 is selected on the Control Panel, the menu display will change its delegation

to ME 3 Key 2. However, the reverse is not true. Changing delegations on the Menu Panel does not change Control Panel delegations.

When both the Control Panel and the Menu Panel are delegated to the same object (say, ME 1, Key 1), changes can be made to that object from either panel. Once the change occurs, both panels will be updated to reflect the status of the object. Both panels do not need to be delegated to the same object to enact a change, however. Suppose the Control Panel is delegated to control ME 1, Key 1 while the Menu Panel is delegated to ME 2, Key 2. Changes made on the Menu Panel will affect only ME 2, Key 2, and changes made on the Control Panel will affect only ME 1 Key 1. When the delegation of either panel is changed to a new object, that object's current status (which may have been changed since last shown) will be reflected on that panel.

Default Keyframe

Default Keyframe settings are applied when an empty register is recalled and when the **CWB** (Clear Working Buffer) button is pressed in the Master E-MEM Module (**EMEM Edit**, **CWB** button) of the Control Panel.

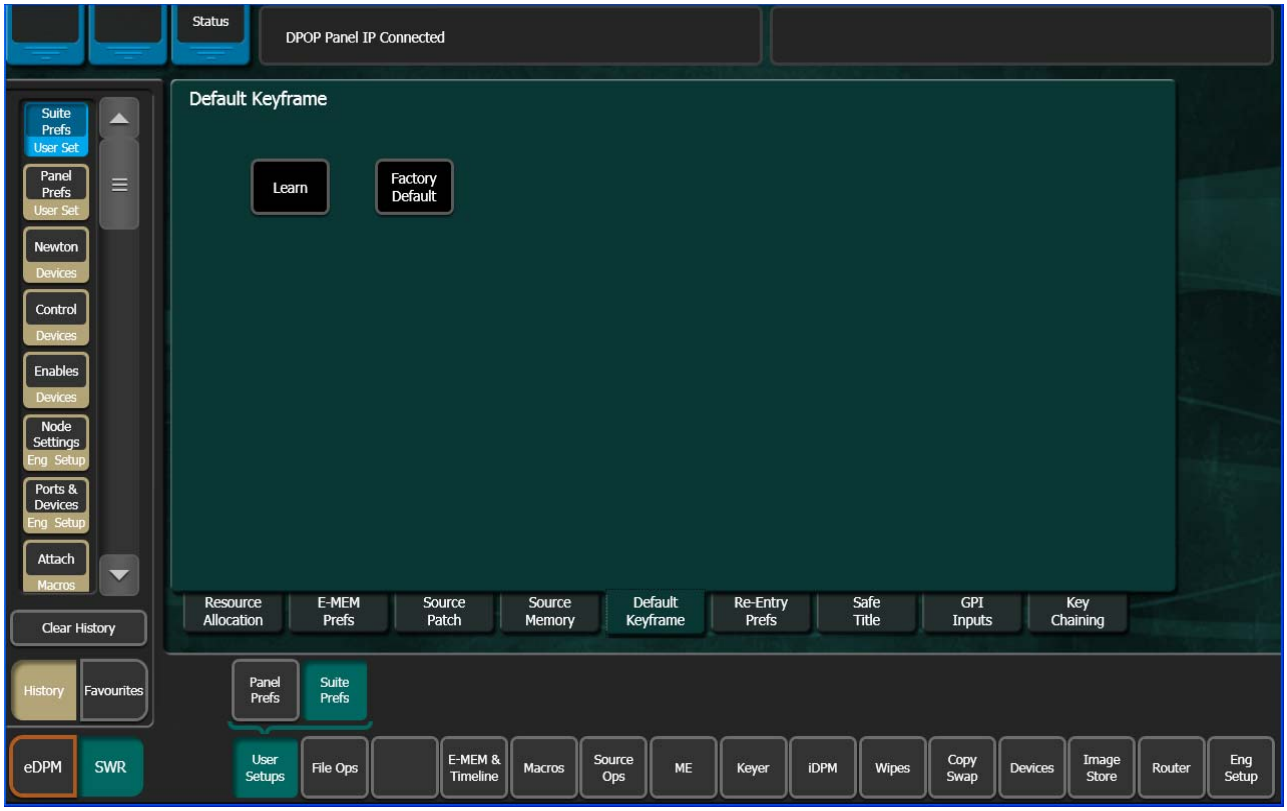
- **SPOP** clears the working buffer of enabled levels to Default Keyframe, however it does not clear the source memory.
- **DPOP** clears the working buffer of enabled levels to Default Keyframe and clears the source memory to the default settings for sources selected on enabled levels.

The Default Keyframe menu is used to learn the current Kayenne panel state to the system's Default Keyframe (and to set the Default Keyframe back to factory settings). Individual settings for each MEs are stored in the Default Keyframe, so different states can be saved for different MEs, if desired.

Note Individual Default Keyframe settings are saved for each Kayenne ME.

The Default Keyframe menu is accessed by touching **User Setups**, **Suite Prefs**, **Default Keyframe** (Figure 92).

Figure 92. Default Keyframe Menu



To Learn a Default Keyframe:

1. Setup the entire Kayenne Control Panel to the desired state.
2. Press the **Learn** button in the Default Keyframe pane.

Pressing the **Set** button overwrites the Default Keyframe with factory defaults.

Note Save your current Suite Prefs, which includes the Default Keyframe settings before resetting to factory defaults.

Button Mapping

Button mapping assigns video sources to source selection buttons (Source Button mapping). Button mapping is also used to assign Aux buses to delegation buttons (Aux Delegate mapping). This allows you to customize the Control Panel and configured Remote Aux Panels to meet your individual needs. Button mapping settings are included as part of Panel Preferences, and can be saved and instantly loaded for use at any time (see *File Operations* *on page 153*).

Button mappings of the Control Panel are set at the factory before shipment to the settings listed below.

There are four source button delegation levels with Kayenne. Table 3 shows the source to button mapping for the 1st (unshifted) and second levels for a 35 button 4-ME system.

Table 3. 4-ME Factory Configured Source to Button Mapping 1st and 2nd Levels

Panel Button	1st (unshifted)	2nd
Buttons 1-28	Source 1 - 28	Source 29 - 56
Button 29-32	M1 A - M4 A	M1 C - M4 C
Button 33,34	Shift, Shift	Shift, Shift
Button 35	Delegate	Delegate

Table 4 shows the 3rd shifted level.

Table 4. 4-ME/35 Factory Configured Source to Button Mapping 3rd Level

Panel Button (35)	3rd
Buttons 1-28	Source 57 - 84
Button 29-32	M1 B - M4 B
Button 33,34	Shift, Shift
Button 35	Delegate

Table 5 shows the 4th shifted level.

Table 5. 4-ME/35 Factory Configured Source to Button Mapping 4th Level

Panel Button (35)	4th
Button 1-12	85-96
Button 13-18	IS 1 - IS 6
Button 19	eDA
Button 20	eDC
Button 21-24	Pg A - Pg - D
Button 25	Blk
Button 26	Test
Button 27,28	Bg 1,Bg 2
Button 29-32	M1 D - M4 D
Button 33,34	Shift, Shift
Button 35	Delegate

Table 6 shows the source to button mapping for the 1st (unshifted) and second levels for a 25 button 2ME system.

Table 6. 2-ME/25 Factory Configured Source to Button Mapping 1st and 2nd Levels

Panel Button (25)	1st (Unshifted)	2nd
Button 1-18	Source 1 - 18	Source 19 - 36
Buttons 19-22	M1 A - M4 A	M1 C- M4 C
Button 23, 24	Shift, Shift	Shift, Shift
Button 25	Delegate	Delegate

Table 7 shows the source to button mapping for the 3rd level for a 25 button 2ME system.

Table 7. 2-ME/25 Factory Configured Source to Button Mapping 3rd Level

Panel Button (25)	3rd
Button 1-18	Source 37 - 54
Buttons 19-22	M1 B- M4 B
Button 23, 24	Shift, Shift
Button 25	Delegate

Table 8 shows the source to button mapping for the 4th level for a 25 button 2ME system.

Table 8. 2-ME/25 Factory Configured Source to Button Mapping 4th Level

Panel Button (25)	4th
Button 1,2	Source 55,56
Buttons 3-8	IS 1 - IS 6

Table 8. 2-ME/25 Factory Configured Source to Button Mapping 4th Level

Panel Button (25)	4th
Buttons 9,10	eDA,eDC
Buttons 11-14	Pg A - Pg D
Button 15	Blk
Button 16	Test
Buttons 17,18	Bg 1,Bg 2
Buttons 19-22	M1 D - M4 D
Button 23, 24	Shift, Shift
Button 25	Delegate

Note When you map a Shift or DELG button, that button will be mapped in the same location across all Shift Levels.

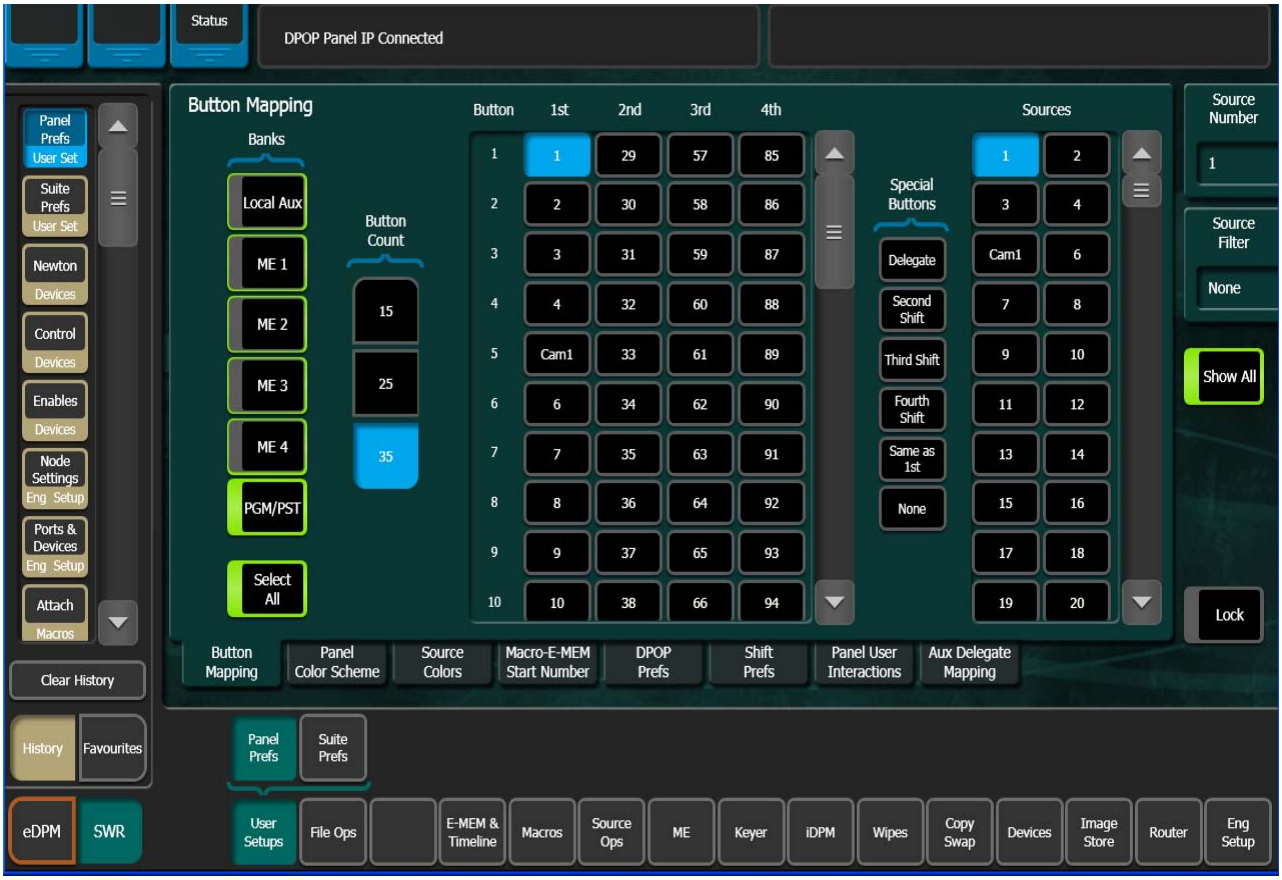
If a Kayenne system's NV memory is cleared, local panel button mappings will revert to the factory defaults shown above.

Source Button Mapping

On the Kayenne system, each bank on the Control Panel (Source Select Modules and Local Aux Module) can have its own independent source-to-button mapping, if desired, as well as each Remote Aux Panel. Typically button mappings on the Control Panel are set the same, for operating simplicity. However, in some situations individual bank mapping can be advantageous. For example, on a show with a large number of sources you can place all the DDR and VTR sources on one bank, all the cameras on another bank, etc., and then have direct access to any desired source. If you use this feature, your system should be equipped with source name displays on all banks so the different sources can be identified.

The Button Mapping menu is accessed by touching **User Setups**, **Panel Prefs**, **Button Mapping** (Figure 93).

Figure 93. Button Mapping Menu



The **Banks** delegation buttons are used to select the device to be mapped.

Local Panel Source Button Mapping

The Kayenne Control Panel and Local Aux Module are considered local panels. Local panel button mappings can be defined the same for all the banks at once, or you can select individual local panel banks to map differently.

1. Touch the labeled Bank button(s) of the banks you wish to map (Figure 93). You can select one, some, or all of the banks to be mapped. Notice that a **Select All** button is available below the list of bank buttons.
2. Scroll the Button list in the central pane and touch the bank source button to be mapped in the center pane.

3. Scroll the Sources list on the right and touch the desired Kayenne source in the right pane. As the mappings change, the names of the different sources will appear on the source name displays on the Control Panel and/or Local Aux Module.
4. Repeat Step 2 and Step 3 until all the bank buttons have been mapped.
5. If you map a source to a button that is currently mapped to another source, a warning dialog box may appear.
    a. Selecting **Yes** maps the source to the button. The button originally mapped to that source becomes unassigned.
    b. Selecting **No** clears the window without making any changes.

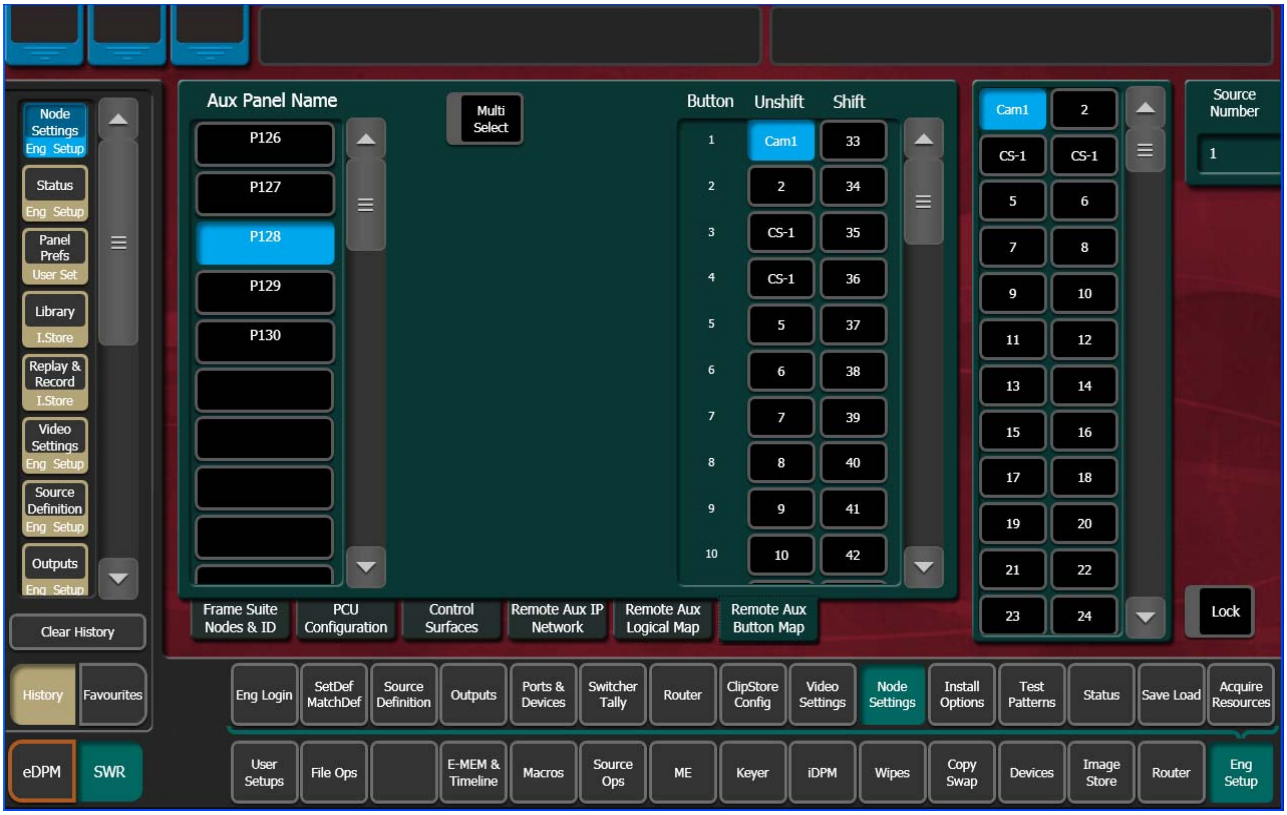
Remote Aux Panel Source Button Mapping

Note Remote Aux Panels must be installed and configured before their buttons can be mapped. Remote Aux Panels assigned to a control surface can only be configured when the Menu Panel is accessing that control surface. See the separate *Kayenne Installation & Service Manual* for Remote Aux Panel configuration procedures.

The **Remote Aux Button Map** menu is accessed by touching **Eng Setup**, **Node Settings**, **Remote Aux Button Map** (Figure 94).

1. Individual Remote Aux Panels are selected by touching the buttons in the left pane. Select the **Multi Select** button for group selection (Figure 94).

Figure 94. Remote Aux Panel Button Map Menu



2. When multiple Remote Aux Panels are selected, changing a button's mapping applies that individual button's mapping to all the selected Remote Aux Panels.

3. Use the same button mapping procedure (page 130) to map the source buttons on the Aux panel. Select the Aux source button in the central pane, then select the Kayenne source in the right pane.

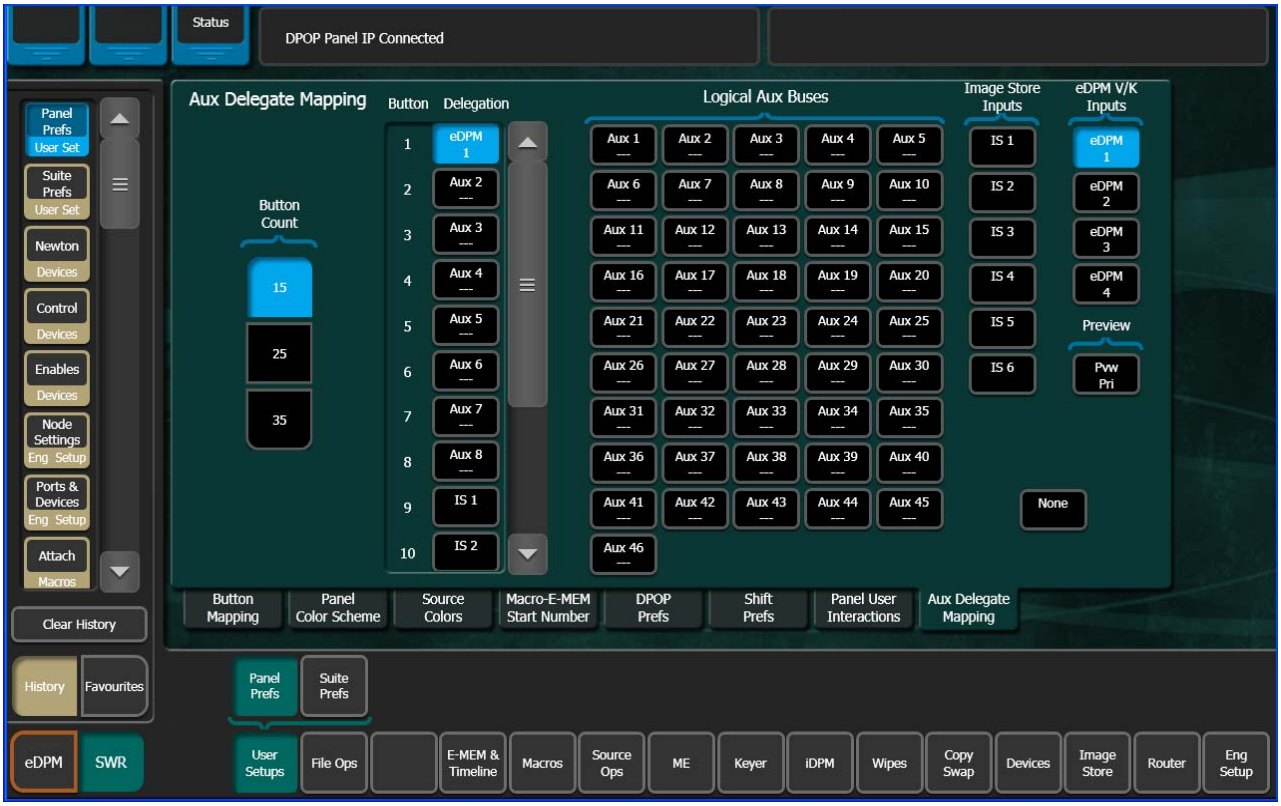
Note Button mapping settings for Remote Aux Panels assigned to a Control Surface are saved to the Panel Prefs configuration file. Button mapping settings for Independent Remote Aux Panels are saved to the Eng Setup configuration file.

Aux Bus Delegation Button Mapping

Map Local Aux Module Delegation Buttons

On multiple destination Local Aux Modules, delegation buttons are used to select which Aux bus is delegated for control by that panel. You map Local Aux buses to delegation buttons using the User Setups - Panel Prefs menu, accessed by pressing **User Setups**, **Panel Prefs**, **Aux Delegate Mapping** (Figure 96).

Figure 95. Local Aux Bus Delegation Button Mapping Menu

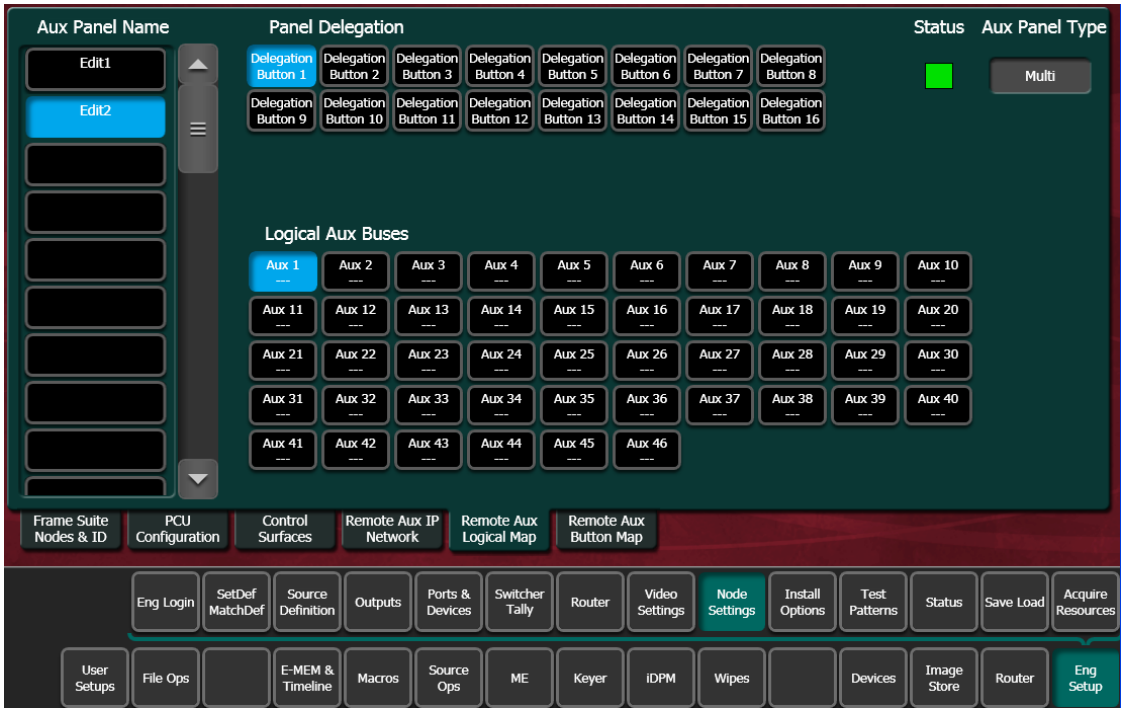


1. In the Button Delegation pane, select the Aux Bus delegation button you wish to map.
2. In the Logical Aux Buses list, select the desired Aux Bus for that delegation button.

Map Remote Aux Panel Delegation Buttons

On multiple destination Remote Aux Panels, delegation buttons are used to select which Aux bus is delegated for control by that panel. You map Remote Aux buses to delegation buttons using the Eng Setup - Node Settings menu, accessed by pressing **Eng Setup**, **Node Settings**, **Remote Aux Logical Map** (Figure 96).

Figure 96. Remote Aux Bus Delegation Button Mapping Menu



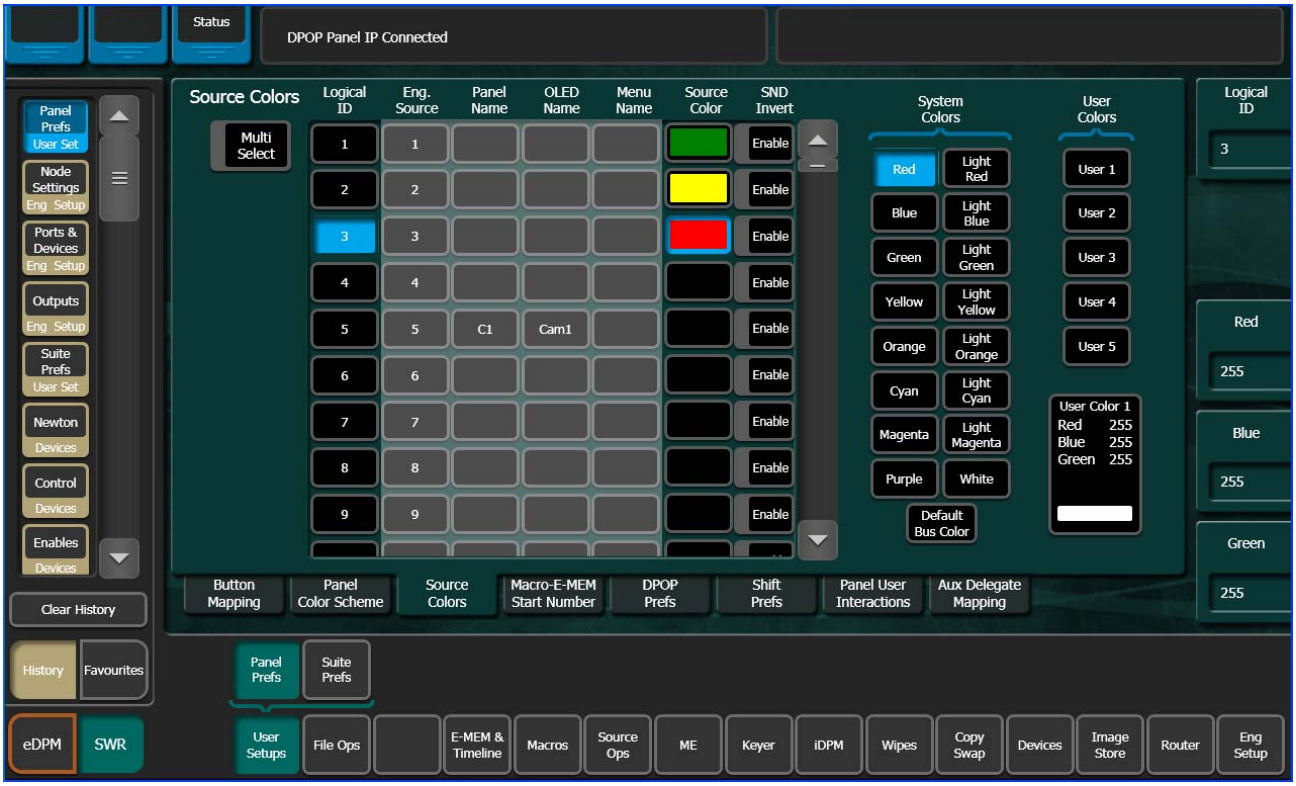
1. In the Panel Delegation pane, choose the Remote Aux Panel to configure. Only one Remote Aux Panel can be selected at a time.
2. In the Logical Aux Buses pane, select the Aux Bus delegation button you wish to map.

Note Button mapping settings for Remote Aux Panels are saved to the Eng Setup configuration file.

Source Colors

The Control Panel sources can be changed from the Control Panel color scheme to display user-defined colors (red, green, blue, light red, light green, cyan, magenta, etc.). For example the operator could set user defined colors for each camera as shown in Figure 97 for quick reference.

Figure 97. Source Colors Menu



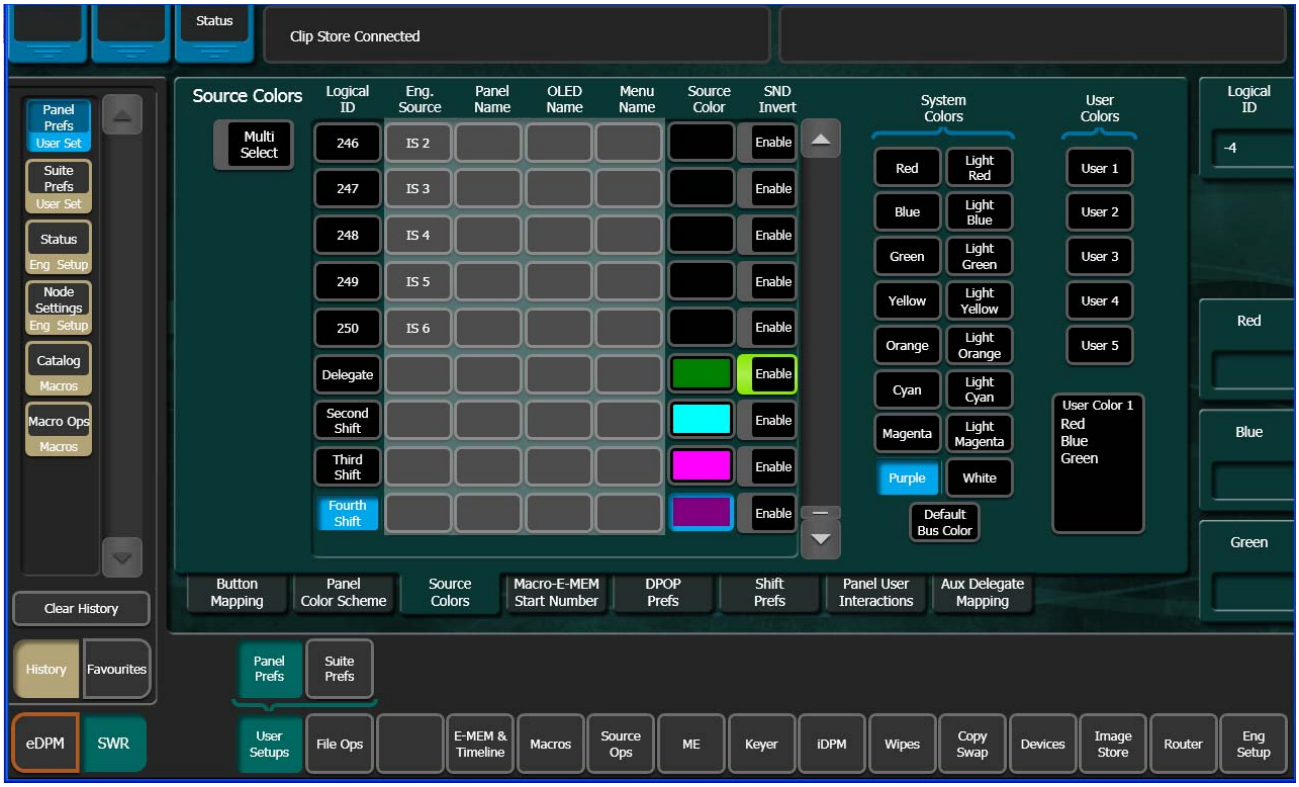
To Assign Source Colors:

1. Touch **User Setups**, **Panel Prefs**, **Source Colors** to go to the Source Colors menu (Figure 97).
2. Select the Logical ID of the desired source (use **Multi-Select** button for multiple selections).
3. Select the desired color in the System Colors pane.
4. Selecting the **Invert** button displays dark text over a colored background in the Source Select Module display OLEDs (default is colored text over dark background).

Bus Delegate and Shift Button Source Colors

Source Colors can be configured for Bus Delegate and Shift buttons, in the User Setups, Panel Prefs, Source Colors menu (Figure 98).

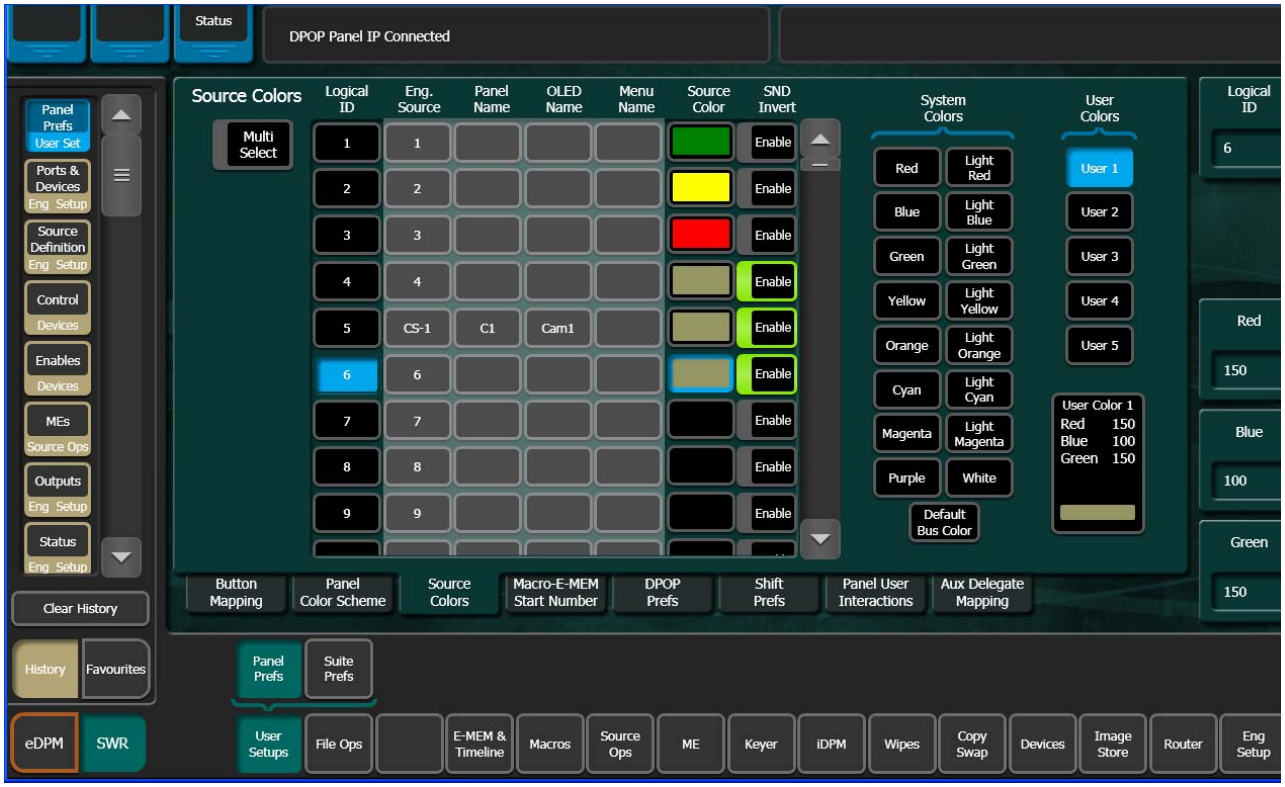
Figure 98. Source Colors Menu, Bus Delegate and Shift Button Configuration



User Colors:

The User Color buttons allow you to create custom colors for sources (Figure 99). You can change the button color for one source or several using the Multi-Select button for each button (1-5).

Figure 99. Source Colors Menu—User Colors



1. Touch **User Setups**, **Panel Pref** to go to the Source Colors menu (Figure 97).
2. Touch a User Colors button **User 1-User 5**.
3. Adjust the User Color using the Red, Blue, Green data pads (Figure 97, right).
4. Select the Logical ID of the desired source (use **Multi-Select** button for multiple selections).

For User-defined colors, see the User Color pane located below the User Colors buttons when adjusting color with the data pads or soft knobs.

User-defined colors can be saved as part of a Show file.

Source Patching

Source Naming Background Information

Facility engineers need to know the exact routing of all the video signals connecting all the devices they are responsible for. These engineers need to be able to identify video signals in a way that will help them connect devices properly. Production personnel, on the other hand, are interested in the content they work with for their shows, and are generally not concerned about which individual device or routing path is used to make those signals available. They just need a way to identify the content and access it when they need it. To support these differing needs, two source naming mechanisms are available on Kayenne systems.

Engineering Names, Eng IDs, and Logical IDs

Engineering names are intended to identify a source as it applies to a specific facility. In a truck, for example, cameras may be hard wired to the production switcher and might be given Engineering names 1, 2, and 3. Names like Patch 14 or Rtr 5 may be used for inputs that are patched or routed. Engineering names are entered in the Eng Setup Source Definition menu, as described above. Engineering source IDs are numeric only, and are available on data pads and scroll knobs for quick selection. The Kayenne system also has logical IDs, that can be used for source patching, as explained later.

Alternative Source Names

Alternative names can be assigned to sources for the convenience of production personnel. For example, you may give the cameras menu names that include the operator (C1 Bob, C2 Phil, and C3 Bill), but remove the operator names from the OLED names to show C1, C2, and C3 in larger characters. These alternative names are entered in the Source Patch menu.

The Source Patch menu (Figure 100) has three editable columns for defining up to three alternative names:

A **Panel Name** is limited to four characters, to fit the space available on the Control Panel's Transition Module. This name is only displayed on the Control Panel.

An **OLED Name** appears only on the Source Name Displays on the Control Panel. Up to eight characters are displayed.

A **Menu Name** is limited to eight characters, and appears on all the Kayenne menu application screens except Engineering Setup menus, which always display engineering IDs or names.

Multiple Suites and Source Names

Different sets of these alternative source names are defined for each Kayenne suite. Ensure the Kayenne Menu Application you are using is logged into the correct suite (**Eng Setup**, **Eng Logon**). The same set of engineering names will be used by both Kayenne suites, however.

Name Display Hierarchy

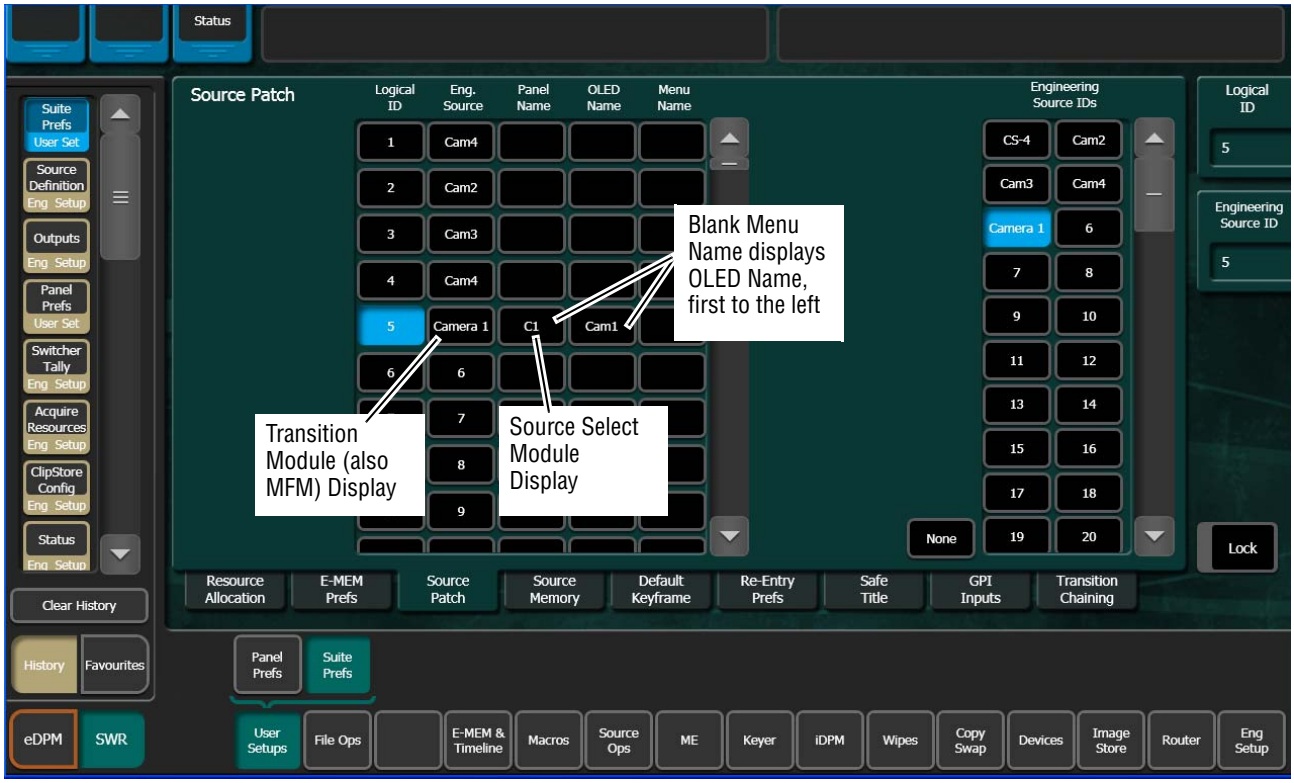
If a source's engineering name is left blank, the Eng ID number will be used. If no alternative names are defined for that source, then that Eng ID number will appear on all the Kayenne system displays.

If an engineering name has been entered (*see Kayenne Installation & Service Manual*) then the engineering name will be displayed on all the Kayenne system displays, including menus. Engineering names will be truncated to the character limits of the display, starting with the first character.

For alternative names entered in the User Setups, Suite Prefs, Source Patch menu (Figure 100), the following rules apply:

For the three editable columns: **Panel Name**, **OLED Name**, and **Menu Name**, if any of the three are left blank for that source, the first name to the left appears in that display on the system (if all three are left blank, the name in the Eng. Source Column is displayed). For example, if an alternative name is entered in the OLED Name column for a source and the other two columns remain blank, the Menu Name takes the OLED Name (OLED Name being first to the left of the Menu Name) but the Panel Name takes the Eng. Source column's name (first name to its left). If names are entered in all three alternative name columns, each area of the system displays the name entered in each column of the Source Patch menu (Figure 100).

Figure 100. Source Patch Alternative Source Names



It is a good practice to create the least number of names possible. This ensures consistency in the various displays and reduces the time needed to enter and edit the names. If you can create short engineering names that work for both the production staff and engineering, complete naming consistency is assured. However, this level of simplicity is probably only feasible at a fixed installation where all the shows use the same source names. When multiple names are created, try to keep the first four characters unique, and make different names for the same source similar for ease of recognition.

Source Patch Feature

The Kayenne system provides a way to map engineering source IDs to logical IDs, using the Source Patch feature. By default this mapping is one-to-one, but this feature can be used to quickly set up production elements for use in a different facility. For example, a show's effects, DDR clips, and taped material may have been built in one production truck with one set of devices, but the next show is scheduled for a different truck. Previously, to use effects in the other truck the Technical Director (TD) would need to edit the engineering source definitions in the new truck so they exactly matched the old truck. By remapping the engineering sources of the devices in the new truck to the logical sources used to build the effects, all the effects can be used without having to edit them. Source Patching can also be used to

quickly swap out a defective device during a show without having to reconfigure the engineering sources. In this case logical names seen by the production personnel would be identical for that content, even though the actual device playing the material changed.

Note Source Patching is the bridge between engineering sources and logical sources. Both TD and EIC should make reference to this menu when resolving source issues. The mechanism is similar in concept to a physical patch panel. Effects and all source selections are based on logical sources. Tally and associations with external devices are based on engineering sources.

Logical Sources

The Source Patch menu scrolling list has more Logical IDs than physical inputs (97-200 on 4-ME Kayenne systems). These can be used to permit alternative processing of the same incoming signal. For example, a camera input can be assigned to two Logical IDs, and one of these logical sources could be given sepia-tone color correction using Source Rules for a special effect. Selecting these different versions of that same source would automatically apply or clear the sepia-tone effect, as needed.

Using Source Patching for Effects Portability

Source patching makes it possible to build effects on a Kayenne system in one facility or truck, and then use those effects on a different Kayenne system at another facility that has different Engineering source configurations. Building a Source Patch table prior to effects creation simplifies the migration of effects between facilities.

Plan out the sources you will use for a show, even ones that may not exist on the system where you are creating the effects. Build a list of Logical sources in the Source Patch menu without regard to the currently associated Engineering sources. After the list is built, map one of the facility's existing Engineering sources to each Logical source. If physical devices don't exist for some planned sources, substitute a dummy Engineering source. You can then build your effects and verify that they run properly. When you are satisfied with the effects, save the Suite Prefs and E-MEM effects you created to USB Memory Stick. At the new facility, load these files into that Kayenne system. Do not load the Eng Setups of one facility into the other, as this will overwrite that facility's existing Engineering configuration.

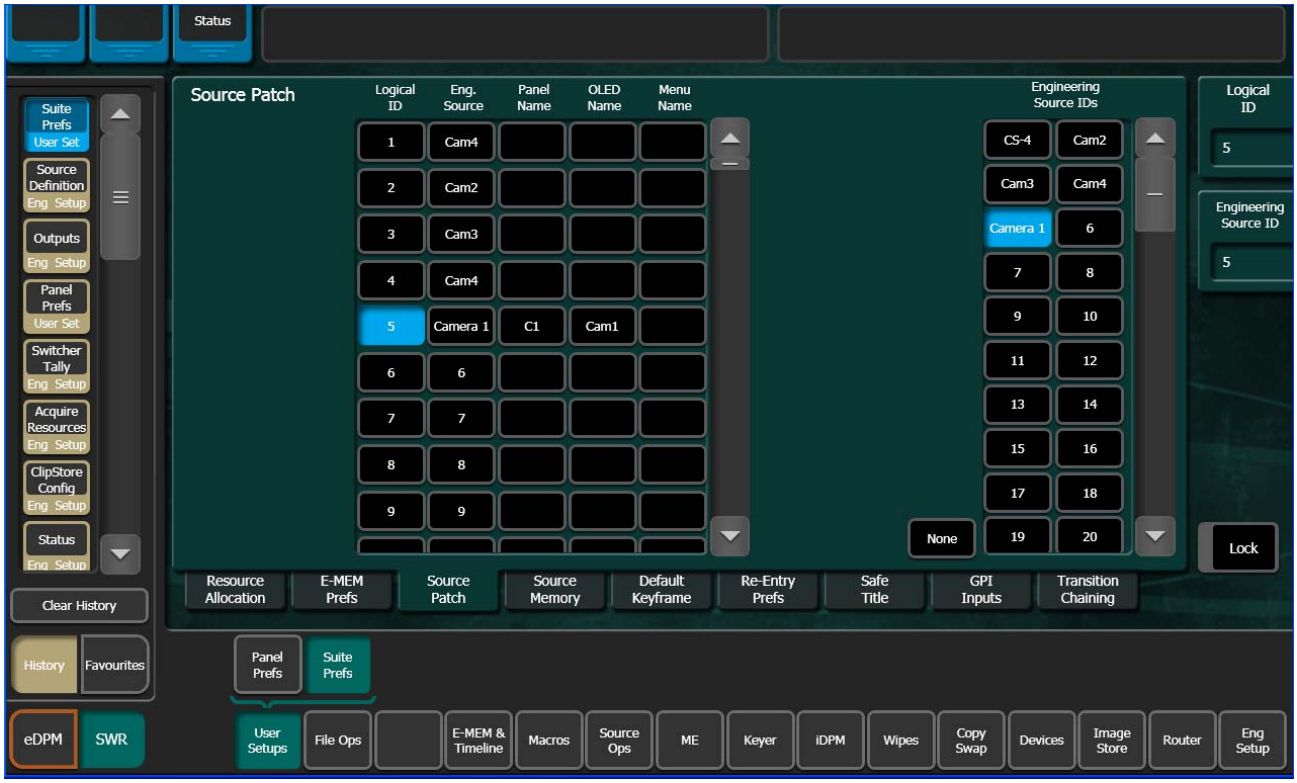
Once the Suite Prefs and effects are loaded at the new facility, go to the Source Patch menu and map the appropriate Engineering sources of the new facility to the original list of Logical sources. Your effects should now run as previously designed without having to edit or rebuild them. When satisfied the effects run correctly at the new facility, save that Suite Prefs under a different name for use the next time you use this facility. Do not

overwrite the original Suite Prefs, as you will need it when you return to the original facility.

Source Patching Procedure

1. Touch **User Setup**, **Suite Prefs**, **Source Patch** to go to the Source Patch menu (Figure 101).

Figure 101. Source Patch Menu



2. Select the Logical ID of the source you wish to change by either:
   - Touching the Logical ID data pad (far right of menu) and entering the Logical ID number.
   - Scrolling through the Source Names list (scrolling list, left side of menu) with the scroll bar. This scrolls the list without changing the current selection. When the desired source appears on the menu, touch its Logical ID button to select it (Figure 101).

3. If you wish, you can give sources alternative names in the Source Patch menu in the following ways (Figure 101):

- Panel Name (Module Name column)—Source will appear on the Transition and Multi-Function Module with this name,
- OLED Name (SND Name column)—Source Name Display will appear on mapped ME/PGM PST Source Select modules and Multi-Functional and Local Aux Modules with this name (see *Alternative Source Names* *on page 138*).
- Menu Name (Menu Name column)—Source will appear with this name in the menus only,

4. If you wish to change the source patching, select an Engineering source to be associated with the currently selected Logical source with the Engineering Source data pad or by scrolling the Engineering Source IDs Button pane (Figure 101). See *Using Source Patching for Effects Portability* *on page 141*.

Source Rules

Source Rules allow the user to associate Keyer states with sources. As a user cuts on the A Bus of an ME, Keyers will be switched on/off or the state is maintained, depending on the source selected. In addition, sources selected on the B Bus (Preset) will affect the settings of the Next Transition buttons on the Transition Module which will be set up so that the desired Keyer status will result after the transition is performed. No user intervention is required, because Source Rules will have been applied logically. However, Source Rules are applied as sources are selected on the A or B Bus so it is possible to override or change the Next Transition settings in the Transition Module prior to the Next Transition.

For example, Source Rules may be set for studio cameras to ensure the station logo (bug) is always visible when On-Air, and a different logo is used with a helicopter camera when the “Heli-Cam” is cut to air. Should the director call to keep the studio camera logo over the helicopter, the TD can preset the Heli-Cam and then adjust the Next Transition buttons on the required effect.

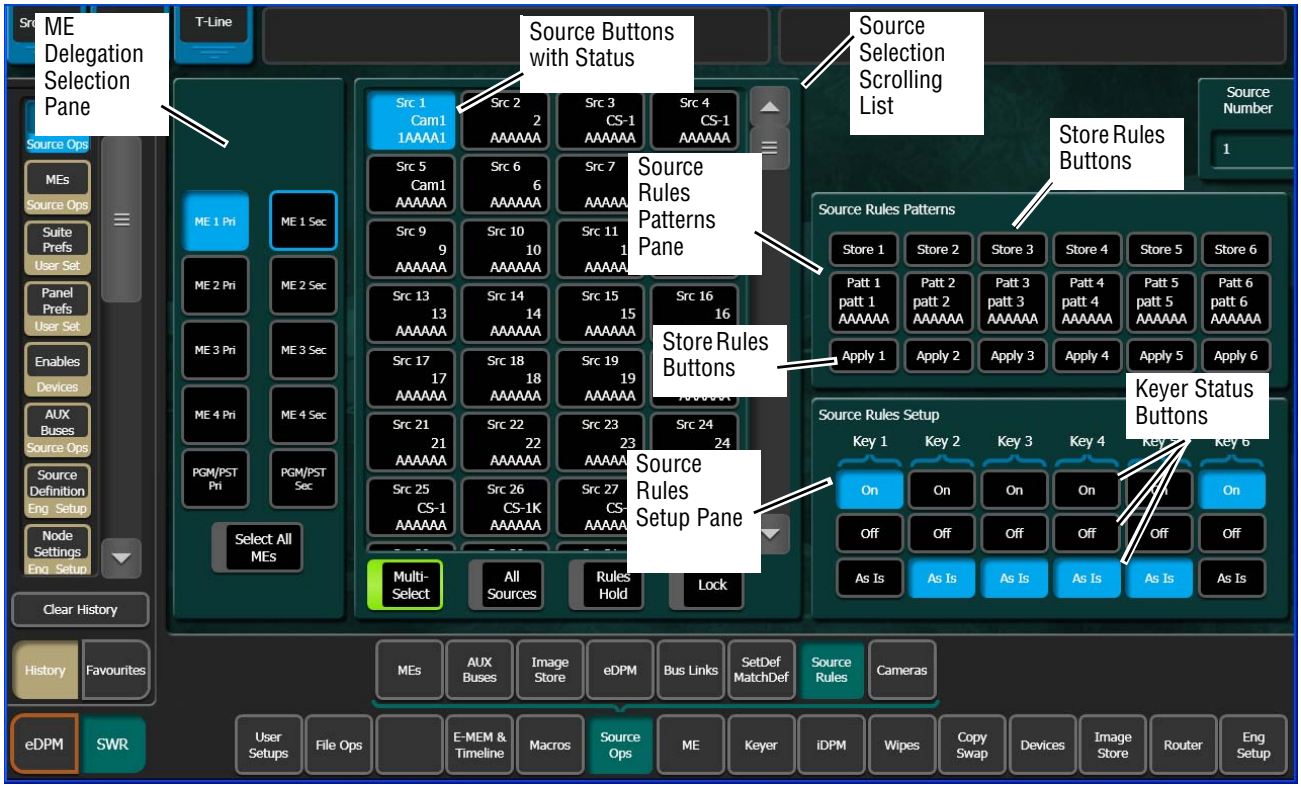
Source Rules force keyers to be in one of three states: On, off, or As Is (the default), on a source by source basis. A pattern of Source Rules for selected sources can be setup, applied, and named and stored for later use.

Source Rules are saved as part of a Show file (unless deselected), see *Show File Operations* *on page 157*.

The Source ID, Source Name, and Keyer Source Rules status are displayed in the Source buttons. Source buttons are in the source button scrolling list (Figure 102). Keyer source rules status is as follows:

- A=As Is
- 1=On
- 0=off

Figure 102. Source Ops, Source Rules Menu



Create a Source Rules Pattern

1. Touch the ME delegation buttons you wish to apply source rules to in the left-most menu pane.

Note Multiple ME selection is supported and a **Select All MEs** button is provided at the bottom of the ME selection menu pane.

2. Touch the source buttons in the scrolling source list menu pane (multiple selection is supported), right of the ME delegation buttons, you wish to setup as a Source Rules Pattern.

3. Touch the **On**, **off**, or **As Is** Source Rules state buttons in the Source Rules Setup menu pane for each Keyer you wish to set the state.

Store a Source Rules Pattern

1. Touch one of the **Store 1-6** buttons to store the Source Rules Pattern.
2. To name the stored pattern, touch the center **Patt 1-6** button to which you want to store the pattern in the Source Rules Patterns menu pane, and a keyboard will be displayed. Type the name and press **Enter**.

Apply a Source Rules Pattern to other Sources

Using the **Apply** buttons, Source Rules Patterns can be applied to any other source or set of sources.

1. Touch the source buttons to which you want to apply the Source Rules Pattern.
2. Touch one of the **Apply 1-6** buttons previously stored in the Source Rules Pattern menu pane.

Source Rules Hold

Rules Holds apply to each partition of a delegated ME. Rules Holds can be applied by either touching the **Rules Hold** button in the Source Ops, Source Rules menu or by pressing the **Rules Hold** button on the Source Select Module for the ME or MEs delegated to that Source Rule.

CAUTION Applying Rules Holds from the Source Select Module require you to press the **Rules Hold** buttons for each ME (including both partitions for a Split ME) delegated to that Source Rule.

SetDef MatchDef

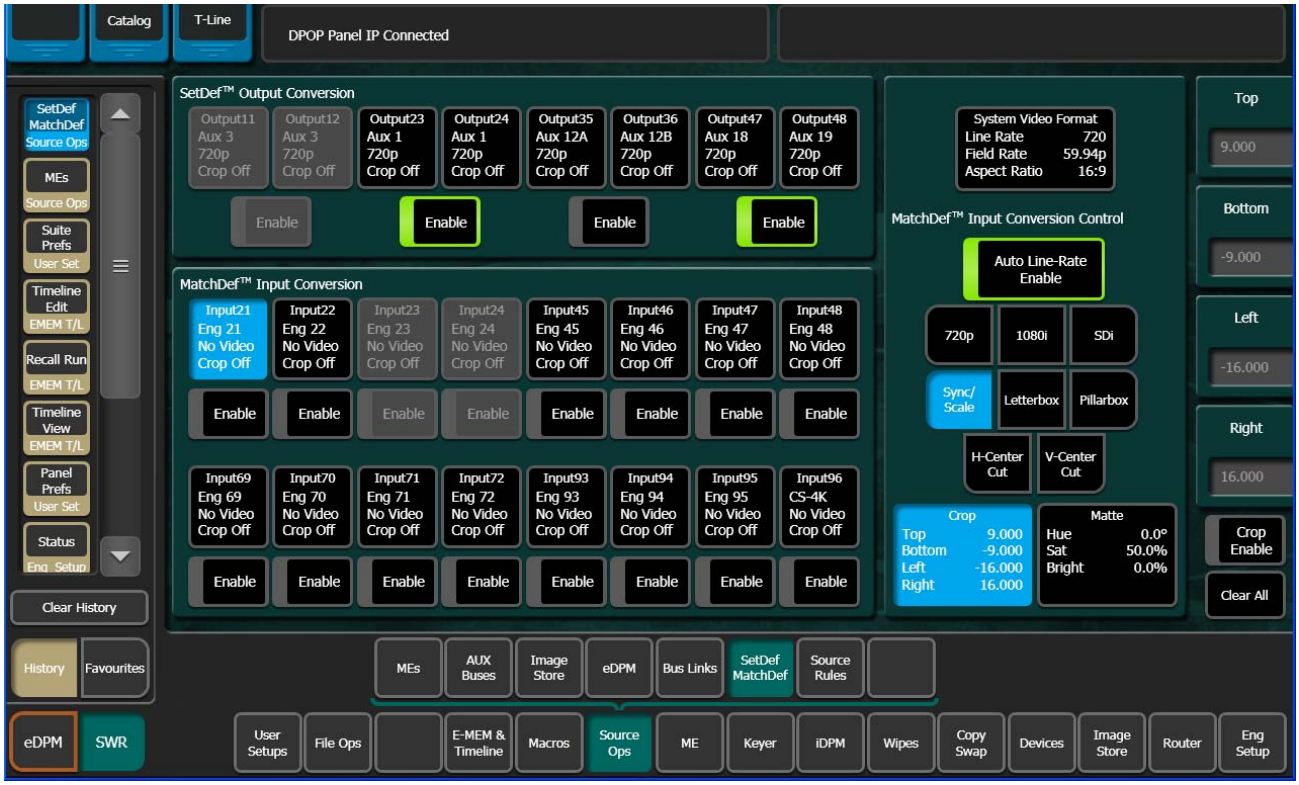
The SetDef and MatchDef options permit line rate signal format conversion of selected Kayenne system outputs and inputs. SetDef output and MatchDef input conversion is licensed in connector pairs. Conversion is active when the associated Video Processor Frame ME board is present and the license is enabled. Selecting an output or input button automatically brings up controls for that conversion.

Note SetDef and MatchDef may be configured as part of engineering setup using the Eng Setup, SetDef MatchDef menu. If SetDef or MatchDef has been configured as part of engineering setup, this takes precedence over the TD being able to change these settings, and these items are grayed out in the Source Ops, SetDef MatchDef menu.

The default for the Source Ops, SetDef MatchDef menu is Auto Line-Rate enabled. To access the Source Ops, SetDef MatchDef menu, touch **Source Ops**, **SetDef MatchDef** (Figure 103).

Note MatchDef does not perform frame/rate conversion.

Figure 103. SetDef MatchDef Menu, SetDef Selected



SetDef Output Conversion

Each of the eight SetDef buttons report the current source, format, and crop status for that output.

Note A SetDef output can only be controlled from the Source Ops, SetDef MatchDef menu when the SetDef output is assigned to the same suite as the menu (a caution dialog will display if you attempt to change the suite with SetDef outputs assigned). Output suite assignment can be performed in the Eng Setup, Outputs menu.

The four **Enable** buttons activate and deactivate conversion for the pairs of output connector buttons immediately above.

The currently operating Kayenne video standard is shown in the **System Video Format** status display on the upper right portion of the menu.

The **SetDef Timing** button, when selected, displays Horizontal and Vertical Offset data pads, allowing changes to the timing of that output relative the the Kayenne system video reference.

The conversion format for the selected output is chosen from the labeled buttons in the right pane (**720p**, **1080i**, **Std Def 4:3**, **Std Def 16:9**). This format is applied to both output pairs.

Controls for Scale, Letterbox, Pillarbox, H-Center Cut and V-Center Cut are displayed, depending on the format selected.

Scale - Scales the image to fill the full raster of the screen. If mismatched formats are involved, the image may distort and appear wider or narrower that its original state.

Letterbox - Used to convert 16:9 to 4:3 by adding bars above and below the image.

Pillarbox - Used to convert 4:3 to 16:9 by adding bars to the left and right sides of the image.

H-Center Cut - Fills the screen with the center portion of the image, cutting off some of the left and right sides.

V-Center Cut - Fills the screen with the center portion of the image, cutting off some of the top and bottom.

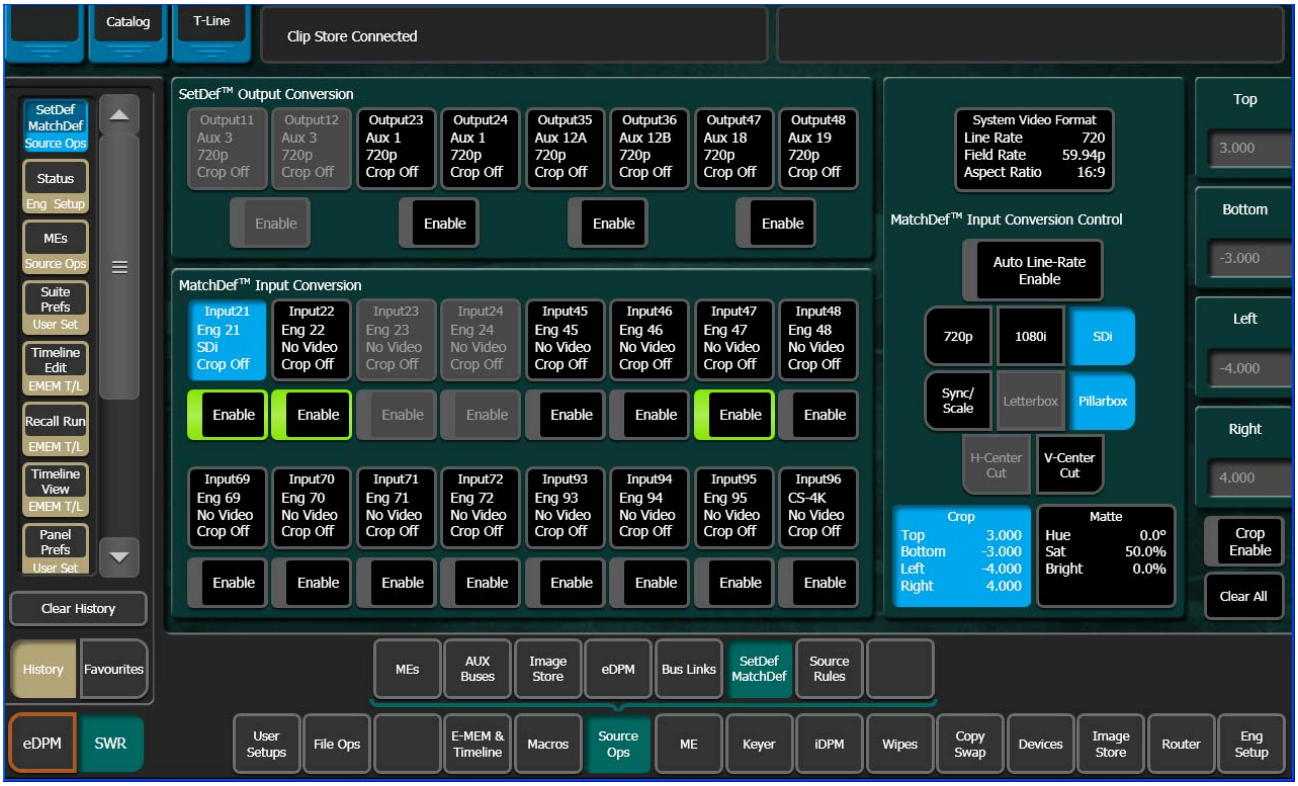
The **Crop** button, when selected, displays Top, Bottom, Left, and Right crop data pads. Crop values can be entered and activated by touching the **Crop Enable** button.

When Crop, Letterbox, or Pillarbox is active, the **Matte** button can be selected, which displays Hue, Saturation, and Brightness data pads. The color values entered are applied to the non-image portion of the raster.

MatchDef Input Conversion

Note Besides scaling, MatchDef performs color space conversion and is motion adaptive.

Figure 104. SetDef MatchDef Menu, MatchDef Selected



Each of the 16 MatchDef buttons report the current source, format, and crop status for that input.

The **Enable** buttons activate and deactivate conversion for the individual input connector button located immediately above.

The currently operating Kayenne video standard is shown in the **System Video Format** status display on the upper right portion of the menu.

Auto Line-Rate Enable – When on, the Kayenne system detects the input video format and automatically chooses the appropriate line rate for the selected input. One frame of video is required for detection. If the incoming video signal format changes, one incorrect frame of video will be displayed. When Auto Line-Rate Enable is on, the 720p, 1080i, and SDi buttons below are inactive.

Note If the incoming source is has a noisy signal, choosing the correct frame rate manually may provide better performance.

When Auto-Line Rate Enable is off, the conversion format for the currently selected input can be chosen from the labeled buttons in the right pane (**720p**, **1080i**, **SDi**).

Controls for Scale/Sync, Letterbox, Pillarbox, H-Center Cut and V-Center Cut are displayed, depending on the format selected. These controls are identical to those used for SetDef. The **Sync/Scale** button behaves the same as the SetDef **Scale** button, but also employs frame sync circuitry.

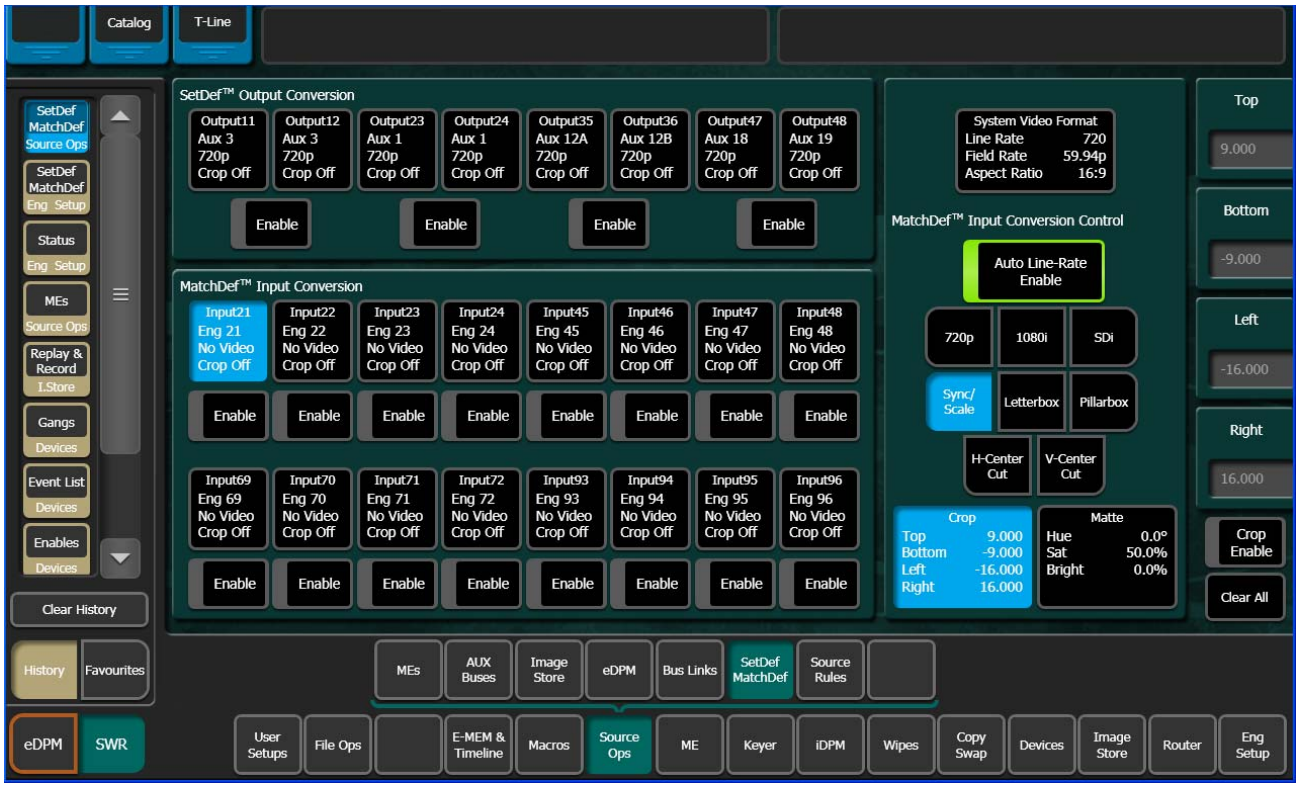
Crop and **Matte** controls are also available, which operate the same as for SetDef (see page 147).

E-MEM Control of SetDef MatchDef

SetDef and MatchDef parameters can be learned and recalled using E-MEM. An E-MEM learned with the SetDef and/or MatchDef sub-levels assigned means that the parameters set in the Source Ops, SetDef MatchDef menu will be recalled as part of that E-MEM (Figure 105). For more information about E-MEM control, see *E-MEM Operations* *on page 181*.

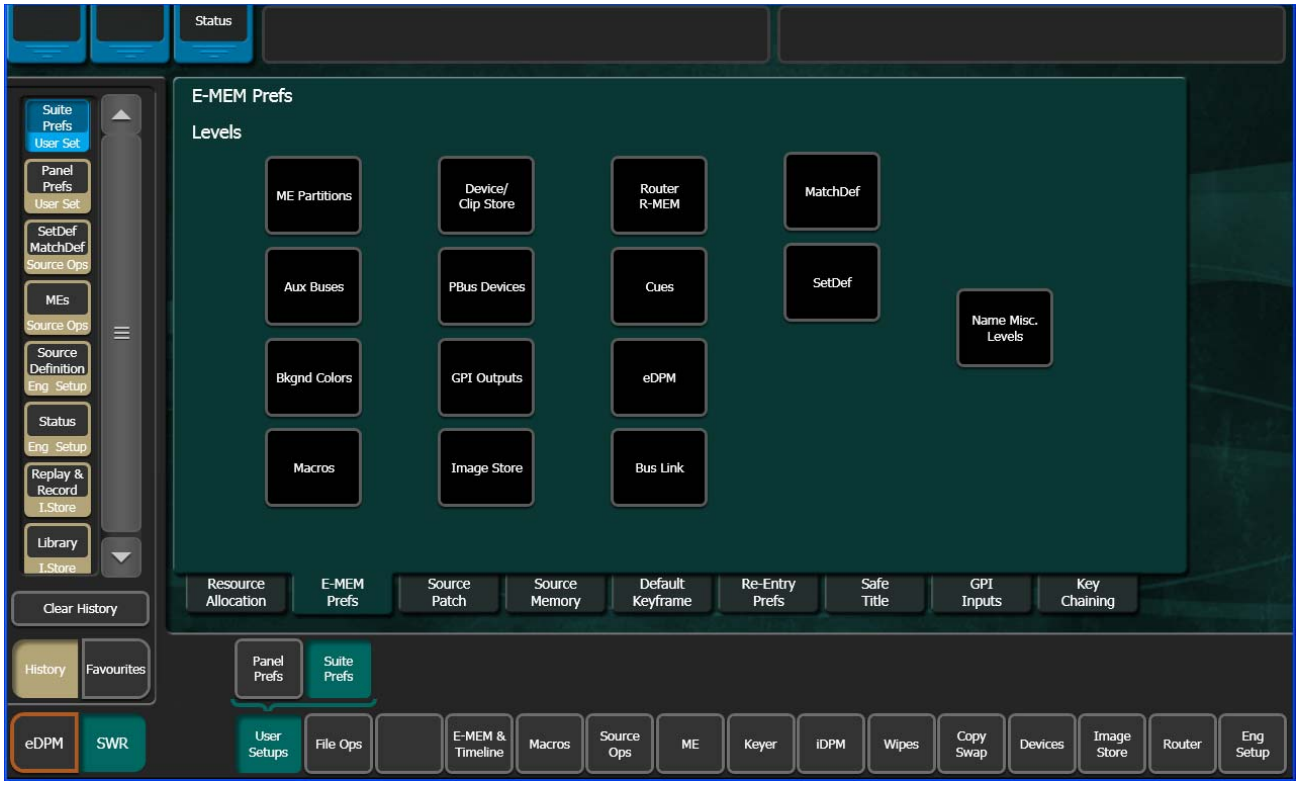
SetDef and MatchDef are E-MEMable but not keyframeable, therefore each will only be recalled on the first keyframe.

Figure 105. Source Ops, SetDef MatchDef Menu



SetDef and MatchDef sub-levels are selected from the User Setups, Suite Prefs, E-MEM Prefs menu (Figure 106).

Figure 106. E-MEM Prefs Menu

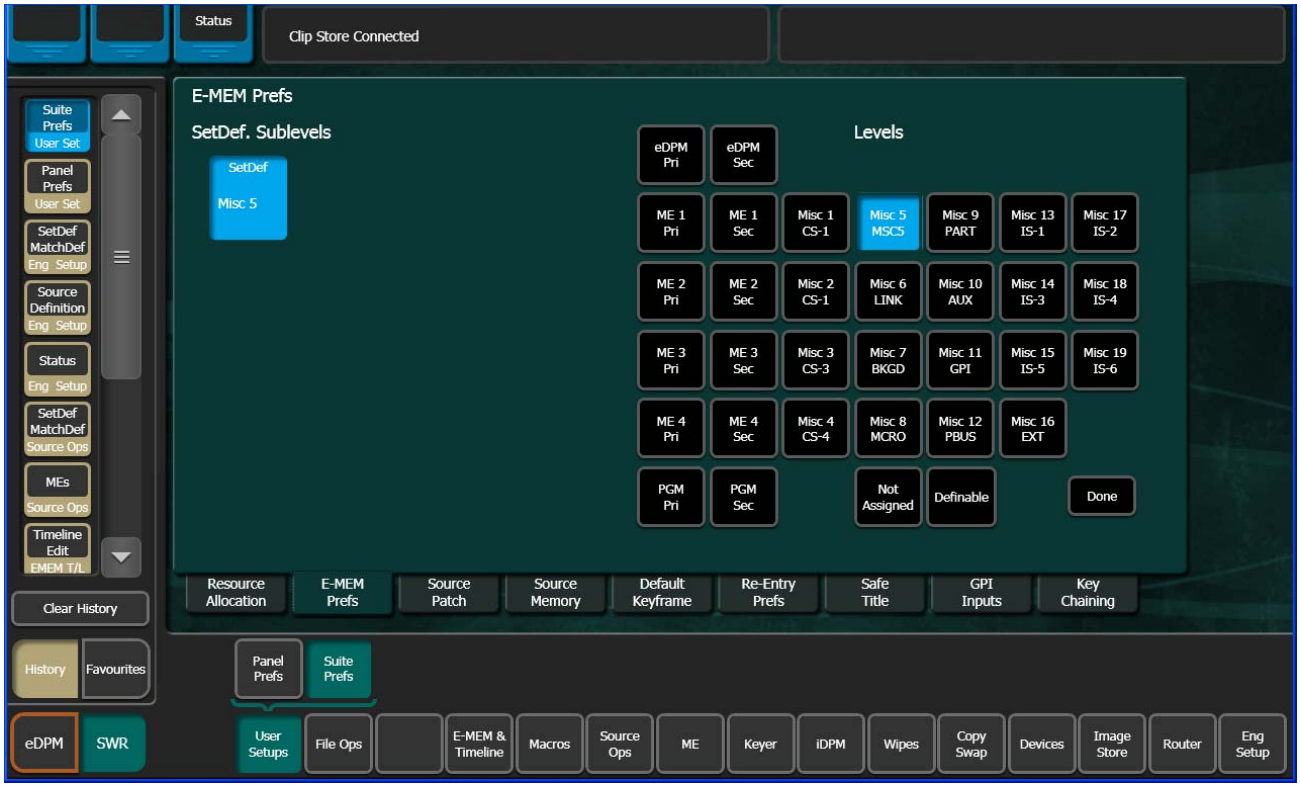


SetDef

There is one SetDef sub-level for Suite 1 and one for Suite 2; SetDef sub-levels can be assigned to any level. Parameters set and an E-MEM learned in Suite 1 will only recall the parameters set in Suite 1.

1. To assign the SetDef sub-level, touch the **SetDef** Level button (Figure 106), the SetDef sub-level menu is displayed.

Figure 107. SetDef sub-level Menu



2. Touch the desired level to assign the SetDef sub-level or the **Definable** or **Not Assigned** buttons.
3. Touch the **Done** button when finished.

MatchDef

E-MEM learns all of the parameters for the MatchDef input conversion in the Source Ops, SetDef MatchDef menu. E-MEM control of MatchDef is limited to Suite 1 only.

1. To assign the MatchDef sub-level, touch the **MatchDef** Level button (Figure 106), the MatchDef sub-level menu is displayed.

Figure 108. MatchDef Sub-level Menu

2. Touch the desired level to assign the MatchDef sub-level or the **Definable** or **Not Assigned** buttons. Touch the **Done** button when finished.

File Operations

The Kayenne system has a file browser. You can browse through folders on the local Kayenne menu hard disk, the Kayenne Video Processor Frame, and the entire network file hierarchy of mapped drives.

Features

The Kayenne file browser supports the following features:

- Navigate through the Frame User Directory on the Video Processor (System Storage menus) and access the Menu Panel and all mapped network drives including USB Memory Sticks (Remote Storage menus),
- Save and Load Show, User Setup, Panel Memory, E-MEM, Macro, Source Rules, Cues, e-DPM, R-MEM, and Eng Setup files,

Note Image Store file operations are performed in the Image Store menu.

- Organize collections of files as Shows,
- Sort files by name and type, and in reverse alphabetical order,
- Create new folders,
- Copy/Paste, and Delete files,
- Rename files and folders, and
- Select multiple files.

Introduction

Kayenne system files are *saved* to the location that has been navigated to with the browser, creating copies of the information currently in use by the Kayenne system. Files are *copied* from one location to another without affecting the current operation of the Kayenne system. File information is *loaded* to Kayenne system RAM, and this immediately affects the operation and capabilities of the Kayenne system.

File and load operations are available from various menus. The same basic operating procedures are used at each location and each is divided into two navigational areas; Local Storage and Remote Storage.

File Type Extensions

Kayenne files are named by the user when saved, and this name appears below the icon. The extension for each Kayenne system file type is listed in Table 9.

Table 9. Kayenne System File Extensions

Icon Example	File Type	Extension
	Panel Prefs	.GVC .GVF .GVJ
	Suite Prefs	.GVS .GVZ
	Source Mem	.GVM
	Eng Setup	.GVE .GVH .GVN
	E-MEM Reg	.GVR
	R-MEM Reg	.GVY
	Panel Memory Reg	.PMEM
	Cues Reg	.GVB
	e-DPM Reg	.GVI
	Image Store	.KIF
	Macro Reg	.GVG
	Source Rules	.GVL
	Show Folders	.GVV

The extension is added to the file automatically when saved, but is not displayed as part of the file name itself. To prevent confusion, do not try to add an extension to the file name when saving files.

Non-Kayenne generated file icons show the file name with extension, and displays the extension letters in the icon.

Kayenne Drive Access

The Kayenne File Operation menus can access directories located on the Compact Flash in the Video Processor Frame (System Storage) and the Menu Panel hard drive (Remote Storage). Local and network drives mapped on the Menu Panel's Windows system are also accessible (Remote Storage). Standard Windows functionality automatically maps all local drives during startup. Mapping network drives to a drive letter using the Windows Explorer allows them to appear at the top of the File Operation menus on that menu system.

File Storage Organization

The file browser gives you great flexibility for choosing and creating storage locations for your files. Any number of folders can be created in

various locations. File folders and the files themselves can be named in any manner. To prevent accidentally saving and loading incorrect files, your facility should establish file storage and naming conventions and follow them consistently.

The engineer in charge should create default Panel and Suite Prefs files that are not to be modified by anyone, and shared by everyone. These can provide a known starting point for users when they build their own preference files.

Experienced users may want to create their own sets of preference files and save only critical ones in the Frame User directory. Other files can be loaded using the browser from any directory or be placed on a personal USB Memory Stick.

Use the Show feature to manage groups of files routinely used together for a particular production.

Save important files to the Menu Panel hard drive *and* a USB Memory Stick for backup, clearly label each (perhaps including the date), and store them in a safe place.

Utilities Pane Operation

Each File Ops menu category has a Utilities Pane, with buttons to perform Copy, Paste, Delete and Create Folder operations and a Multi-Select toggle button.

Copy/Pasting Files

1. Navigate to the directory containing the file to be copied, using the **Top Directory**, **Up Directory**, and **Open Selected** (or double-click on the file icon) buttons.
2. Select the file(s) to be copied (choose the **Multi-Select** button for multiple files)
3. Touch the **Copy** button. A new pane with its own scroll bar will appear to the right. **Top**, **Up**, and **Open** navigation buttons will also appear for the right-hand pane. Files can only be pasted to the new right-hand pane. The Delete, Create Folder, and Rename functions apply to the left-hand pane only, and are inactive during a Copy/Paste operation.
4. Navigate the right-hand pane to the desired directory, using its navigation buttons.
5. Touch the **Paste** button. A message indicating the file is being copied will be displayed, and when finished the right-hand pane will close.

Note Use clear naming conventions and logical directory structures when creating folders and renaming files so you can reliably reload the correct versions of these files when you need them.

Delete Files

1. Navigate to the directory containing the file(s) to be deleted, using the **Top Directory**, **Up Directory**, and **Open Selected** (or double-click on the file icon) buttons.
2. Touch the file icon(s) to highlight it.
3. Touch the **Delete** button.

Create Folder

1. Touch the Create Folder button.
2. Enter the folder name in the pop-up keyboard.
3. Touch **Enter**.

Rename Files

1. Navigate to the directory containing the file to be renamed, using the **Top Directory**, **Up Directory**, and **Open Selected** (or double-click on the file icon) buttons.
2. Touch the file icon to highlight it (only one file can be renamed at a time).
3. Touch the **Rename** button.
4. Enter the new file name in the pop-up keyboard.
5. Touch **Enter**.

Multi-Select Button

The **Multi-select** button is useful for copying, pasting, loading, or saving multiple files.

Show File Operations

The Show Files menu (accessed from **File Ops**, **Show Files**) is used to create, save, and load Shows. A Show is a special collection of Kayenne files that can be managed as a group.

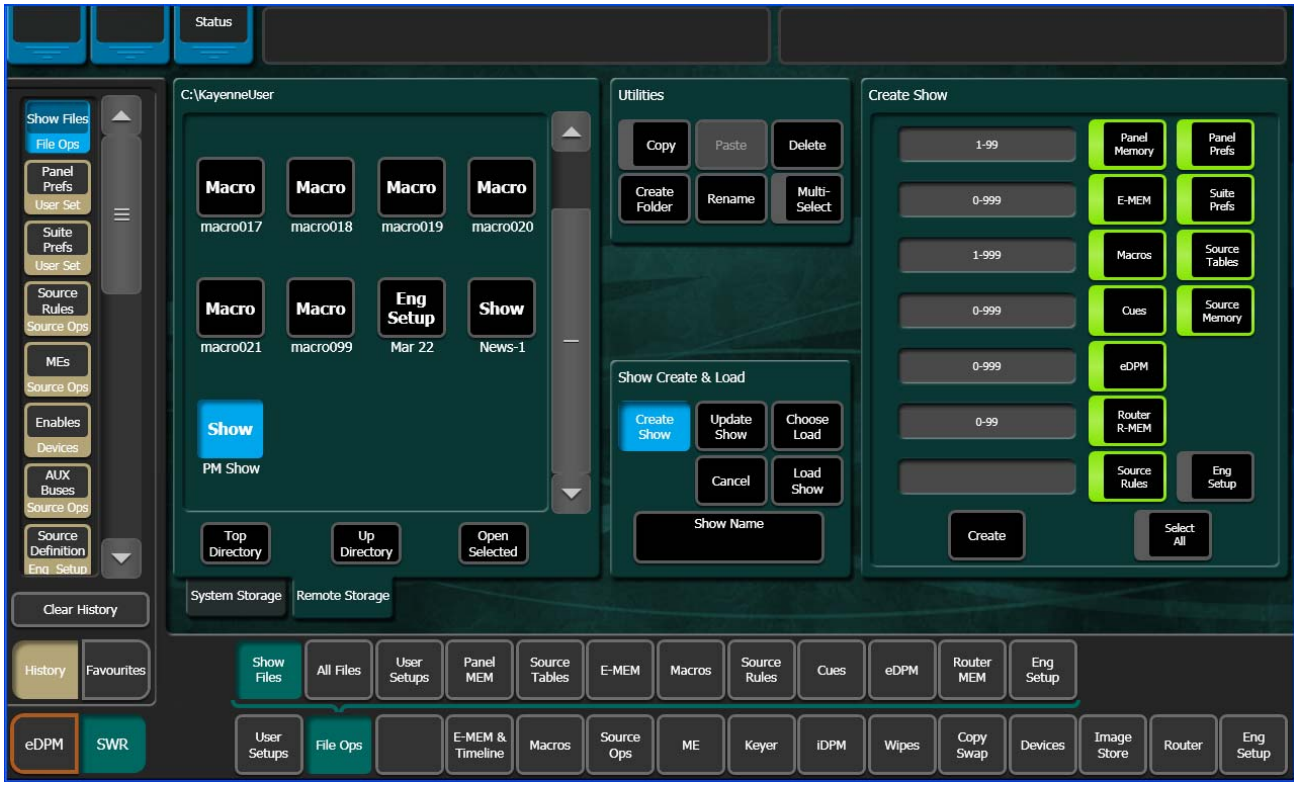
Touching the **Create Show** button opens a create show pane.

In this pane you enter the name of the Show (touch the **Show Name** data pad), and if you choose, select which file types and choose a range of registers that will be included in the Show file.

The **Select All** (toggle) button selects or deselects all the available file types. Touching on a file type button selects or deselects that individual type of file for saving/loading. Touching the data pads just to the left of the file type buttons allows you to enter a range of registers, of that type, to include in the show (Figure 109).

Touching the **Create** button saves the show into the currently selected directory. A pop-up panel displays the status of each file type as the Show file is created.

Figure 109. Create Show File Operations



1. Go to the File Ops, Show Files menu.
2. Select the **Create Show** button in the Show Create & Load pane (bottom-center).

3. In the Create Show pane, touch to select/deselect file types, or touch the **Select All** button (e-DPM is an option, if not installed the button will be inactive).
4. Select the register data pad (left of each button) and enter a series or range of registers to be included in the Show file (the default is **all**).
5. Touch the **Create** button in the Create Show pane.

Choose Load

Pressing **Choose Load** brings up a pane that allows you to see what files are contained in the Show, and select which files to load. Buttons for files not present are grayed out. By default all the files in the Show are selected for load. The controls in this pane operate the same as the Create Show, except the **Load** button replaces the Create button.

Specify the file types and ranges of files you wish to load, then touch the **Load** button.

Update Show

Touching the **Update Show** button brings up a pane that allows you to select specific files within a show to update. Specify the file types and ranges of files you wish to update, then touch the **Update** button. The selected files in the show will be overwritten with the current Kayenne settings for those items.

Load Show

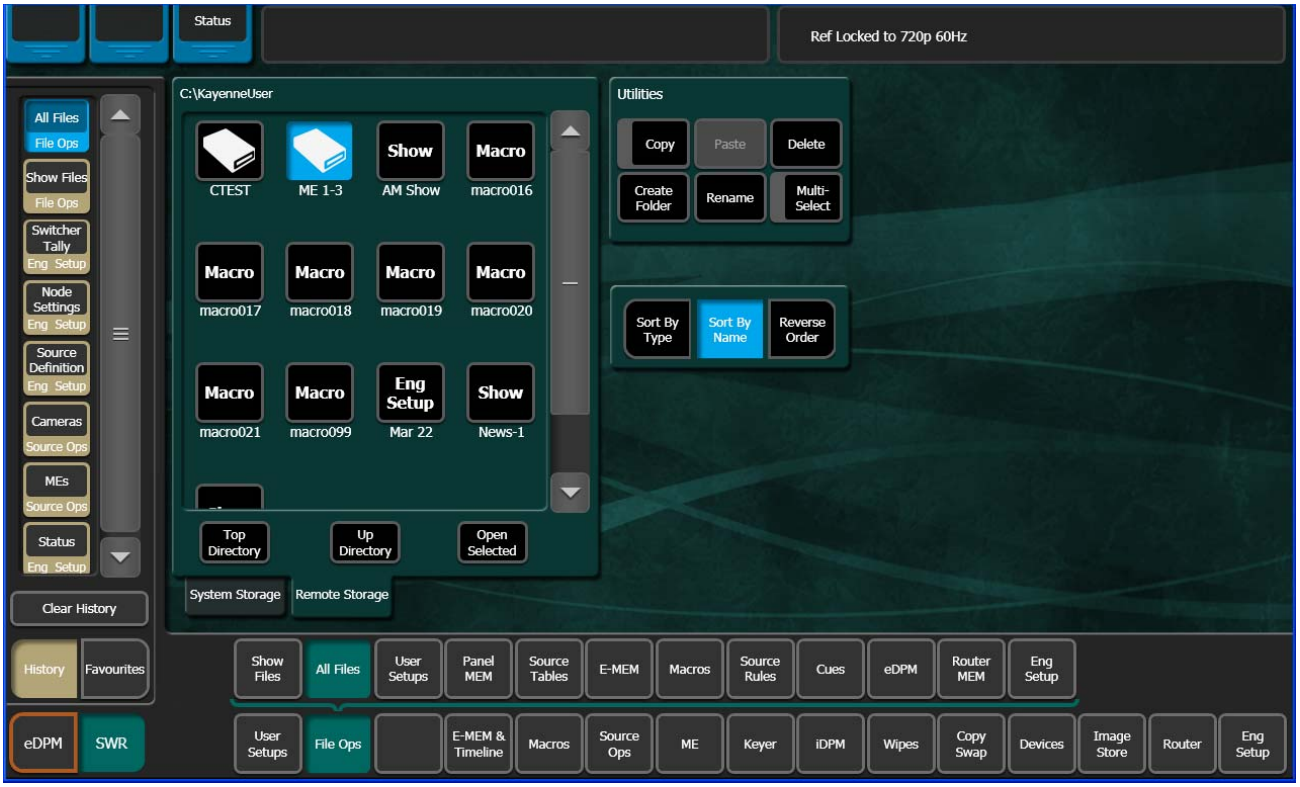
Touching the **Load Show** button immediately loads all the files in the currently selected show into the Kayenne system. This operation will overwrite the existing settings that are currently being used. While the current work buffer and video outputs will not be affected, other aspects of system operation (source mapping, source name displays, available effects, etc.) will change depending on what files are being loaded.

CAUTION Be sure the Show contains appropriate files before you load a Show, especially if the system is currently on-air or the Show contains Eng Setup files. Choose Load can be used to inspect the Show and select files before loading.

All Files Operations

The File Operations All Files menu is used for managing Kayenne system file storage. The menu is accessed from **File Ops**, **All Files** (Figure 110).

Figure 110. File Operations Menu

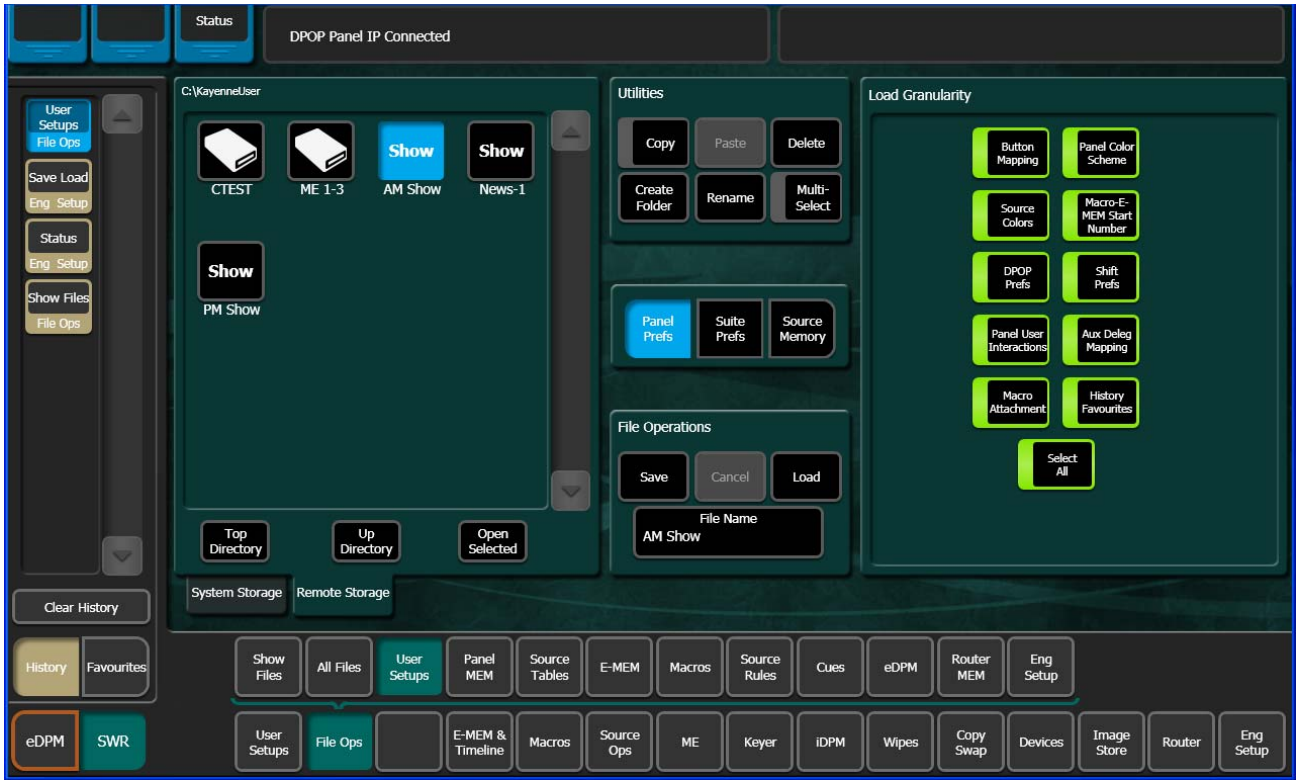


User Setups File Operations

The User Setups menu is used to save and load Panel Prefs, Suite Prefs, and Source Memory. Only these file formats are supported in this menu. The menu is accessed by touching, **File Ops**, **User Setups** (Figure 111).

For Panel Prefs and Suite Prefs, you can select all (**Select All** button) or individual files to load in the Load Granularity pane (right). Access the Load Granularity pane by touching the Panel Prefs or Suite Prefs mode button (Figure 111).

Figure 111. User Setups Menu



The User Setups menu is similar to the File Operations All Files menu, with a file display pane on the left and some of the same navigation and action buttons in the center.

To Save Panel Prefs or Suite Prefs Files:

1. Touch the **Panel Prefs** or **Suite Prefs** button.
2. Select all or individual file types to save.
3. Navigate to the desired destination directory and/or create a new folder for the file using the buttons in the File Operations pane.

4. Touch the **File Name** data pad and enter the name you wish the saved file to have.
5. Touch the **Save** button.

To Save Source Memory Files:

1. Touch the **Source Memory** button.
2. Navigate to the desired destination directory and/or create a new folder for the file using the buttons in the File Operations pane.
3. Touch the **File Name** data pad and enter the name you wish the saved file to have.
4. Touch the **Save** button.

To Load Panel Prefs, Suite Prefs, or Source Memory Files:

1. Navigate to the directory containing the files you wish to load, using the buttons on the lower left.
2. Select the file to be loaded.
3. Touch the **Load** button.

CAUTION The Load button immediately replaces information the Kayenne system is currently using with the selected file information. When configuration files are loaded, significant changes to Kayenne system operation are possible.

Panel MEM, E-MEM, Macros, Cues, e-DPM, and Router MEM File Ops

These menus all function similarly and are used to save and load their corresponding register files. Each menu is accessed by touching, **File Ops**, then the menu category: **Panel MEM**, **E-MEM**, **Macros**, **Cues**, **e-DPM**, or **Router MEM**.

Note The key difference in the above menus are the number of registers, for example the E-MEM menu has 1000 register files while the Macro menu has 999, and Router MEM has 100, and so on. Keep this in mind when entering registers.

Note Register files are named by their bank and register number. For example, the filename for E-MEM register 5 in Bank 2 would appear as EMEM25. File names consist of the bank and register appended with.GVR. It is important that these files retain these names, as the number determines which register will receive the data when files are loaded. In fact, register files saved locally to the Frame:C drive cannot be renamed. If you try to rename an E-MEM file on the Frame:C drive an error message will appear in the message area. If for some reason an E-MEM file needs to be renamed, copy it to a local drive and rename it.

Each menu is similar to the other File Ops menus with a file display pane on the left and the same navigation and action buttons in the center.

Each menu provides the Utilities pane (Copy, Paste, etc.) and the ability to select all, individual, or a range of register files to be saved or loaded. In addition, in the File Operations pane, you can enter a starting register which allows you to save/load a register or range of registers to a different register or range of registers.

To Save Register Files:

1. Navigate to the desired destination directory and/or create a new folder for the file using the buttons in the File Operations pane.
2. Touch one of the three Save/Load Register mode buttons (center) and
   a. Touch the **All** button to select all register files, or
   b. Touch the **Enter Reg(s)** button then enter a register or range of registers in the **Register** data pad (right), for example 1-5,10,12, or
   c. Touch the **Select Reg(s)** button then select register files in the file display panel (touch **Multi-Select** button for multiple selections).
3. Touch **Save**. The register or range of registers will be saved to the target directory.

To Load Register Files:

Registers are loaded by using the same methods as above but by touching the **Load** button.

Loading to a Different Set of Registers

One additional method of loading registers is available, that permits loading registers with an offset.

1. Navigate to the desired destination directory and/or create a new folder for the file using the buttons in the File Operations pane.
2. Touch the **Enter Reg(s)** button then enter a register or range of registers in the **Register** data pad (right).
3. Touch the **Start Register** (highlights green) button.
4. Enter the number of the first register into which you wish to load the selected range of registers, then touch **Enter**.
5. Touch the **Load** button.

The range of registers will be loaded to the specified register number shown in the **Register** data pad.

Source Rules File Operations

The Source Rules menu is similar to the other File Ops menus, with a file display pane on the left and some of the same navigation and action buttons in the center.

To Save Source Rules Files

1. Select the file(s) to be saved (choose the **Multi-Select** button for multiple files).
2. Touch **Save**.

To Load Source Rules Files

1. Select the file(s) to be saved (choose the **Multi-Select** button for multiple files).
2. Touch **Load**.

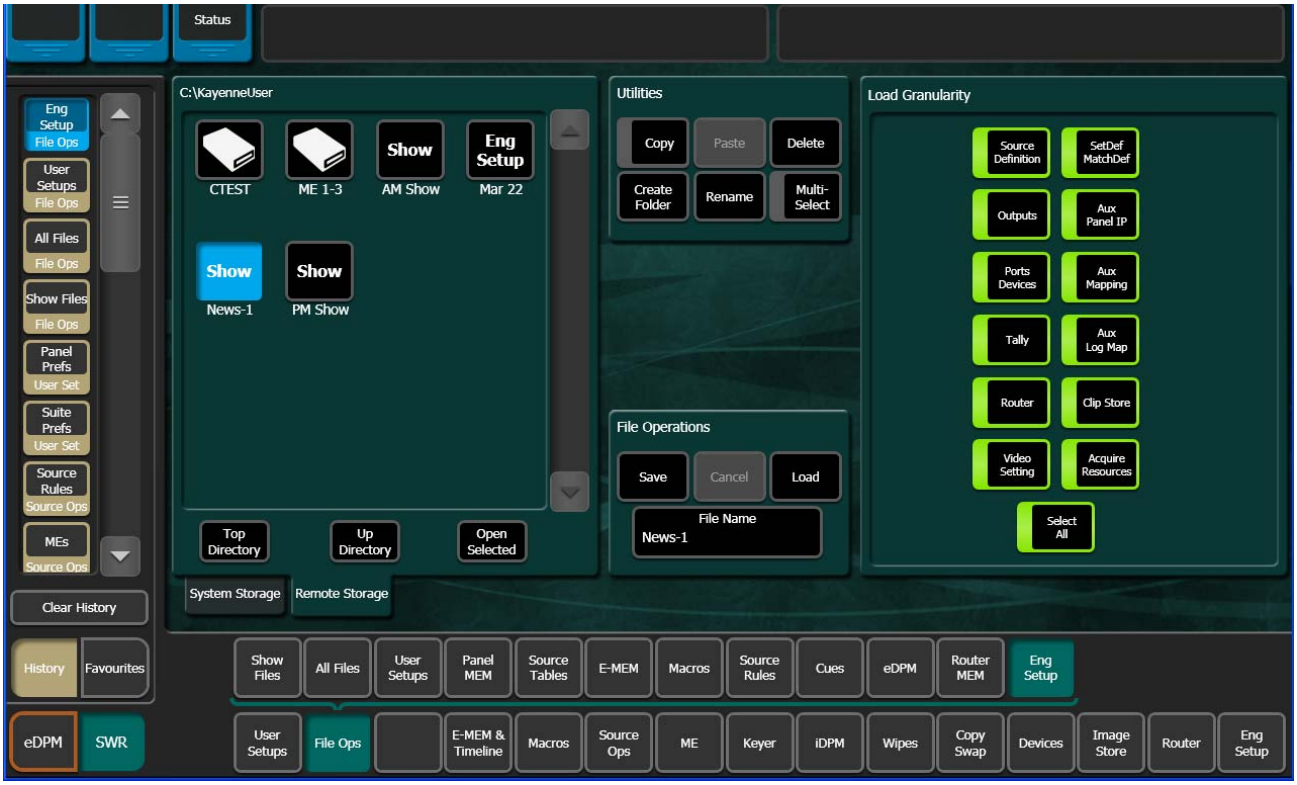
Eng Setup Operations

The File Ops, Eng Setup menu is used to save and load engineering setups information. Only this file format is supported in this menu. The menu is accessed by touching **File Ops**, **Eng Setups** (Figure 112).

CAUTION The **Load** button immediately replaces information the Kayenne system is currently using with the selected file information. When configuration files are loaded, significant changes to Kayenne system operation are possible.

Refer to the *Kayenne Installation & Service Manual* for more information about Eng Setup operations.

Figure 112. Eng Setup Save-Load Menu



Transitions

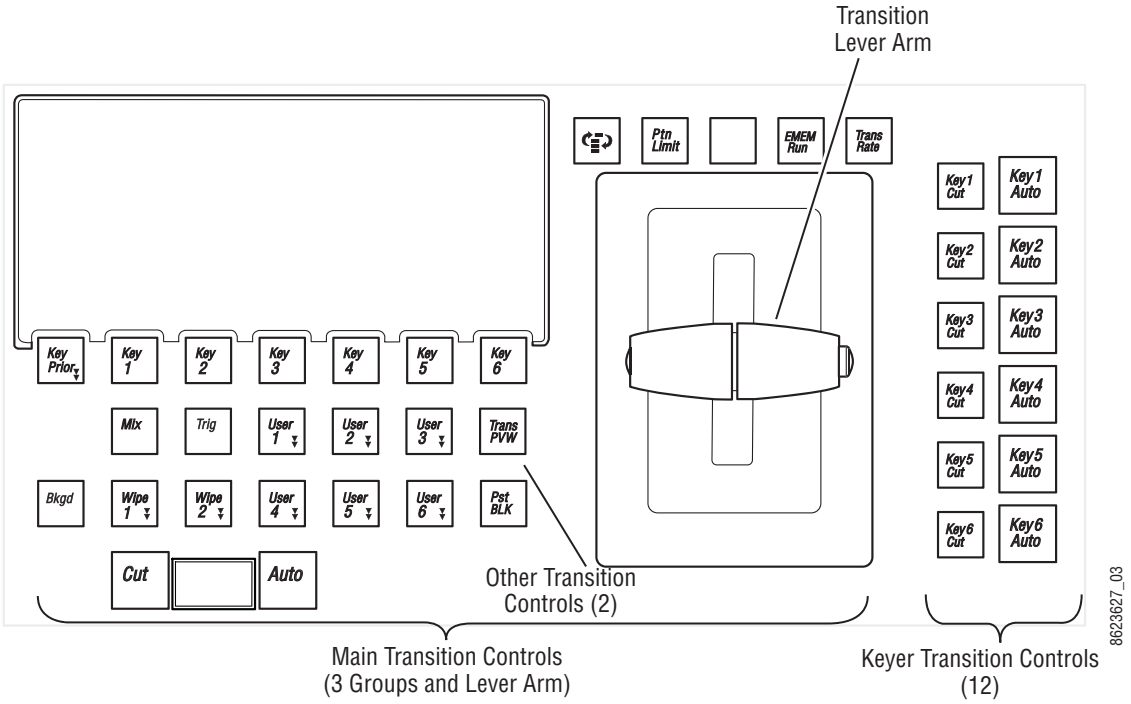
ME and Local Aux Panel transitions can be performed on the Kayenne Control Panel. Transitions are also possible from the ME, Transition menu.

Transition Module

Manual Transitions

Manual transitions are preset with the next transition element buttons. Any elements that are active when a transition is performed will change state. Active keyers will transition from on-air to off-air or vice versa. Background transitions will occur between the A and B buses with a flip flop at the end of transition, ensuring the A bus is always on-air and the B bus is off-air when a transition is not in progress. Any element not selected in the next transition element group retains its current state. Combinations of elements can be included in the same transition by selecting more than one transition element button.

Figure 113. Transition Module



To Perform a Lever Arm Transition

Setup:

1. Select the next transition button(s) for the element(s) involved (**Bkgd**, **Key 1-6**, **Key Prior**.). Selecting one element button disables any others selected. Holding down one button while pressing another selects both elements, allowing all the transition elements to be activated if desired.
2. Select the type of transition (**Mix**, **Wipe 1**/**Wipe 2**, **or User Transitions**).
3. Select any new sources involved in the transition:
   - If performing a background transition, select the new source to transition to on the B bus.
   - If you are transitioning in a new key, select that new source on the key bus.
   - If you are changing key priority, specify a new key priority in the Keyer Priority menu.
4. If desired, select a transition modifier (**Trans PVW** or **Preset Black**).

Perform:

5. Move the transition lever arm. The picture will transition only the elements selected. Other elements will remain unchanged.

To Perform an Auto Transition

Setup:

1. Setup for an Auto Transition is the same as a lever arm transition (see page 166) with the following added step:
2. Specify the duration of the transition by turning on the **Trans Rate** button, selecting the flashing button of the desired element, and entering a value in <seconds> • <frames> • <field> format (*Time Value Entry on page 180*). Different durations can be specified by repeating this process for each element.

Perform:

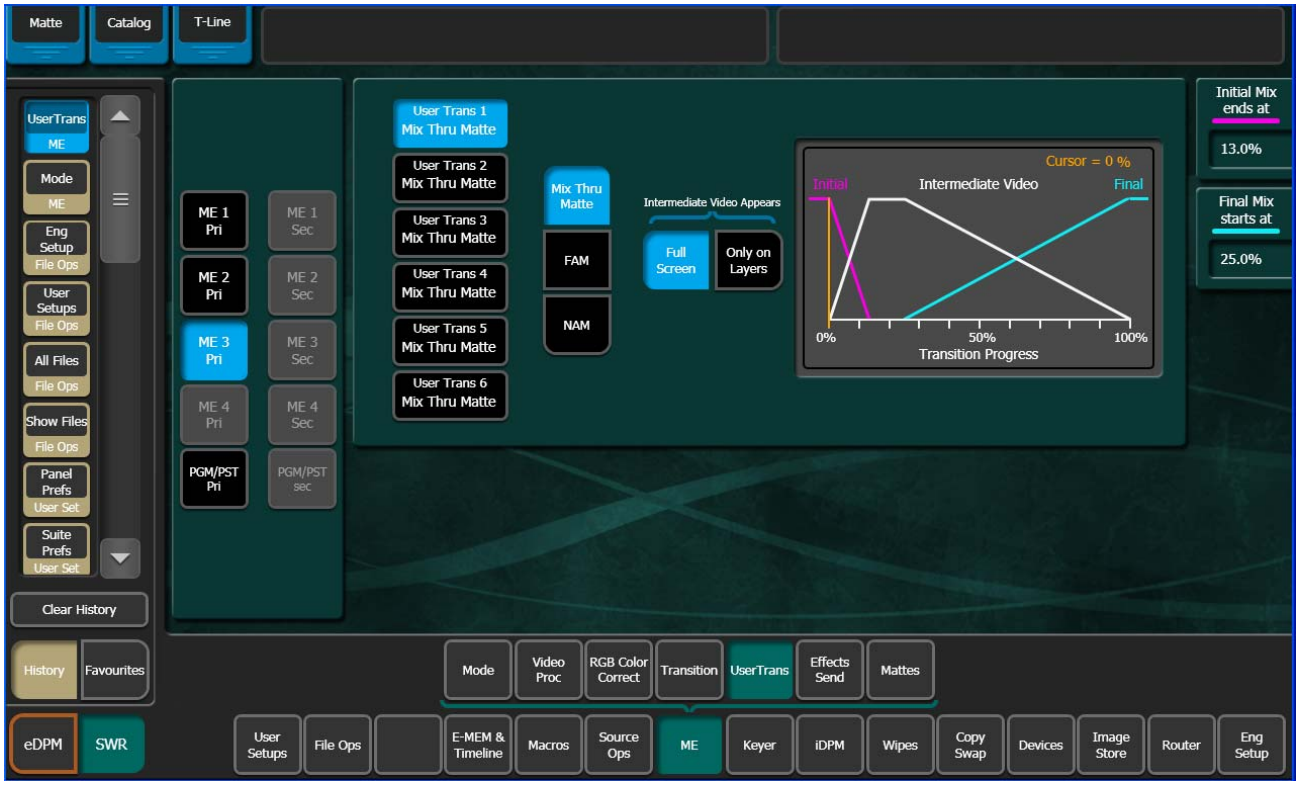
3. Press the **Auto Trans** button. The picture will transition only the elements selected at the specified rate(s). Other elements will remain unchanged.

Mix Through Video Transition

One common application of a Mix Through Video transition is to add a white flash to simulate a photographer's flashbulb. To set up a simple white flash effect do the following:

1. Go to the ME, Mattes menu.
2. Select the ME for the transition (left pane).
3. Select the Base Color data pad (right pane).
4. Set the Brightness to 100% and the Saturation to 0% with either the soft knobs or the popup keypad to create a white matte. The matte will appear in the Base Color box.
5. Go to the ME, User Trans menu.
6. Select the **User Trans Mix Through Matte** (1-6) button.
7. In the ME, User Trans menu, touch the **Full Screen** button under 'Intermediate Video Appears' to create a full raster effect.
8. Change the **Initial Mix Ends at** to a lower number to sharpen the slope of the mix from the initial to the intermediate video as shown in Figure 114.

Figure 114. Camera Flash Mix Values



9. On the Control Panel, select a video source on the corresponding ME A bus and a different video source on the B bus to transition to.

10. Select the User Transition button you assigned in Step 6 in the Transition Module. For a simple white flash between sources, select a **Bkgd** transition only (no key).

11. Use the Transition Lever Arm to run the white flash transition. Alternatively you can set the Transition Rate in the Transition Module to a fast rate to enhance the flashing effect, then press the **Auto** button to perform the transition at the specified rate.

You can experiment with various different programmed values to vary the appearance and timing of the effect.

NAM and FAM Mixed Transitions

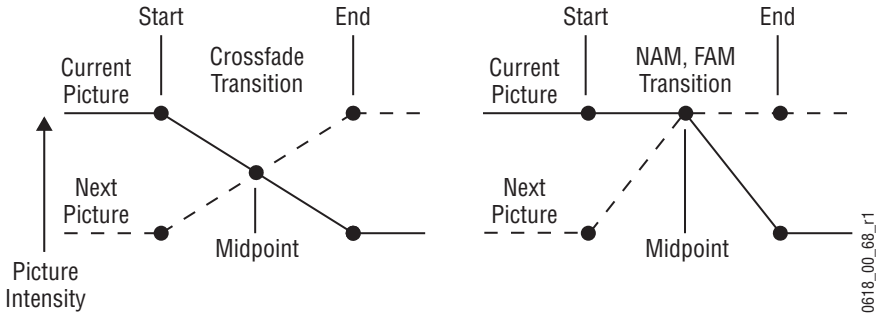
Non Additive Mix (NAM) and Full Additive Mix (FAM) are special mix transitions in the Kayenne system.

NAM transitions pass only the brightest regions of each picture to the output. During the first half of a NAM transition the original picture retains its original intensity while the next picture mixes to full intensity. Brighter areas in the new picture replace any corresponding darker areas of the previous picture. During the second half of a NAM transition the previous picture mixes out of the darker areas of the new picture. FAM transitions also first fade a new picture to full intensity and then fade the old picture out, but both full intensity pictures are mixed together to the output during the transition (Figure 115). The resulting signal is clipped at white level to prevent generating illegal video.

Ramping characteristics can be adjusted which allows the full mix point to be achieved at a preselected point in the transition. This can be useful when dissolving to and from animated transitions which have high luminance values.

Select **ME, User Transitions**. Select the **FAM** or **NAM** menu button.

Figure 115. Normal, NAM and FAM Mixes



Transitions Using E-MEM

Transitions can also be built into E-MEMs. See *E-MEM Transitions* *on page 197*.

Aux Bus Transitions

With support for Aux bus transitions on the Local Aux Module, you can mix or wipe between sources on an Aux bus. Kayenne allows you to use one or more ME partitions to perform mixes or wipes on multiple aux busses (“Half MEs” can only support a mix transition, not a wipe).

To perform a mix, a wipe, or a mixture of both transition types for a show, you will need to allocate ME resources in the User Setups, Suite Prefs, Resource Allocation menu (Figure 116).

Figure 116. Resource Allocation Menu

Trans Lock Button

The **Trans Lock** button on the Kayenne Local Aux Module on the Control Panel allows you to lock the selected mix or wipe as the transition type for the selected aux bus (repeats when a source is taken on that aux bus). By turning on the **Trans Lock** button, the transition will continue to mix or wipe until it is deselected. With the **Trans Lock** button off, a mix or wipe will only

transition once and then reset to a cut (cut is the default setting for an aux bus).

Setting Wipe Transition Parameters

1. Go to the Wipes menu in the Kayenne Menu Panel or press the **Wipe** button in the Multi-Function Module and set the wipe parameters for the ME(s) you will use for the aux bus (see *Pattern Mix* *on page 290*).
2. Select the wipe pattern to be used.

CAUTION When two partitions or more are released for aux bus wipe transitions, it is very important to make all wipe parameters the same because the dynamic assignment of ME partitions will not guarantee that an allocated partition will supply the transition resource for a specific aux bus.

Allocating Resources and Setting up the Transition

Aux bus transitions use the allocated resources only during the transition. Any Aux bus can then use the resource as it frees the resource after the transition.

When resources are allocated, the ME Mode menu still allows for the keyers to be used on the resource. If keyers are cut on they will only be visible on the Aux bus during the transition.

To allow both mix and wipe transitions, release the partition of a full ME in the User Setups, Suite Prefs, Resource Allocation menu. For mix-only, you can release and allocate an ME 50 or “half ME” resource.

1. Go to the User Setups, Suite Prefs, Resource Allocation menu (Figure 116).
2. Touch the button(s) of the ME partition you wish to allocate as the transition resource for the aux bus.
3. Press the **Aux Trans** button in the Application column.
4. To change the transition rate, press the **Aux Transition Rate** parameter button, enter a transition rate in the pop-up keypad, and press **Enter**.

   The **Mix** and **Wipe** buttons on the Local Aux Module are now low tally.
5. Select an Aux bus on the Local Aux Module.
6. Press the **Mix** or **Wipe** button.
7. Press the **Trans Lock** button if you wish the mix/wipe transition to remain selected.

   The aux bus is ready for transition to the next source.

Note If you attempt an Aux bus transition while all allocated ME transition resources are in use, the Aux bus will perform a cut (not a transition). For example if during a long transition where allocated resources are all in use, and you switched sources during the transition, the Aux bus would 'cut' to the selected source (it would not mix or wipe).

Transition Chaining

Transition Chaining allows you to chain transitions across different MEs. *Background Chaining* and *Partition Sync (Synchronization)* have been added to the Key Chaining feature to create "*Transition Chaining*":

- Key Chaining—Allows you to chain keys to coordinate their keyer states (on and off) on a single ME or from one ME to another. There are 15 Key Chains available in a Kayenne System. All keys in a chain transition on and off together (see *Key Chaining* *on page 172*).
- Background Chaining—Links background next-transition elements across different MEs; Primary to Primary partitions and Secondary to Secondary partitions. Two chains are available per suite (see *Background Transition Chaining* *on page 176*).
- Partition Sync—Links Primary and Secondary partitions within the same ME (see *Partition Sync Mode* *on page 177*).

These features can be used separately or together, and in combination with bus links to provide for example multiple feeds or 3D productions.

The Key Chaining menu in User Setups, Suite Prefs has been changed to Transition Chaining and selector buttons for **Key Chains** and **Bkgd Chains** have been added. To access the Transition Chaining menu, touch **User Setups**, **Suite Prefs**, **Transition Chaining** (Figure 121).

Figure 117. Transition Chaining Menu

Key Chaining

Key Chaining allows you to chain keys to coordinate their keyer states (on and off) on a single ME or from one ME to another. There are 15 Key Chains available in a Kayenne System. All keys in a chain transition on and off together. Key Chaining is performed in the User Setup, Suite Prefs, Key Chaining menu (Figure 118).

Some uses for Key Chaining are:

- Keyers within an ME for language or Ident separations of clean feeds,
- Aspect ratio-specific graphics across more than one ME, or
- Advertising graphics on bus-linked MEs which already substitute background pictures.

In the Key Chaining menu, you can configure which keyers are chained together in each chain. The following rules apply:

- Each keyer may not be in more than one Key Chain.
- All keyers in a Key Chain will be equal in command priority.

Key Chaining is part of the Kayenne configuration and saved as part of File Ops, Suite Prefs. A layer of load granularity (**Key Chaining** button) has been added to this menu.

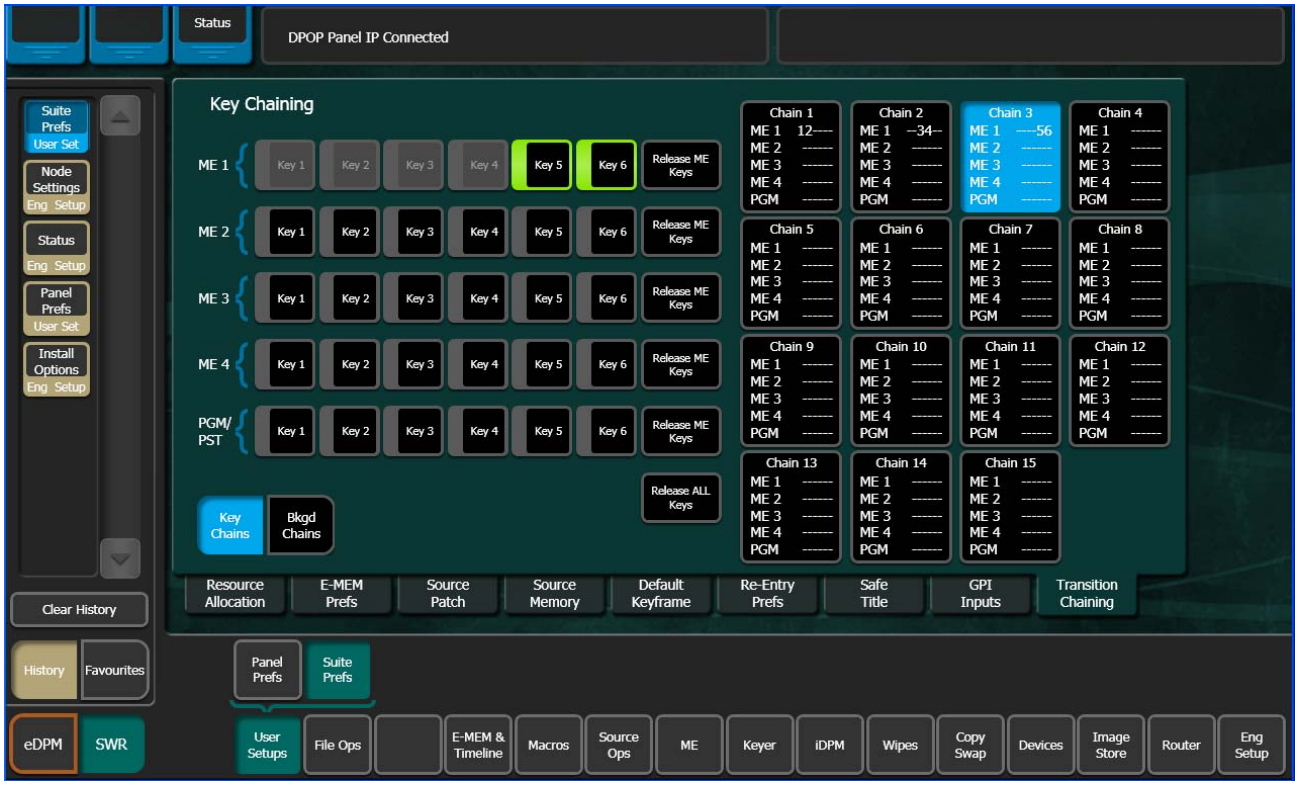
Keyers are controlled from the Transition Module on the Kayenne Control Panel. They can be cut on/off or transitioned on/off using the dedicated Key Cut and Auto buttons. Key chaining allows for a single button push to transition all the keys in the chain. A single keyer selection in the Next-Transition area of the Module will similarly cause the other keys in the chain to be selected. Then a single push of the Auto button or movement of the Lever Arm will cause all of the keys in the chain to transition on one or more MEs simultaneously.

Creating Chains

To create a Key Chain or chains in a single ME, simply touch a Chain parameter data pad (Chain 1, Chain 2, etc., see Figure 118) to select it (turns blue), and touch the keys you wish to add to the chain. Touch another Chain parameter data pad and repeat the process (for the same ME in this case).

The Chain parameter data pads display each ME and either dashes (if empty) or Keys 1-6 if keys are enabled for that ME in the chain (Figure 118).

Figure 118. Key Chaining Menu



Once a keyer is enabled as part of a chain, the button is grayed out as each key can only be part of one chain.

The **Release ME Keys** and **Release All Keys** buttons are provided to help manage Key Chain configuration.

Using Key Cut/Auto Buttons

Pressing any of the **K1 Cut - K6 Cut** or **K1 Auto - K6 Auto** buttons in the Transition Module of an ME, with those keyers as part of a chain, will result in the following:

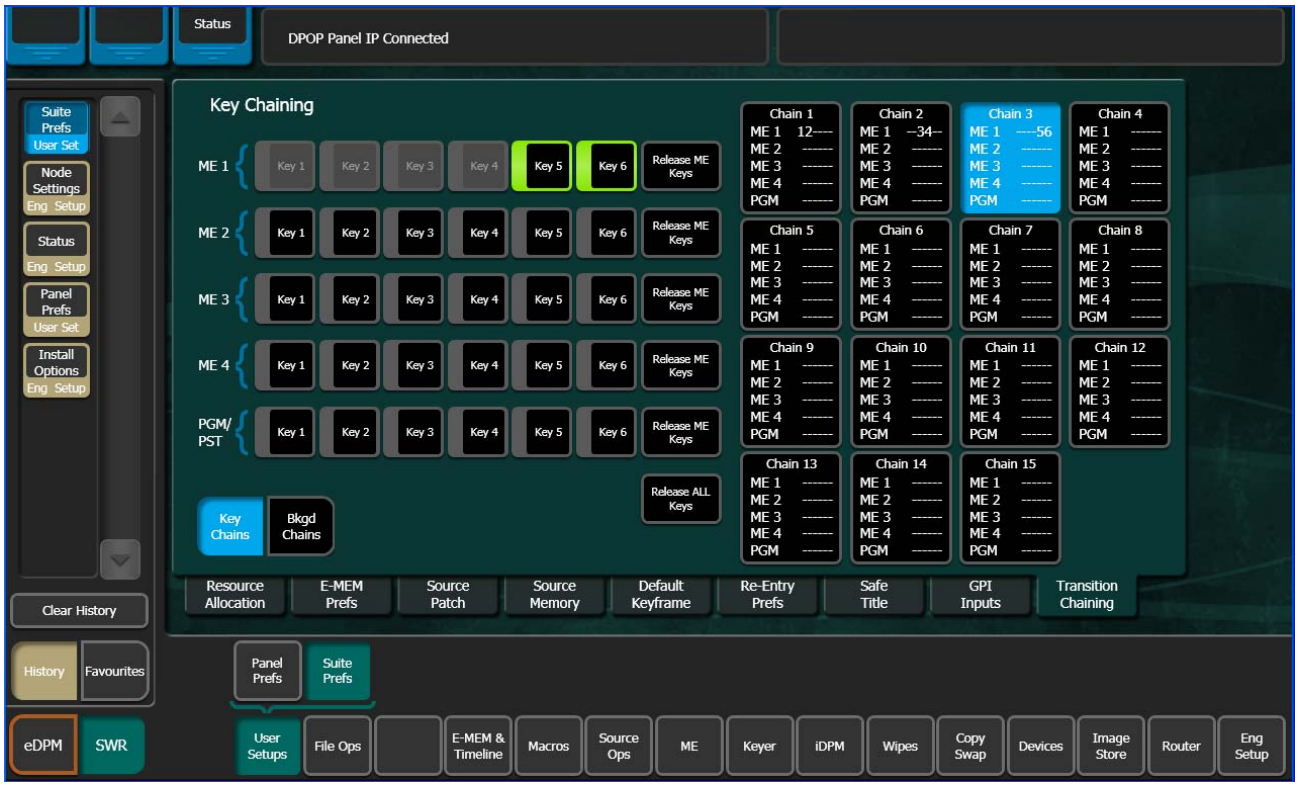
- Chained keyers on the same or different MEs all transition simultaneously,
- The transition rate of the button that is pressed (controlling keyer) is applied to all the other (controlled) keyers in the chain.

Key Chaining on a Single ME

As shown in Figure 119 (in blue), in the Chain parameter data pads, the following three key chains have been created for ME 1:

- Chain 1—Keys 1 and 2,
- Chain 2—Keys 3 and 4, and
- Chain 3—Keys 5 and 6.

Figure 119. Key Chaining Menu—Single ME Key Chaining



Selecting keyers in the Next-Transition section of the Control Panel will make those keyers initiators for the transition. Key Chaining causes the chained (controlled) keyers to be selected as well. These chained keyers will flash to indicate they are in the chain. The keys which do not flash are the

initiators. When the Lever Arm is moved, or the **Auto** button is pressed, the keys transition together.

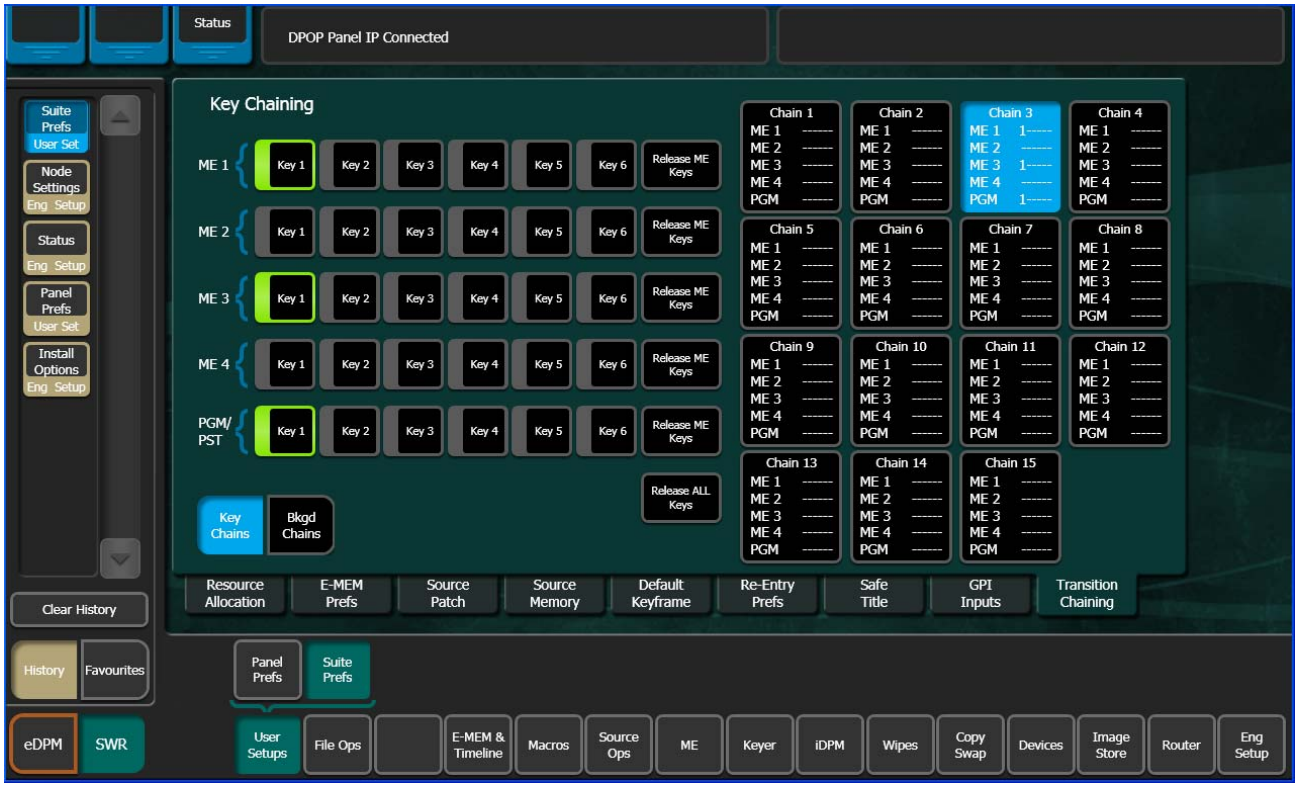
If a selection is made for a keyer in the primary partition, and the chained controlled key is in the secondary partition, the controlled keyers will transition simultaneously with the keys in the primary partition, irrespective of the delegation of the **SEC** button (Source Select Module). The same is true for selections made in the secondary partition with controlled keys in the primary; they always delegate whether or not the **PRI** button (Source Select Module) is delegated. This behavior corresponds to the tally of the next-transition buttons. The blinking tally indicates that the keys will transition.

Key Chaining Across MEs

As shown in Figure 120 (in blue), in the Chain 1 parameter data pad, the following multiple ME key chain has been created:

- PGM/PST, Key 1,
- ME3 Key 1, and
- ME1 Key1

Figure 120. Key Chaining Menu—Multiple ME Key Chaining



Selecting a keyer in the Next-Transition section of the Control Panel will make that keyer the initiator. On the MEs with keyers in the chain, their next-transition selections will be erased and the keyers in the chain

selected. These keyers will flash to indicate that they are in the chain. The key which is not flashing is the initiator.

You can also use the Cut/Auto keys as described in *Using Key Cut/Auto Buttons on page 174*. If a Cut button is pressed on the initiating ME, then all the MEs with chained keyers, cut. If an Auto button is pressed, then similarly, all MEs with chained keyers shall perform the same transition at the same rate.

Other non-chained keys or other transition elements can be added to the next-transition at this time. Key chains can be established with keys both in the same and different MEs.

Background Transition Chaining

There are two chains available for Background Chaining in the menu. You could for example chain backgrounds for ME 1, ME 2, and ME 3 in Chain 1 and for ME 4 and ME 5 in Chain 2 on a 4.5-ME Kayenne (Figure 121).

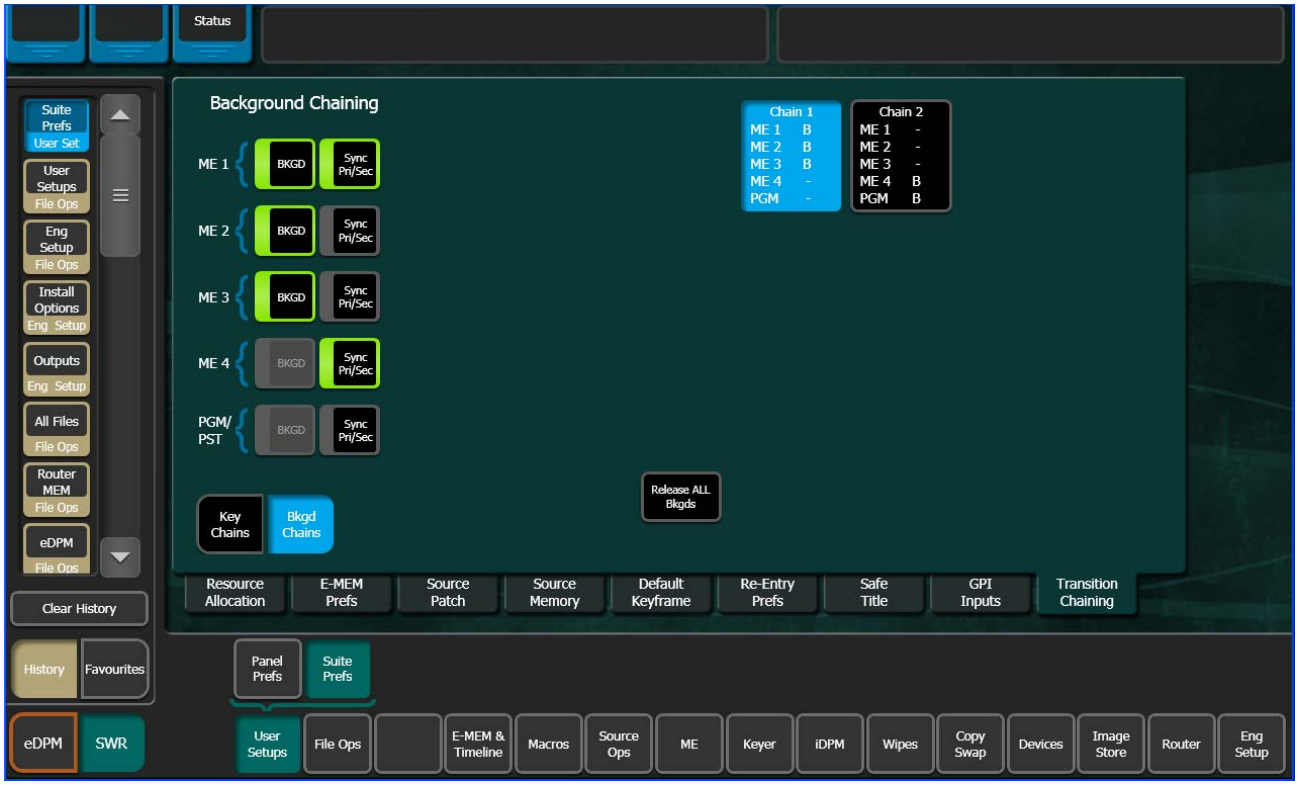
Similar to Key Chaining, where the first ME Keyer button pressed on the Control Panel is the controlling ME for the chain, the first ME Bkgd button pressed on the Control Panel becomes the primary or "controlling" ME. This is important for example when you are coupling MEs (backgrounds, keyers, buses, etc.) for a multiple feed or 3D broadcast, it will be much more effective to switch the show from the primary ME with the secondary ME(s) following.

The Primary ME's **Bkgd** Transition button on the Transition Module (once pressed) will be high tally while chained **Bkgd** Transition buttons will flash.

Note The primary ME's transition type and rate are not copied into the other MEs with Background Chaining.

To access the Background Chaining menu, touch **User Setups**, **Suite Prefs**, **Transition Chaining**, **Bkgd Chains** (Figure 121).

Figure 121. Background Chains Menu



In the Background Chaining menu, in the **Chain 1**/**Chain 2** data pads, a "**B**" is displayed next to the ME when that ME's background is part of the Background chain (Figure 121).

Note An ME can only belong to one Background Chain at a time, so once chained it will be grayed out and unavailable to the other chain.

Partition Sync Mode

There is no general need to chain the primary and secondary partitions of an ME, this can be done by selecting both the **Pri** and **Sec** buttons on the Source Select Module. In Kayenne, each partition can be transitioned separately by use of the left and right halves of the lever arm. However, to fully synchronize these two partitions (essential for 3D operation), Partition Sync Mode has been added.

Partition Sync mode (**Sync Pri/Sec** buttons) synchronizes or "locks" the chained background transitions together and puts the Lever Arm in a primary transition-only state, with the secondary transition attached. If you perform a Primary and Secondary transition without Partition Sync on for a split ME, the two outputs may be slightly offset. Even with the split Lever Arm locked, the outputs may still be offset. Turning on a **SyncPri/Sec** button (Figure 121) precisely synchronizes the backgrounds for transition.

Partition Sync Locks Primary/Secondary Mode On

Partition Sync selects the ME's Primary and Secondary partition. The **Pri** button high tallies red and the **Sec** button high tallies green to indicate this mode. Without using Partition Sync, there is no way to lock the Pri/Sec mode on, so if you have a Program Clean Feed set up on Primary and Secondary partitions for re-entry, and you forget to turn the Pri/Sec mode on for that ME, upon transition the secondary partition would not re-enter as a clean feed so the Program Clean Feed would be lost.

Operations

Background and Key Chaining and Partition Sync are configured in the Menu Panel.

With the introduction of Kayenne DoubleTake, you could Split an ME and it's keyers between two feeds, for example one feed in English using the Primary Partition and one in French using the Secondary or you could use one partition with keyers for Left-Eye and one for Right-Eye for use with 3D. However, you were limited to six keyers divided between feeds, two of them being "simple" keyers (Key 5 and Key 6). With Background Chaining, you can have a split feed using two full MEs rather than two partitions, with the power and flexibility of up to six keyers per feed (four full keyers and two simple) and two backgrounds (with the same or different sources by using source substitution).

In addition, you are not limited to two MEs, you could chain the backgrounds of all the MEs in your Control Panel. You could switch a multiple feed show from the English ME and also feed the show in French and Spanish using three MEs.

Creating Primary and Secondary MEs (Dual Feed)

In the following example procedure, a dual feed with English on the Primary and French on the Secondary ME will be configured. The A and B background busses will be chained and bus linked and three full keyers will be chained on ME 1 and three on ME 2. The result is the operator can switch the show completely from ME 1 and use two full MEs with three full keyers for each of the dual feed outputs.

ME 1 will be the primary, controlling ME, i.e. ME 2 sources, background busses, and keyers will "follow" ME 1.

1. In the Transition Chaining, Bkgd Chains menu, touch **ME 1** to assign it to the chain.
2. Touch **ME 2** to assign it as the secondary or "controlled" ME.
3. To synchronize the background transitions, touch the **Sync Pri/Sec** button for the controlling ME (in this example, ME 1).

4. Touch the **Key Chains** selector button to access the Key Chaining menu.
5. Touch one of the 15 Key Chain data pads and Chain ME 1, Key 1 to ME 2, Key 2 by touching those buttons in the Key Chaining pane.
6. Repeat Step 5 for ME 1/ME 2 Key 2 and ME 1/ME 2 Key 3.
7. Go to the Bus Linking menu by touching **Source Ops**, **Bus Links**.
8. In the Links Setup menu tab, touch the Controlling Bus data pad in the Table Setup pane.
9. In the ME Busses pane, touch **ME1 A**.
10. Touch the **Linked Bus** data pad, and touch **ME2 A** in the ME Busses pane.
11. Repeat Step 9 and Step 10 for **ME1 B** and **ME2 B**.

    The A and B busses for ME 2 will now follow the A and B busses for ME 1.
12. To make ME 1 the controlling ME for the chain, press the ME 1 **Bkgd** transition button on the Transition Module.

Multiple Feed

Starting with the example above, you could chain additional MEs for multiple feeds. This should be planned carefully but once configured, the entire show can be switched from the Primary ME thus simplifying a very complex set of operations.

Including Source Substitutions

Source substitutions can also be a powerful part of chained MEs. They can be used to cut on two or more different sources for the chained MEs and switched from the Primary ME. For example during a “Home” verses “Away” baseball game, the Primary ME could take a camera source in the Home team’s dugout on Source 1 but take a different camera on Source 11 on the Secondary ME in the Away team’s dugout using the source substitution (see *Source Substitution Tables* *on page 309*).

Source substitutions could also be used across multiple feeds for different languages or for paid cable verses network feeds and so on.

File OPs

Transition Chaining is part of the Load Granularity pane in the File Ops, User Setups, Suite Prefs menu.

Time Value Entry

Time values are input on the Kayenne Main Control Panel Local E-MEM and Master E-MEM Modules in seconds, frames, odd field format, using the **Undo/•** button the separator (indicated below as "**•**") and the **Enter** button to complete the entry:

(seconds), •, (frames), •, (field), Enter

The default time entry is in frames. For example, a time of 15 frames (one half second on 60 hz systems) can be input simply by pressing:

15, Enter

Entries in seconds can be entered by adding one separator. For example, a time of 1 second is input by pressing:

1, •, Enter

An odd field is input by pressing **1** as the last entry. For example, a time of one second 15 frames and one field is input by pressing:

1, •, 15, •, 1, Enter

After an odd field has been entered, it is represented with an "f" in the E-MEM readout. For example, the completed time above appears as `1:15f`. It is possible to enter values other than 1 as an odd field. The system will calculate and display the correct number frames and a single odd field.

To enter only fields, use two separators before the number. For example, a time of 30 fields (one half second on 60 hz systems) is entered by typing:

•, •, 30, Enter

CAUTION Pressing the **Undo/.** button first resets the effect duration to the Natural duration.

You can actually enter any combination of seconds, frames and fields. The Kayenne system will do the conversion and display the result in seconds, frame, field format.

Decimal values for other non-time parameters are also input on the Master E-MEM Module with the numeric keys, the **Undo/•** button for the decimal, and the **Enter** button to complete the entry. If a default value exists for an entry, it can be input without typing in a value by pressing:

•, Enter

The Kayenne menu Panel also provides a touch activated keypad for entering values directly into menus, using similar procedures.

E-MEM Operations

The E-MEM (Effects Memory) system provides a way of storing effects for later use. An effect defines parameter settings that determine how the selected video sources are processed. An E-MEM effect is *learned* into an effect *register*, and can then be *recalled* at a later time with a single button press. Effects can be edited after they have been learned, and effect data can also be saved to and loaded from disk.

For a general description of E-MEMs, see *E-MEM (Effects Memory) on page 55*.

The Kayenne system has 1000 E-MEM registers organized into Pages and Banks. There are ten pages of ten banks with 100 E-MEM registers each, that can be learned and recalled in the Local and Master E-MEM Modules.

Register operations such as Learn and Recall can be performed in the current page and bank or changed before selecting the desired register.

Learning Registers

On the Local E-MEM Module there are various modes. Pressing the **EMEM** button selects the E-MEM mode.

Learn a Register in the Current Bank

1. Create the effect.
2. Press the **LRN** button.
3. Press the keypad number of the desired register.

Learn a Register from a Different Bank

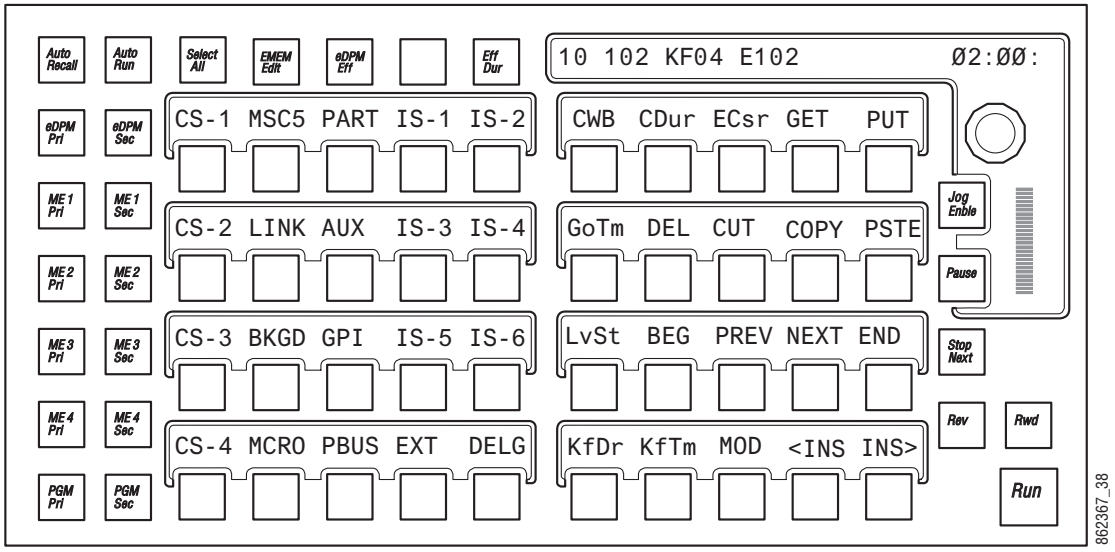
1. Create the effect.
2. Press the **Page** button (if necessary).
3. Press the button for the desired page: 0, 100-900.
4. Press the **BNK** button.
5. Press the button of the desired bank.
6. Press the keypad button of the desired E-MEM register.

Alternatively, you can perform the Page and Bank selections, press the **LRN** button, then press the desired register button.

Get and Put

The **Put** and **Get** feature buttons are provided in the Master E-MEM Module (Figure 122).

Figure 122. Master E-MEM Module, E-MEM Edit Menu



Put—Allows you to copy the E-MEM Timeline information from the current E-MEM register to another E-MEM register.

1. Press the **EMEM Edit** button on the Master E-MEM Module.
2. Press the **Put** button, the Put menu is displayed.
3. Enter the target register number for the E-MEM you wish to *put* the current register's E-MEM Timeline information, and press **ENT** (Enter).

Note Pressing the **Put** button then the Dot "**.**" button will put the current register into the next available register.

Get—Allows you to copy the E-MEM Timeline information from another E-MEM register to the current E-MEM register.

1. Press the **EMEM Edit** button on the Master E-MEM Module.
2. Press the **Get** button, the Get Register menu is displayed.
3. Enter the target register number for the E-MEM you wish to *get* the E-MEM Timeline information from, and press **ENT** (Enter).

Note Pressing the **Get** button, Dot "**.**" button, then **ENT** (Enter) clears the current register. The Master E-MEM Module displays a "Clear current?" prompt after pressing the **Get** and Dot "." buttons. Press the **ENT** button should you wish to continue.

Recalling Registers

The Kayenne system is optimized for rapid effects recall, generally accomplished with a single keystroke.

Note If recalling effects from the Master E-MEM Module with **Auto Recall** off, you first need to specify which levels you wish to control with the Enable buttons.

Recall a Register in the Current Bank

1. Press the E-MEM module keypad number of the desired register.

Recall a Register from a Different Bank

1. Press the **Page** button (if necessary).
2. Press the button for the desired page: 0, 100-900.
3. Press the **BNK** button.
4. Press the button of the desired bank.
5. Press the keypad button of the desired E-MEM register.

Alternatively, you can perform the Bank, then Page selections, then press the desired register button.

Clearing Registers

When you build an effect you may want to start with an empty register. This can be done in the E-MEM & Timeline, Register Ops menu.

To Clear the Current Register

1. Touch the **Clear Current Reg** button, bottom left of the keypad (lower right of menu).

To Clear a Different Register

1. Touch the **Clear** button (left side of menu).
2. Using the keypad, enter the register number to be cleared and touch **Enter**.

To Run an Effect

With Auto Run Off

1. Recall the desired effect.
2. Press **Run**.

With Auto Run On

1. Recall the desired effect. The effect will run as soon as it is recalled.

E-MEM Sequences

To Learn a Sequence of Registers

1. Press **LRN**, **SEQ**.
2. Press the page, bank, and register keypad buttons of the desired registers in the order you wish them to run. Delay time can be added at each register by pressing **Trans Rate** and entering a time value.
3. Press **LRN**.

To Play a Sequence of Registers

1. Press **SEQ**.
2. Press the page, bank, and register keypad button of the starting register.

To Break a Sequence

1. Press **LRN**, **SEQ**.
2. Press the page, bank, and register keypad button of the register to end the sequence.
3. Press the same page, bank, and register button a second time.

Basic Effect Editing

Effect editing involves changing work buffer values using panel and/or menu controls, then applying these values to the effect. This discussion concerns basic effect editing, using the Master Timeline for the examples.

Inserting a Keyframe

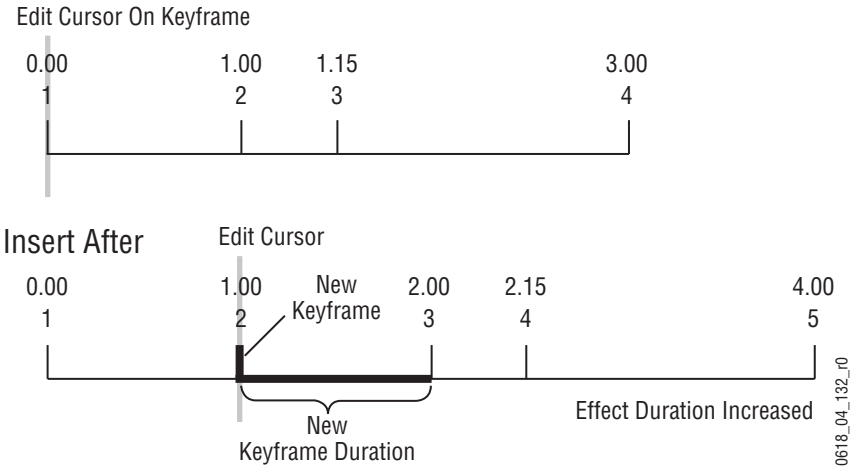
The Insert Before and Insert After operations are used to insert new keyframes onto the timeline of an effect. The result of the Insert operation varies depending on whether the edit cursor is on a keyframe or between keyframes (on the path).

An inserted keyframe has both work buffer values and a duration. The keyframe duration is calculated by the Kayenne system (time to the next keyframe) and is not actually contained in the keyframe data. This permits added flexibility during effect editing.

Inserting on a Keyframe With Insert After

When the edit cursor is on a keyframe, pressing **Insert After** inserts a new keyframe after the current one. The insert occurs after the duration of the keyframe the cursor is on, at the next numbered Master Timeline keyframe location. This inserted keyframe's duration is, by default, the duration of the keyframe the cursor was positioned on before the insert, though this value can be changed by the operator (see page 189). The edit cursor also moves to the start of the new keyframe. This operation will increase the duration of the effect by the duration of the inserted keyframe. (Figure 123).

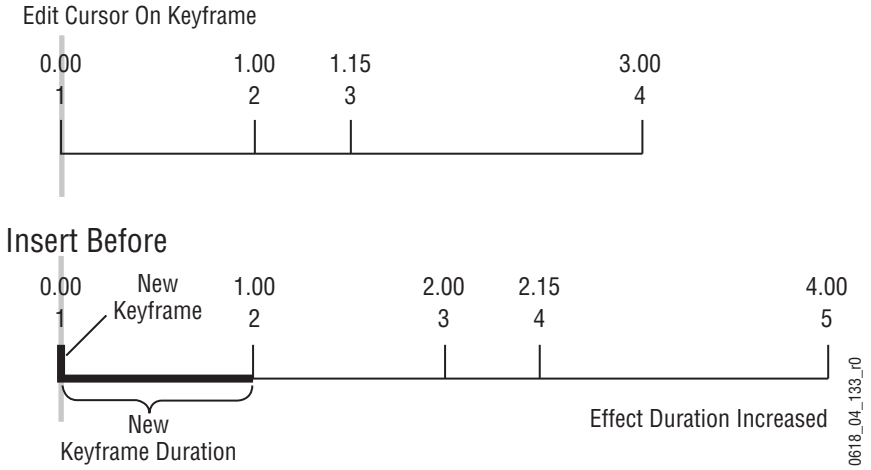
Figure 123. Insert After



Inserting on a Keyframe With Insert Before

When the edit cursor is on a keyframe, pressing **Insert Before** inserts a new keyframe at that time line location. The old keyframe, and all the keyframes that follow, are moved to the right the length of the new keyframe's duration. This operation will increase the duration of the effect by the duration of the inserted keyframe, which by default is the duration of the keyframe the cursor was originally positioned on before the insert, though this can be changed (see page 189). Note that keyframes are renumbered after the insert. In the example, what was keyframe #1 becomes keyframe #2 (Figure 124).

Figure 124. Insert Before



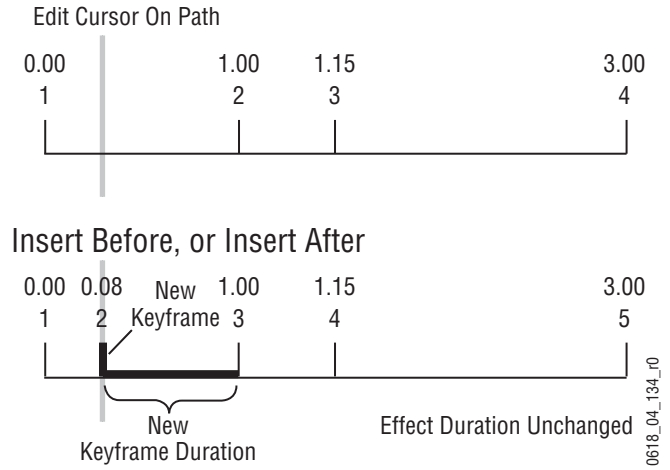
Using Insert After or Insert Before on a Keyframe

In an existing effect, an Insert After at the keyframe 2 location would seem to be the same as an Insert Before at the keyframe 3 location, but this is usually not true. The work buffer material inserted into an effect is typically based on an existing keyframe, with some modifications. For Insert After keyframe 2, the starting point for the inserted work buffer data will be keyframe 2 values. For Insert Before keyframe 3, however, the inserted material will be based on keyframe 3 values. If the starting parameters in keyframe 2 and 3 are different from one another, the look of the resulting effect will vary depending on which Insert operation is performed.

Inserting on the Path

When the edit cursor is not positioned on a keyframe, the insert operation inserts a new keyframe at the current location. This is called *inserting on the path*. The default duration of new keyframe inserted on the path will be the time between the cursor location and the next keyframe on the Master Timeline. The **Insert After** and **Insert Before** buttons perform the same operation when you insert on the path.

Figure 125. Insert on Path



Note that after inserting on the path, the preceding keyframe's duration is shortened and the new keyframe's duration extends to the next keyframe. When keyframes are inserted on the path the overall effect duration does not change.

When an empty register is recalled, no keyframes exist yet for the cursor to be on or between. In this situation, because the cursor is not on a keyframe the Insert operation inserts on the path. This is why either Insert button can be pressed to create the first keyframe in a new effect.

Building an Effect By Inserting on the Path (on Master E-MEM Module)

You can build an entire effect by inserting every keyframe on the path in the Master E-MEM Module. Keyframe durations will be automatically calculated by the system. This can be useful if you need to build an effect to match some pre-recorded material.

1. Review the recorded material and determine the times that keyframes are needed. In this example, keyframes are needed at 1.5 seconds, 2.5 seconds, and 3 seconds.
2. Bring up an empty register (**LRN**, **•**), set up the look for the first keyframe and then press either **<Ins** (Insert Before), **>Ins** (Insert After) or **Mod** to add that keyframe to start the effect.
3. Press **GoTM**, **1**, **•**,**15**, **ENT** to move the cursor one and a half seconds into the effect, set up the second keyframe and add it to the effect.
4. Press **GoTM**, **2**, **•**,**15**, **ENT**, set up the third keyframe and add it.
5. Press **GoTM**, **3**, **•**, **ENT**, set up the last keyframe and add it.

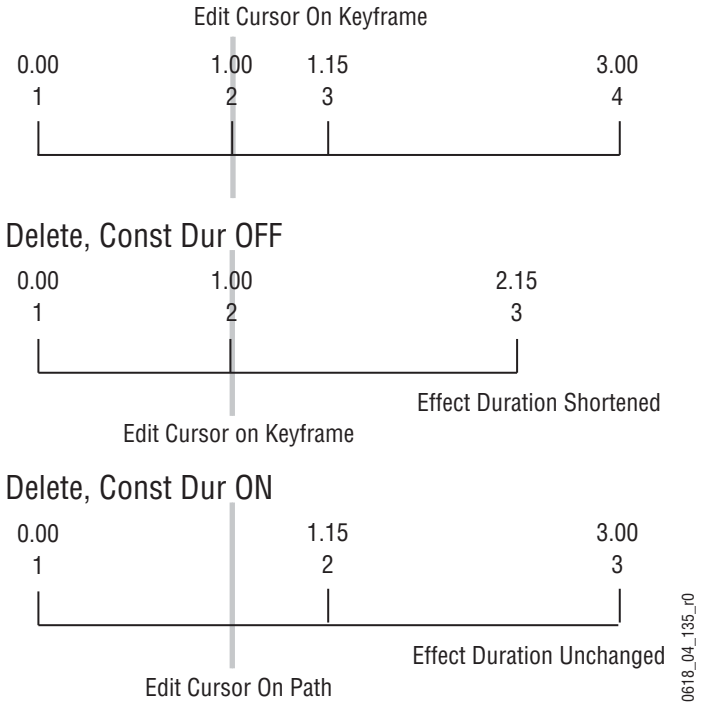
The effect will now exactly match the recorded material. Using E-MEM, you can run the effect and the recording simultaneously (see page 336).

Deleting a Keyframe

When the edit cursor is on a keyframe, pressing **Delete** removes that keyframe from the effect. The **Delete** button is inactive when the edit cursor is on the path.

Delete behavior is affected by Constant Duration mode. When Constant Duration is OFF, the duration of the deleted keyframe is also removed from the effect (time to the next keyframe). When Constant Duration is ON, the duration of the previous keyframe is increased by the deleted keyframe's duration, so the total duration of the effect is unchanged. After a delete operation, any keyframes following the deleted keyframe are renumbered accordingly (Figure 126).

Figure 126. Delete Keyframe



Note that after a **Delete** with Constant Duration ON the cursor is located on the path, not on a keyframe. You will need to move the cursor to a keyframe before you can use **Delete** again.

Editing a Keyframe Duration

Showing Keyframe Durations

Pressing the **KF Duration** button so it is illuminated assigns the keyframe duration value to the keypad. Once assigned, keyframe durations will be

displayed on the Master E-MEM readout. When the cursor is moved from keyframe to keyframe, the value will change to reflect the duration of the keyframe where the cursor is located. When the cursor is moved between keyframes, the duration shown is the distance from the current time to the next numbered Master Timeline keyframe. The time value displayed is used by default when a new keyframe is inserted into an effect.

Changing the Duration of a New Keyframe

The value for a new keyframe's duration may be set from the keypad. For example, the following procedure was used for Figure 127.

1. Move the edit cursor to the desired location in the effect, in this case on the path midway through a one second keyframe.

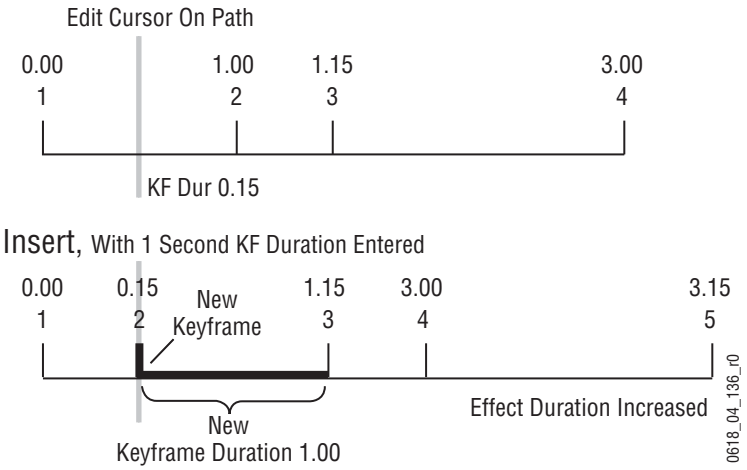
1. Press **KF Duration** button.

2. Type a **1.0** duration value on the keypad and press **Enter** to change the value displayed on the readout.

Note Pressing **Emem Edit, <*enter value*>, TRIM** in the Master E-MEM Module will increase or decrease the duration value by the amount specified.

3. Press **Insert Before** or **Insert After** to insert the new keyframe with the specified duration.

Figure 127. Insert KF with Duration Specified



Modifying an Existing Keyframe Duration

The duration of an existing keyframe can also be modified. For example, the following procedure was used for Figure 128.

1. Move the cursor to the keyframe whose duration you wish to modify. You cannot modify a keyframe duration when the cursor is on the path. In this case, the keyframe duration is 15 frames.

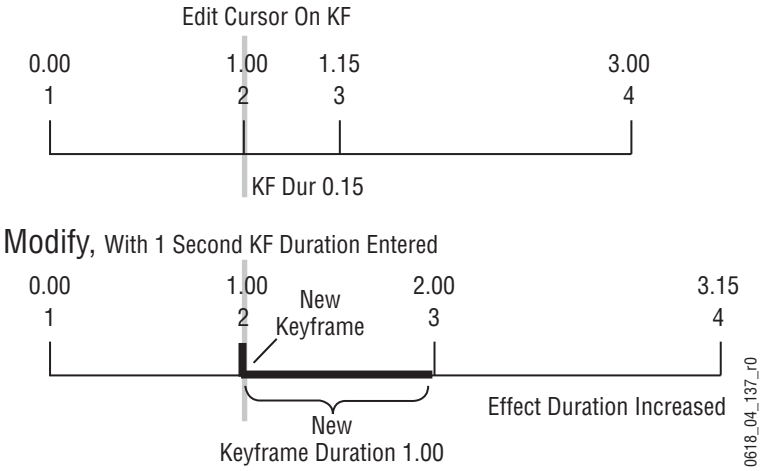
1. Press the **KF Duration** button to display the keypad.

2. Type a **1.0** duration value on the keypad and press **Enter** to change the value displayed on the readout.

Note Pressing **Emem Edit, <*enter value*>, TRIM** in the Master E-MEM Module will increase or decrease the duration value by the amount specified.

3. Press **Modify** to apply the new duration value to the keyframe.

Figure 128. Modifying an Existing KF Duration



Restoring KF Duration Default to the Keypad

The keypad retains the last duration value entered until it is changed on the keypad, or until the edit cursor is moved to a new location with a different duration. You can reset the keypad to the factory default one second duration at any time

1. Press the **KF Duration** button to display the keypad.

2. Press •

Editing Effect Duration

When an effect is first created it has a “natural duration”, which is the time indicated by the last keyframe. With the Effect Duration feature you can

make the overall length of the effect longer or shorter with a single command. Each keyframe duration in the effect will be increased or decreased proportionately to match the new “forced duration”.

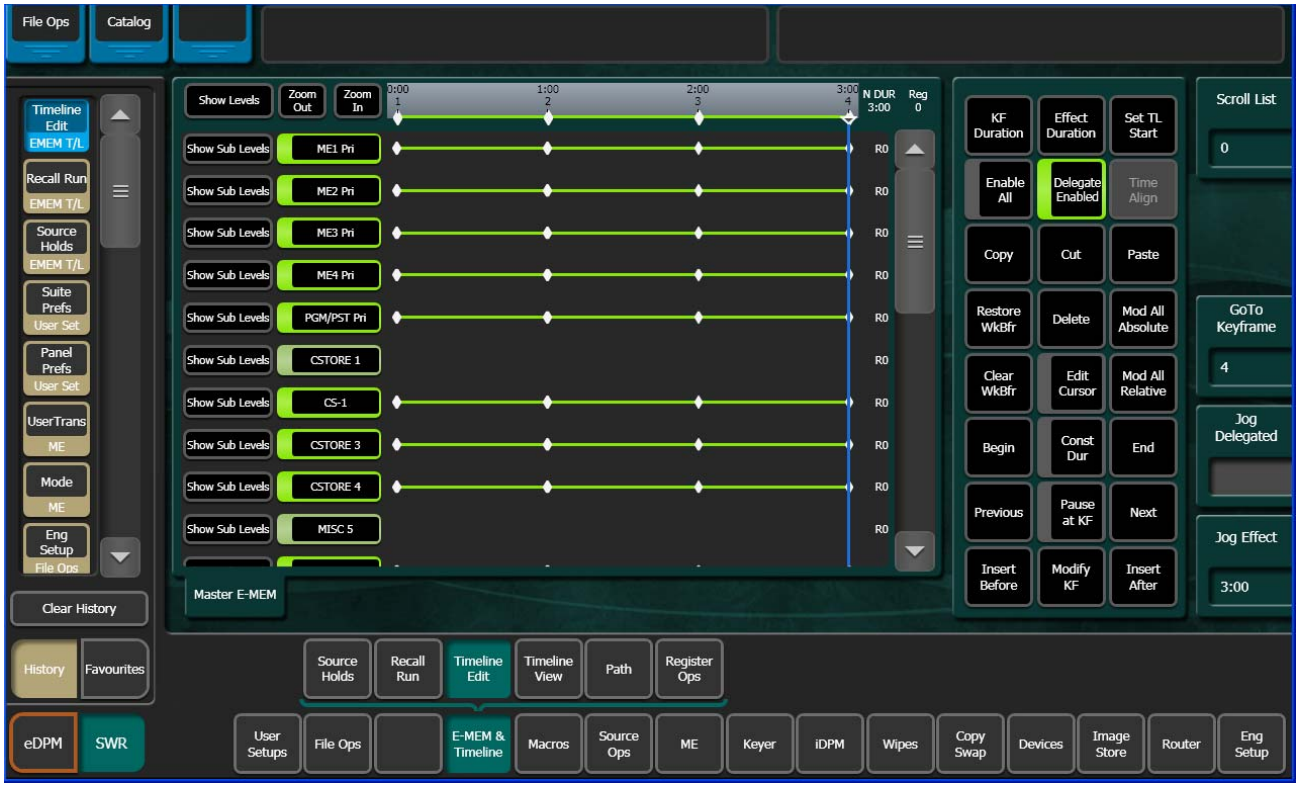
Editing Effect Duration with the Control Panel

1. Select the effect whose duration you wish to change.
2. Touch the **Eff Dur** button on the Master E-MEM Module.
3. Type a new duration in Seconds • Frames • Field format and touch **ENT**. Entering a single value defaults to frames, and the third Field value is optional. Entering a **1** for the Field value specifies odd field. For example, **1.0.1** indicates 1 second, 0 frames, 1 field.
   - Entering only a • restores the natural duration of the effect.

Editing Effect Duration with the Menu Panel

1. Select the effect whose duration you wish to change.
2. Touch **E-MEM & Timeline**, **Timeline Edit** on the Menu Panel (Figure 129).

Figure 129. Timeline Edit Menu



3. Touch the **Effect Duration** button to open a keypad (located in pane, just right of the Timeline view). Type a new duration in Seconds • Frames • Fields format and touch **Enter**.

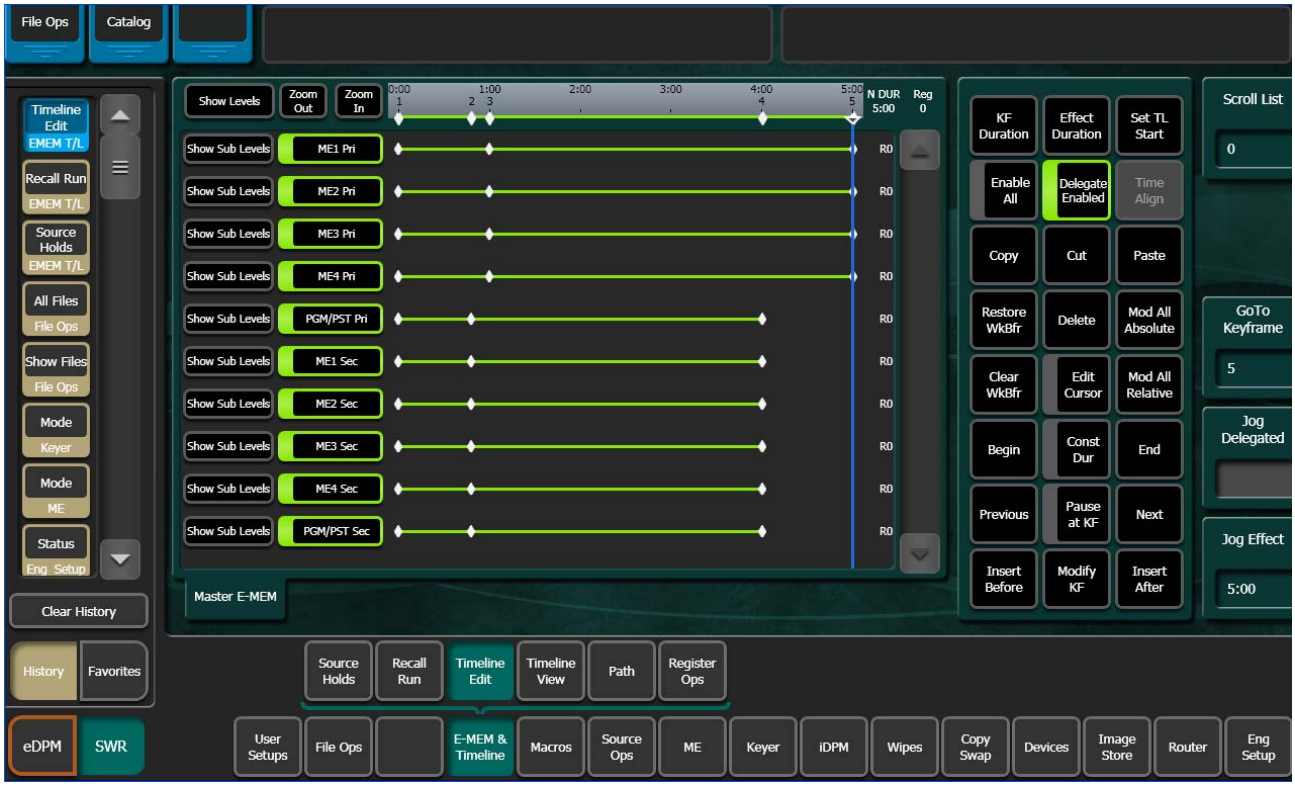
   • Entering only a • restores the natural duration of the effect.

4. The new Forced Duration (F (Forced) DUR 8:00) of the event is showing at the right end of the white Duration box at the top of the Timeline View pane.

Editing Effect Durations of Individual Levels

You can apply Forced Duration to individual levels by selecting only those levels for modification. In the example shown in Figure 130 the first three levels have been set to a Forced Duration of 5 seconds and the other levels remain at the Natural Duration of 4 seconds. The Natural and Forced Duration values are reported in the menu on the right-hand side of the screen. The Natural Duration values are indicated with the letter "N" to the right of the time display.

Figure 130. Timeline Edit Menu, Forced Duration of Individual Levels



E-MEM Modify All Operations

The Modify All function can be used to modify selected values of all the keyframes in an effect that are on levels delegated for editing. Keyframes on levels not delegated for editing are unaffected.

Modify All operations only affect parameters that have been modified in the work buffer from the values of the current position of the time cursor. Typically this position is the current keyframe, but it could be the interpolated state on the path between keyframes. If the cursor is on the path, the Modify All function will also add a keyframe to the effect at that location. Modifications to the work buffer are made by pressing a button, turning a knob, or entering a value with the key pad.

Two different types of Modify All functions are available:

- *Modify All Relative* operations calculate a difference between the current value at the time cursor position and the current work buffer value for each changed parameter. This difference is applied to all the affected key frames in the effect. For example, a hue change of 30 degrees will shift different hues by that amount, and will not change them to the same hue. This function is performed by touching the Modify All Relative button on the Timeline Edit menu.
- *Modify All Absolute* operations replace the current value of parameters of all affected keyframes in the effect with the current value of each changed parameter in the work buffer. For example, if a hue was changed 30 degrees to make it red, different hues on other keyframes will be changed to red, not shifted 30 degrees. Exact values, not differences, result. This function is performed by touching the **Mod All Absolute** button on the Timeline Edit menu.

Mode changes are always absolute. Turning a function on turns it on for all affected keyframes, and does not toggle on functions off.

To perform a Modify All operation:

1. Delegate for editing the levels in the effect you wish to be affected by the modifications.
2. Move the time cursor to the location in the effect you wish to use as a baseline for the operation.
3. Change the desired parameters by pressing a button, turning a knob, or entering a value with the key pad.

4. Perform the desired relative or absolute modify operation:
    - To make relative changes, access the Timeline Edit menu by touching **E-MEM & Timeline**, **Timeline Edit**, then touch the **Mod All Relative** button. The relative changes of the modified parameters will be applied to all the affected keyframes in the effect.
    - To make absolute changes, access the Timeline Edit menu by touching **E-MEM & Timeline**, **Timeline Edit**, then touch the **Mod All Absolute** button. The absolute values of the modified parameters in the work buffer will be applied to all the affected keyframes in the effect.

E-MEM Learn Auto Recall

Each E-MEM register contains header information, along with keyframe data. This header information applies to the entire effect and is not keyframable. Register header information includes:

- E-MEM enable group button selections (for Auto Recall)
- Effect Dissolve state (on or off)
- Effect Dissolve rate (seconds, frames, field)

When an effect is edited in the standard manner (Insert Before/After, Modify Keyframe, Modify All), only keyframe data is affected. The header information does not change. In a standard Learn operation, all existing keyframe data is overwritten with a single keyframe, and new header information is saved.

Learn Auto Recall can be used to update E-MEM register header information without changing keyframe data. To use this feature, select the state of the desired header information, press **LRN** (top left soft button**)** then **Auto Recall** (top left hard button) on the Master E-MEM module. Examples are presented below:

To change the enable groups associated with Auto Recall:

Press **Auto Recall** so it is on, select the desired Master E-MEM Module Enable buttons for the desired groups of levels, then press **LRN**, **Auto Recall**.

To set or change the Effect Dissolve rate:

Press **LRN**, **DIS**, **RATE**, on the Master E-MEM Module, type seconds, frames, or fields, then press the button for the register you wish to apply the effect dissolve rate.

Editing Path Control

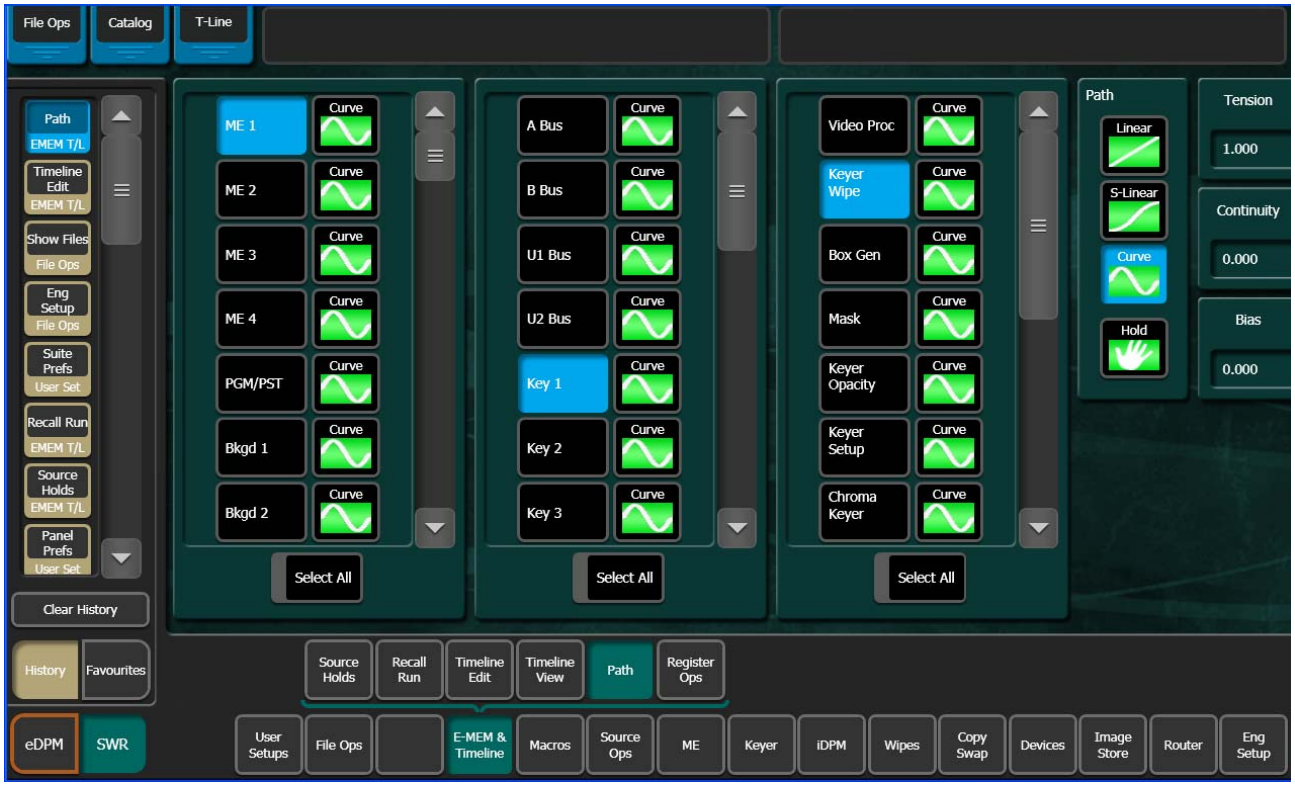
Path control determines how interpolation is performed through keyframes. S-Linear, Linear, and Curve path types are supported, in addition

to Path Hold. These path types provide fine control of the dynamics of the effect. See *Path Control* *on page 77* for background information.

To Change Path Control Values in an Effect:

1. Move to the location in the effect that you wish to change.
2. Go to the Path menu (**E-MEM & Timeline**, **Path**) and delegate the desired Level(s), Sublevel(s), and Group(s). In Figure 131 the keyer wipe of Keyer 1 of ME 1 has been selected for path control editing.

Figure 131. Interpolation Paths Menu



3. Choose the desired Path type (**S-Linear**, **Linear**, or **Curve**). If **Curve** is selected, you can use the soft knobs or data pads to change the values for **Tension**, **Continuity**, and **Bias**.
4. Add the new values to a keyframe in the effect with **Insert** or **Modify**, or Learn. You must change the keyframe, because current work buffer values are overwritten during the running of an effect.
5. Run the effect to see your changes.

General Curve Tips

Although adjusting the Curve path type Tension, Continuity, and Bias controls can feel like a guessing game, here are some general tips to help you build desired effects in a timely manner:

- Tension in the minus direction (up to -1.0) creates bigger, looser curves.
- Continuity at +1.0 is the same as S-Linear motion.
- Continuity in the plus direction gives a bigger bounce, with +2.0 a good value.
- Bias in the plus direction makes the curve happen after the keyframe.
- Bias in the minus direction makes the curve happen before the keyframe.

Cutting and Pasting Path Values

Being aware of how Curve values may change during editing can help you successfully fine tune the paths of edited effects.

- When keyframes are cut and pasted to and from the clipboard, the path type (Curve, Linear, S-Linear) is retained for each keyframe.
- When a block of Curve path keyframes are cut and pasted, the first and last keyframes in the block are given Tension = 1.0, Continuity = 0.0, and Bias = 0.0 values. This helps merge the path with neighboring path settings, since the Curve path requires three keyframes for proper calculation. Intermediate Curve path keyframes in the marked block retain their original values, since the neighboring keyframes required for the calculation exist.
- Cutting or copying a single keyframe with a Curve path type is handled the same as a first or last keyframe, and so this keyframe is given Tension = 1.0, Continuity = 0.0, and Bias = 0.0 values.
- If you paste a keyframe with a Curve path into the middle of an effect, reset Tension values to 0.0.

Controlling Smooth Path Windup

Effects with a curved transform path may move back slightly in the opposite direction when the move begins or ends. This “windup” is a characteristic of Curve path control, which is the factory default path type applied to new effect keyframes. Curve requires three keyframes for proper interpolation, so values for the previous (or next) keyframe affects the path through the next (or previous) keyframe.

There are several ways to change an effect so moves begin and end without any windup.

- Change the Path Type on the function keyframe to S-Linear.
- Set the Curve path Tension value on the function keyframe to 100.
- Set a Path Control menu Hold for the function on the previous keyframe.

E-MEM Transitions

Transitions can be built into E-MEM resisters. Recalling and running these E-MEMs will make the transitions occur as programmed. The lengths of transitions in effects is determined by keyframe duration, not the transition duration used for manual transitions. When you build effects with transitions, keep the E-MEM transition rules in mind, which are different from the rules used for manual transitions. The beginning and ending states of the buses and transition elements must be set properly.

Though background and keyer transitions are described here as separate procedures, effects can easily be built that include both background and key transitions in the same keyframe by selecting the appropriate next transition element buttons.

E-MEM Transition Rules

Key Priority Transitions interpolate wipes and mixes as part of an E-MEM.

Note When creating a priority transition that will interpolate as part of an E-MEM, it will only transition correctly if the 'Next' Priority Stack on the initial keyframe is set to match the 'Current' Priority Stack of the subsequent keyframe.

- A background transition will occur only when the **Bkgd** next transition element is selected on the initial keyframe AND the source selected on the B bus of the initial keyframe matches the source selected on the A bus of the following keyframe.

Note The decision to perform a background transition is based on keyframe values, regardless of the state of Bus or Source Holds. If a Hold is active you will not be able to tell by looking at the currently selected sources whether a background transition will occur.

- A keyer transition will occur only when the **Key 1-6** background transition element(s) for the keyers involved are selected on the initial keyframe AND a keyer changes its on/off state at the following keyframe.
- If Effects Dissolve is on, when an effect is recalled transitions will occur between the previous switcher state and the first keyframe of the effect, following the rules above. If Effects Dissolve is off effect recalls will cut to the first keyframe of the effect.

To Build Background E-MEM Transitions:

When building background transitions make sure the A and B background bus selections are consistent through out the effect. Otherwise the background video may cut to different sources when keyframes are encountered. Plan ahead to the next transition when you create keyframes in an effect that has multiple background transitions.

1. Go to the keyframe in the effect where you wish the background transition to begin.

Note Adding new transition keyframes to the end of an effect is the easiest way to build effects containing background transitions, though using this method is not required.

2. Select the **Bkgd** next transition button.
3. Select the type of transition (**Mix**, **Wipe 1**, or **Wipe 2**).
4. Select the new source to transition to on the B bus.
5. Press **Modify** to change the keyframe to the values set above.
6. Perform the transition by moving the lever arm or pressing the **Auto Trans** button. This lets you preview how the transition will look (though the transition duration used may not match the keyframe duration specified).

Note Performing the transition is not required (pressing **Cut** accomplishes the same goal, which is to put the switcher into the next desired state). The transition type button selection and the keyframe duration determines how the transition will be performed when the effect runs.

7. If there will be another transition immediately following this one, select on the B bus the source that will transition to in the next keyframe. This prevents undesirable background cuts from occurring.
8. Press **Insert After** to add this keyframe to the effect.
9. Repeat the steps above for any additional background transitions.
10. Rewind and run the effect to check its operation. The transitions will occur as programmed.
11. After the effect runs properly, you can go back and modify keyframes with Source Holds where needed.

If unwanted background cuts occur, go to the keyframe where the cut occurs, identify the source selected on the A bus, go to the previous keyframe, select that same source on the B bus, and then press **Modify KF** to properly setup that source in that keyframe for that next transition.

To Build Keyer E-MEM Transitions:

Individual keyers transition on or off (there is no keyer preset bus). To cross fade between keys, use two keyers and have one key transition in while the other transitions out. You can include any combination of keys in a single transition, using the transition rules to determine the exact behavior of the transitioning keys.

1. Go to the keyframe in the effect where you wish the key transition(s) to begin.
2. Select the **Key 1-6** next transition button(s) for the keyer element(s) involved. Selected keys that are on will transition off, and keys that are off will transition on.
3. Select the type of transition (**Mix**, **Wipe 1**, or **Wipe 2**).
4. Press **Modify** to change the keyframe to the values set above.
5. Change the on/off state of the keys you wish to transition.
6. If you are transitioning in a new key, select the source on that key bus. If you are transitioning out a key, do NOT change the source selected on the key bus for that keyer (this prevents an unwanted cut).
7. Press **Insert After** to add this keyframe to the effect.
8. Repeat the steps above for any additional keyer transitions.
9. Rewind and run the effect to check its operation. The transition(s) will occur as programmed.

To Change the Length of an E-MEM Transition:

Change the keyframe duration of the first keyframe involved in that transition.

1. Go to the first keyframe for that transition.
2. Press **KF Duration** and then enter a value in <seconds • <frames> • <fields> format on the keypad.
3. Press **Modify KF**.

To Prevent Elements from Transitioning in E-MEMs:

To ensure a transition for an element does not occur, simply make sure the next transition button for that element is off in the keyframe by selecting another element's button.

To ensure no transition occurs at all at a keyframe (any changes will be cuts), you can select only the next transition button for a keyer and make sure its state does not change in the next keyframe. A change of state in a keyer is required for a transition to occur when the effect runs.

The transition rules have one subtile limitation. The next transition element buttons are an interlocked group. All these buttons cannot be turned off simultaneously (at least one element is always selected). This means you cannot uses these buttons to prevent any transition from occurring when all the elements are in use. To workaround this special case, add another keyframe to the effect to transition the keys with a one field transition (which is the same as a cut).

Return to Normal Technique:

A useful technique to use when building effects for use on-air is to first establish a normal switcher state for the particular show. This normal state could, for example, have only the **Bkgd** next transition element selected, a **Mix** transition type, all six keyers off, and one second transition durations. This normal state permits immediate cuts or dissolves to and from any element, probably the most common requirements during a live show.

Running the effect departs from the normal state to do whatever is required. When the effect comes to the end of its run, the next to last keyframe controls the transition that occurs at the end of the effect. The last keyframe has no following keyframe and so does not transition, and that keyframe effectively has no duration. You can set the next transition elements in this last keyframe to the normal state without fear of causing unanticipated transitions. This return to normal technique permits completely controllable seamless shifts between your effect recalls and runs and your live switching.

When building effects for the show, take care that the beginning and ending of every effect works well with the normal state. You also may wish to apply a Source Hold to the first keyframe to ensure the last source selected remains unchanged going into the effect.

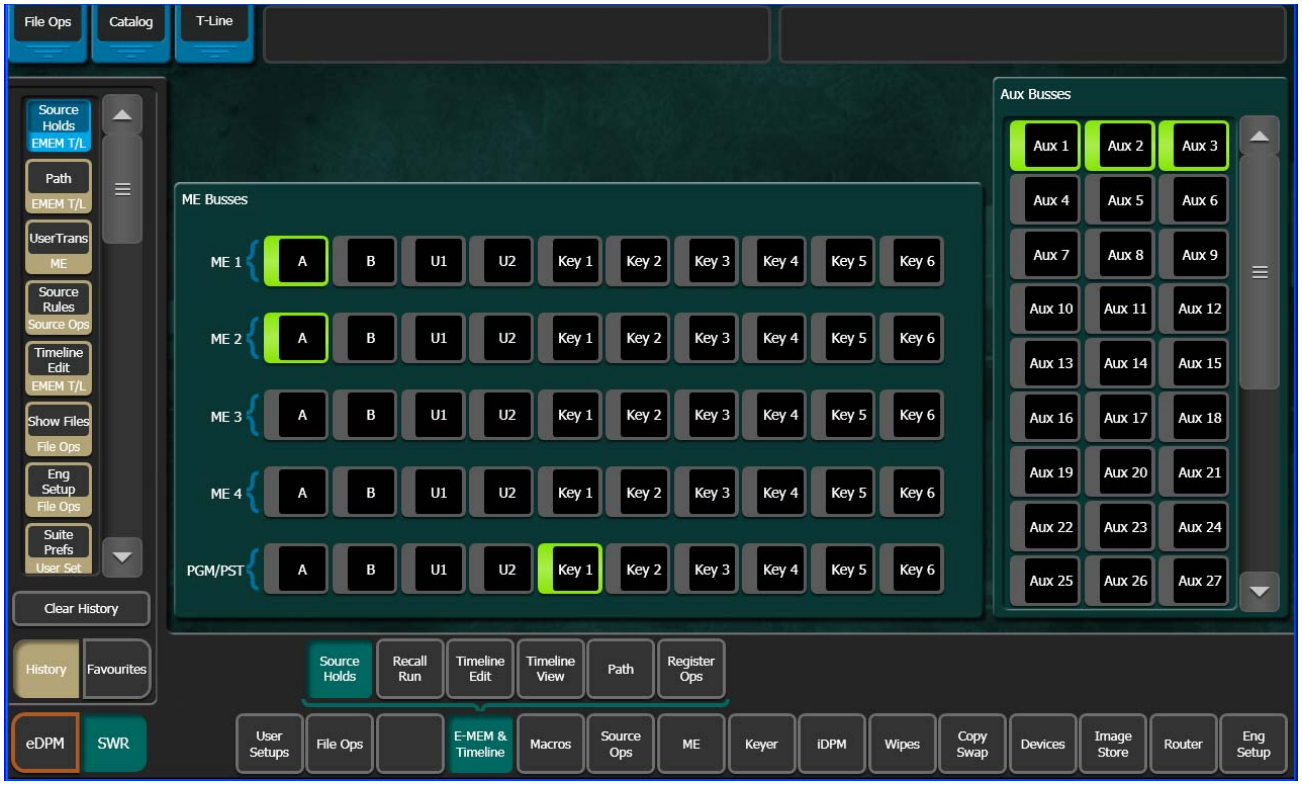
Source Holds in Effects

During E-MEM recalls and effect runs sources can be programmed to change. Sometimes this is not desired, as an effect may be designed to run on the currently selected sources, not the particular sources used when the effect was built. Holds can be programmed into an effect with the Source Holds menu to prevent sources from changing when that effect is recalled. This form of hold is keyframeable, and so can be applied to specific portions of an effect.

To Set a Source Hold in a New Effect

1. Go to the Source Holds menu (**E-MEM & Timeline**, **Source Holds**).
2. Select the buses you wish to hold by touching their labeled buttons on the menu so their green indicators illuminate (Figure 132).

Figure 132. Source Holds Menu



3. Press **LRN** on the Kayenne Control Panel (Master or Local E-MEM Module), then press a bank and register number to create a new effect with a Source Hold in its one keyframe.

Source Hold, being a work buffer parameter, will be imposed on other keyframes as they are inserted, unless turned off in the Source Hold menu. You may want to start an effect with a Source Hold, so the existing sources will not change when the effect is recalled, then turn it off to enable source changes during the running of the remainder of the effect.

To Set a Source Hold in an Existing Effect

1. Locate the cursor on a keyframe in the effect where you wish to add a Source Hold.
2. Select the buses you wish to hold by touching their labeled buttons on the Source Holds menu so their green indicators illuminate.
3. Press **Modify KF** or **Insert Before/After** to add the Source Hold to the effect.

The Source Hold only applies to that keyframe, meaning the previously selected sources on the chosen buses will be held at that keyframe until the next keyframe lacking a Source Hold is encountered.

Reusing Effects

E-MEM effects can be built and saved for use later. It is important to realize that the Kayenne system operating environment affects how an effect will load and run. Just recalling a particular effect without considering the environment within which it runs does not guarantee that effect will look the same as when built. When the Kayenne system environment for an effect is compatible, however, the look of the effect should be exactly the same every time.

One of the most important aspects of the Kayenne environment to consider when reusing effects is Suite Preferences. In particular, the Source Patching and E-MEM Prefs must be compatible. Other Suite Prefs control the behavior of the switcher, but do not affect E-MEM compatibility.

Source patching is the mechanism to sort out facility specific differences in sources. Loading a Suite Pref file with preexisting Source Patch settings will not necessarily allow an effect to run as designed. The sources must be patched to compensate for different physical source definitions in each facility. For example, the replay VTR may be engineering source 12 in one truck and engineering source 27 in another. If the effect was built to expect the replay VTR on Logical source 12, then logical source 12 must be patched to source 27 in the other truck. Once all the re-patching is completed, effects saved from the first truck will call up the correct sources.

E-MEM Prefs control which E-MEM levels will control specific components of the switcher. For example, if Image Store Channel 2 is assigned to the IS A group in one facility and to Misc 7 in another, the effect may not include Channel 2 if Misc 7 is not included in the original effect. Mapping ME partition boundary and secondary partitions is also critical to effect recall and run since it determines which ME E-MEM panel (or Master E-MEM enable group) controls ME partitioning.

The simplest way to guarantee Suite Pref settings are compatible is to save them when the effects are built, and reload them when you want to run those effects at a later time, making only the necessary modifications (like those for Source Patching described above). One common method is to save all the effects along with the Suite Pref and User Pref files for a particular show together on a USB Memory Stick, and then reload them all the next time you work on that show. Note that User Prefs settings will not change how an effect runs, but will reproduce the control surface as it was when the effect was built so, for example, all the source buttons are arranged exactly where you want them.

Other Kayenne environment variables to consider for successful reuse of effects are listed below.

- All the external devices required are available for use (Profile VDRs, GVEous, PBus devices, GPI outputs, etc.).
- Correct clips loaded on the Profile or other DDRs.
- Correct stills cached on the Kayenne Image Store.
- If operating in Multi Suite mode, the suites should be setup for effect sharing by properly acquiring logical devices in each suite. Also sufficient resources need to be available in the suite. If resources are not acquired, those portions of the effect will be silently ignored. If resources are acquired after loading effects, the effects will need to be reloaded.
- If using a router interface, router sources and destinations need to be defined correctly and available, and any required R-MEMs loaded.

E-MEM and Macro Interaction

Macros and E-MEMs can interact in two fundamentally different ways. An E-MEM can be programmed to execute one or more macros, or a macro can be created that recalls one or more E-MEMs. With care, operating both control mechanisms together can be extremely powerful. However, improper use can create infinite loops or other undesirable behavior. It is especially important that your Kayenne system be loaded with the correct E-MEMs and Macros and is operating in the correct mode, or unpredictable system behavior will result from the mismatched E-MEMs and macros.

Macros in an E-MEM

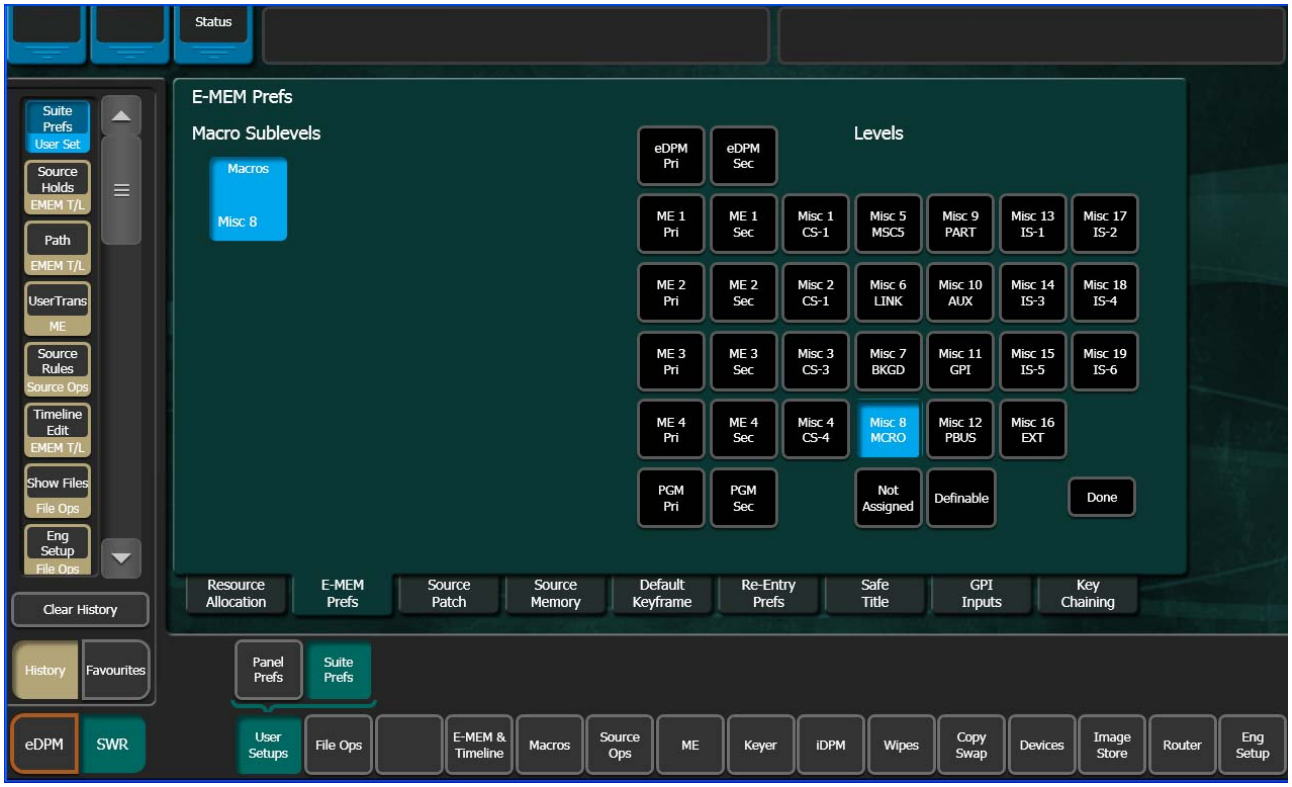
A macro can be added to an E-MEM keyframe and be executed when that E-MEM register is recalled and run. Only the macro register number (and its Enabled state) is saved to the E-MEM register, not the actual macro commands. If a macro is subsequently changed, any E-MEM specifying that macro register will run the modified macro. See *E-MEM Recalls in a Macro on page 382* for related information.

E-MEM Prefs Macro Sublevel Assignment

A Macro sublevel can be assigned to any E-MEM level (default is **Misc 8 MCRO**).

This assignment is accomplished with the E-MEM Prefs menu, accessed via **Suite Prefs**, **E-MEM Prefs**, **Macros** (Figure 133).

Figure 133. E-MEM Prefs Menu, Macro Sublevel



Preventing Assigned Macros from Running

If you want to be able to prevent any assigned macro from running in an effect, make sure the Macro sublevel is assigned to a separate level, and then enable or disable that level to turn all the E-MEM macros on or off.

To Add a Macro to an E-MEM

The Macro Catalog menu is used to add a macro register number and its Enabled state to an E-MEM effect. You can control a macro from this menu including: append, record, delete, or insert a delay (in seconds or frames)

using the Macro Catalog buttons. The menu is accessed via **Macros**, **Catalog** (Figure 134).

Figure 134. Macro Catalog Menu

1. Touch the **Macro No.** data pad in the **Macro in E-MEM** pane to open the Macro selection menu (Figure 135).

Figure 135. Macro in E-MEM Selection Menu

2. Touch the desired macro in the menu, then touch **Select** to confirm your choice or **Cancel**. The name of the selected macro appears in the data pad.
3. Select the **Enable** button to enable (select again to disable) that specific macro.
4. Navigate to the desired location in the current effect.
5. Insert or Modify a keyframe to associate that macro and its enabled state to that location in the effect.

Advanced E-MEM Operations

CAUTION Advanced E-MEM operations are recommended for very experienced operators only. Without careful planning, using these features may have unexpected On-Air results.

Note Define E-MEM is not keyframeable.

Partial Keyframing

Partial Keyframing is the ability to create and control independent sub-level timelines on a keyframe by keyframe basis in an effect. A partial keyframe is created when any sub-level is 'excluded', i.e. temporarily disabled for a level in a timeline, whether the keyframe is inserted or edited.

Partial Keyframing can include definable sub-levels as available resources using the Define E-MEM feature which is discussed later in this section.

Note Partial Keyframing is available in the Menu Panel only.

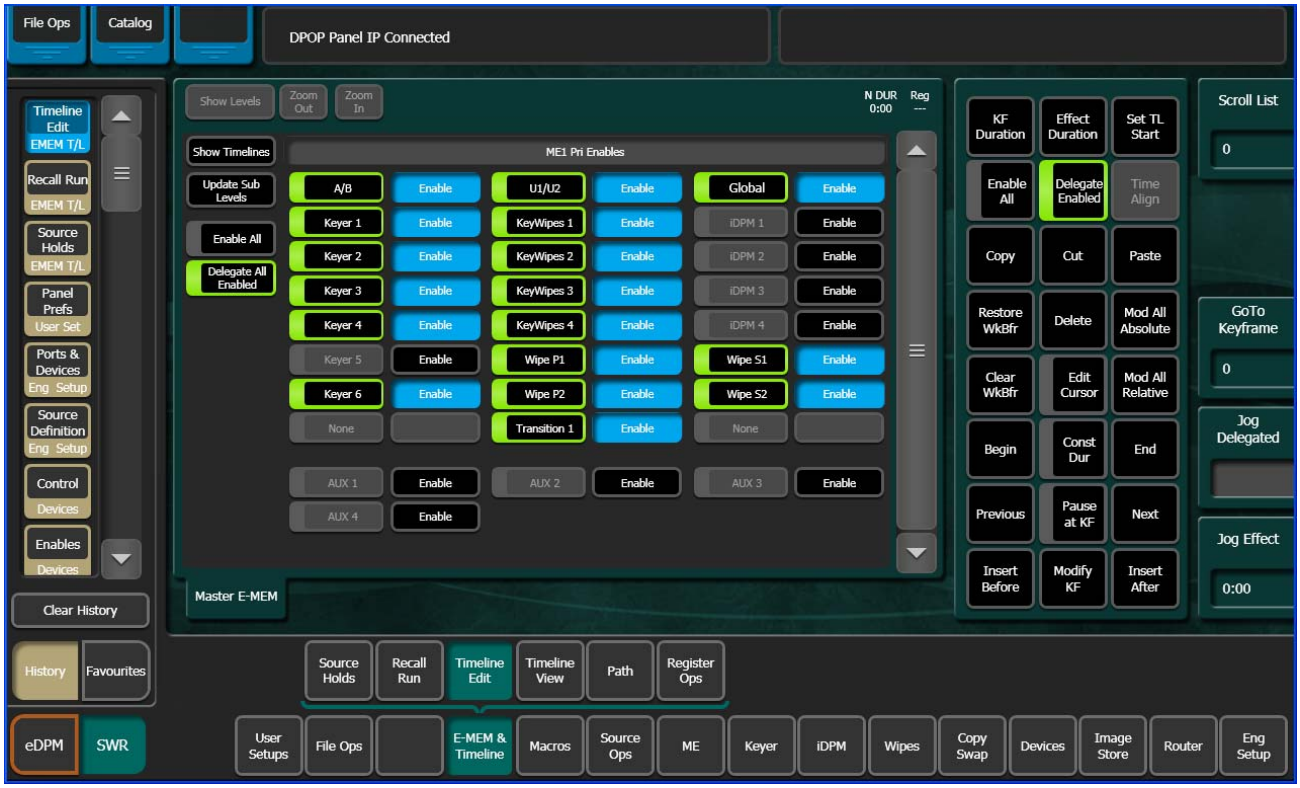
Excluding Sub-Levels in a Level

1. Go to the E-MEM & Timeline, Recall Run menu and touch the buttons of the switcher levels you want to enable for defining sub-levels (or touch the **Select All** toggle button. Alternatively, you can select the levels on the Master E-MEM Module.
2. Go to the E-MEM & Timeline, Timeline Edit menu and touch the **Show Sub Levels** button to the left of the level you wish to edit (Figure 136). The Enables menu is displayed for that level.

Figure 136. Timeline & Edit Menu, Show Sub Levels

3. Touch the Enable button of any sub-level to disable that sub-level (Figure 137) from being included in the current E-MEM register.

Figure 137. Timeline & Edit, Enables (Define) Menu



4. Repeat Steps 1-4 for each level you wish to create Partial Keyframes for and include in an effect.

5. Learn the Partial Keyframe enabled effect to a register by pressing and holding down the **LRN** button on the Local/Master E-MEM module and selecting a register.

Note Once any sub-levels have been disabled, the **LRN** button on the Local and Master E-MEM Modules will be colored *Cyan* (light blue) to reflect a partial keyframe is present in the timeline of the effect; the default is white. Pressing and holding the cyan **LRN** button while pressing a register button forces any Partial Keyframes to be part of that E-MEM. If the cyan **LRN** button is not held when a register button is pressed, any Partial Keyframes will not be part of that E-MEM register and they will no longer exist. The register will learn a default state with all sub-levels enabled and any 'defined' sub-levels disabled.

The delegate buttons (left of enable buttons) can be turned on/off to delegate/undelegate sub-levels when inserting or modifying key-frames (Figure 137).

Define E-MEM

Sub-levels can be made definable on an effect by effect basis to be included in a level when an effect is recalled.

For a sub-level, there are three states possible:

- Not assigned—Not controlled by an E-MEM, for example if you want manual control of an Aux Bus and do not want it to be recalled by an E-MEM.
- Assigned to a E-MEM MISC Level—Under typical E-MEM control.
- Definable—Define which level will own a sub-level on an effect by effect basis.

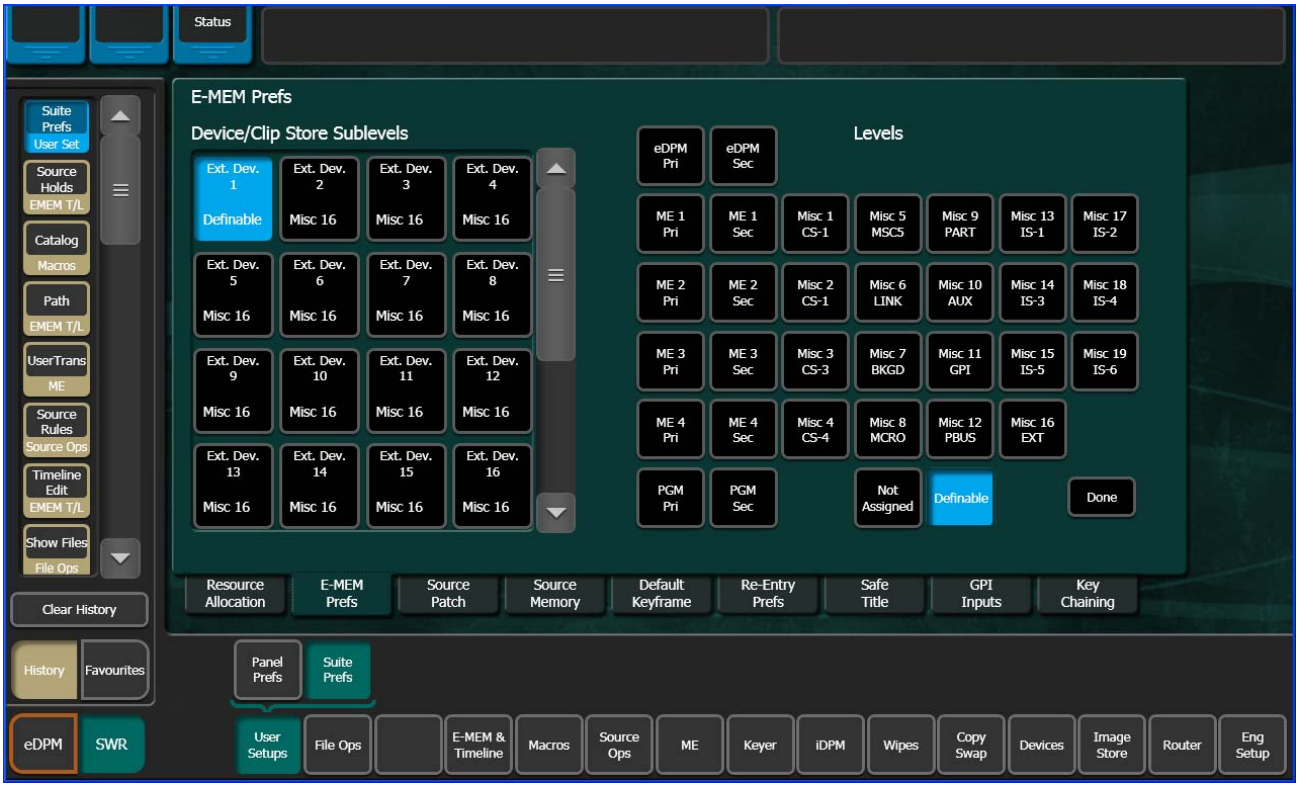
With Kayenne, sub-levels which are set to be defined can be 'enabled' in any level.

The ten E-MEM Preferences levels' sub-levels can be made as 'definable' in the User Setups, Suite Prefs, E-MEM Prefs, menu.

To make E-MEM sub-levels definable to other levels:

1. Select an E-MEM Level.
2. Touch the sub-level you wish to make definable (Figure 138).
3. Touch the **Definable** button, lower right in the menu (Figure 138).
4. Repeat steps 1 and 2 for each sub-level you wish to make definable.

Figure 138. E-MEM Prefs Sub-levels Menu, Define E-MEM



The sub-level is now definable and can be defined to a level. The definable sub-levels are not yet attached to a level.

Note Sub-levels can only be defined to one level at time, for example if Aux 1 and Aux 2 sub-levels are assigned to ME-2 Primary, they are not available to ME-1 Primary.

To enable definable sub-levels (Figure 139):

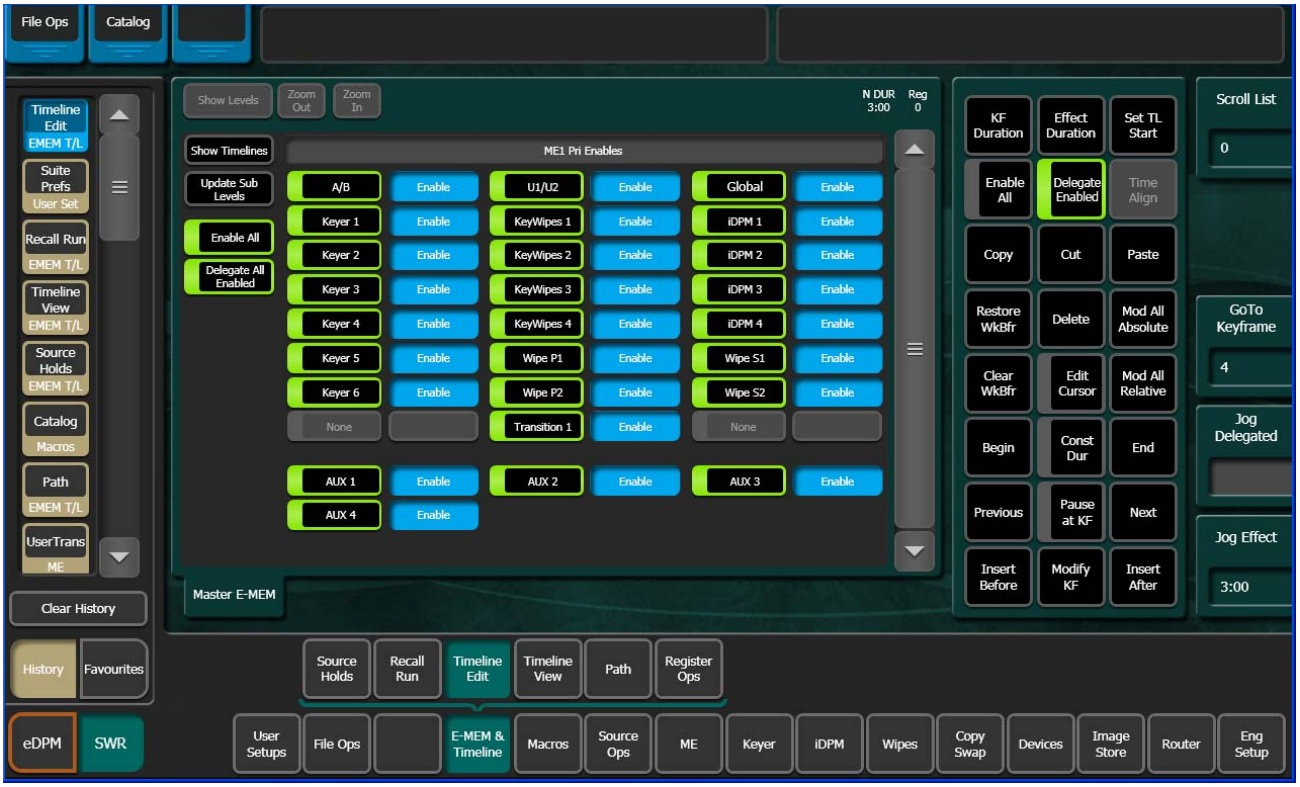
1. Go to the E-MEM & Timeline, Timeline Edit menu.
2. Touch the **Show Timelines** button.
3. Touch the **Show Sub Levels** button corresponding to the level you wish to define-sub-levels.
4. Touch the **Enable** button corresponding with the sub-level you wish to enable.
5. Learn the effect:
   a. For a new register, press and hold the cyan (light blue) **LRN** button on the Local or Master E-MEM Module, and press a register button.
   b. To edit an existing register, touch the **Update Sub Levels** button.

Once the sub-level is defined to a level, an effect can be learned with this relationship. When that effect is recalled, the level/sub-level relationship will be reestablished.

Note The **Delegate All Enabled** button's default is 'On'. If you choose to toggle this button to off, you must touch the **Delegate Enabled** button, top right of menu to delegate enabled choices. Otherwise, the enabled sub-levels will not be part of the inserted keyframes and therefore not part of the effect.

Defined sub-levels are appended below the assigned levels (if present), see Figure 139. Aux 1, Aux 2, Aux 3, and Aux 4 have been appended.

Figure 139. E-MEM & Timeline Menu, Define E-MEM Sub-levels



Moving Currently Defined Sub-levels

CAUTION Moving a defined sub-level to another level while On-Air will result in a loss of that resource.

Defined sub-levels can be taken by other levels. To prevent the accidental taking of sub-levels, the Kayenne menu will display a defined and delegated sub-level with 'yellow' (Figure 140) if the sub-level is assigned to another level. If you touch the enable button for that sub-level, it will be redefined to the current level and undefined from the previous level. If you then touch the **Update Sub Levels** button, the current E-MEM register will be modified.

Figure 140. Timeline Edit Menu, Define E-MEM, Sub-level Conflict

Background Matte

Background matte generators create colors and washes. These can be used, for example, as the backgrounds for keys.

Background mattes cannot use the wipe pattern generators available to keyer and wipe mattes, and cannot use Utility video as a wipe source. Instead background mattes employ a simple dedicated wipe generator that creates a single, straight line.

Background matte control is available from the Control Panel (Multi-Function Module, **Matt** button in the Home menu) and from the Keyer, Matte menu, which provides additional background parameter controls.

Multi-Function Module Matte Controls

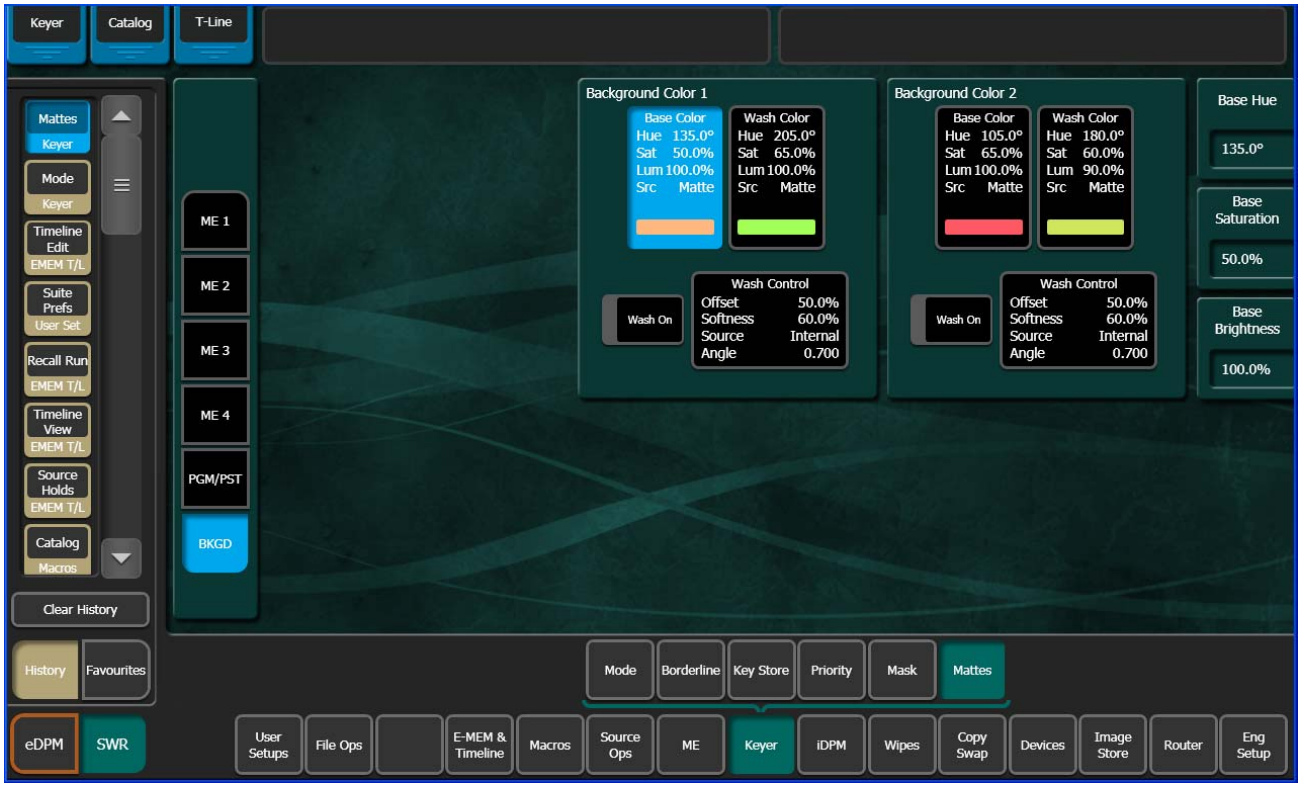
1. Select the **BGD 1** source on a background bus of any Stripe (its default location is the seventh source select button from the right).
2. Select the **Matt** button on the Multi-Function Module to display the Matte Mode.
3. If necessary, make the matte visible on the preview monitor by selecting delegated ME button on the Switched Preview button group on the System Bar.
4. Press the **Flat** button in the Multi-Function Module. This selects a flat, single color matte (Figure 141). All subsequent matte controls are located in the Multi-Function Module.Adjust the **Hue**, **Saturation**, and **Brightness** knobs to make the matte the desired color. This adjusts the base fill color of the matte.
5. Press the **Keyer Wipe** button to select a wash matte type containing both base fill and wash fill colors. The **Keyer Wipe** button illuminates to indicated a wash has been selected (though the background matte is not using the keyer wipe pattern generator). Note that pressing the **W1 Wipe** or **W2 Wipe** button also selects a wash matte type and illuminates the **Keyer Wipe** button.
6. Press **BWAS** to delegate the Matte controls to the wash fill, and adjust the **Hue**, **Saturation**, and **Brightness** knobs to create a contrasting color. If only a single matte fill color is visible that doesn't change, adjust the **Offset** and/or **Softness** knobs to make the edge between the two colors visible on the screen, then adjust the wash fill color.
7. Adjust the **Rotation** knob to change the angle of the edge.

Matte Menu Controls

Most of the controls in the Matte menu duplicate the controls in the Multi-Function Module, Matte mode.

1. Go to the Mattes menu by pressing **Keyer**, **Mattes**.
2. If not already selected, touch the **Base Color** data pad of the desired Background (1 or 2). Use the top three soft knobs to adjust **Base Hue**, **Base Saturation**, and **Base Brightness** of the base fill color (Figure 141).

Figure 141. Matte Menu, Base Color Selected



3. Touch the **Wash On** button at the bottom so its indicator illuminates to create a wash matte.
4. Touch the **Wash Control** data pad to bring up **Offset**, **Softness**, and **Rotate** soft knob controls. If necessary, use the **Offset** and **Softness** knobs to make the wash edge visible on the screen. You can also turn on the **Rotate** button, and then adjust the angle of the edge using the **Rotate** soft knob.
5. Touch the **Wash Color** data pad to delegate the soft knobs on the right to adjust **Wash Hue**, **Wash Saturation**, and **Wash Brightness** of the wash fill color.

Because all background matte parameters are keyframeable, you can build effects with constantly changing backgrounds using multiple keyframes.

iDPM Operations

Kayenne has two types of DPMs (Digital Picture Manipulator) options available, *iDPMs* (Internal) that are available by floating license on the first four keyers of each ME for a maximum of sixteen (on a 4-ME system) and *eDPMs* (Extended), four combined or independent DPM channels that can be mapped to separate source select buttons or delegated to any of the six keyers on any ME (see *eDPM Operations on page 262*).

If any iDPM channels less than the maximum are licensed, then those iDPM channels can be used on any of the first four keyers of an ME. For example, if you only have two floating iDPM Channels licensed on a 2-ME system, the two iDPM Channels can be assigned to two of Keyers 1-4 on one ME or one keyer on each of the two MEs.

Note iDPMs and eDPMs are software options (and also hardware in the case of eDPM) and must be enabled in the Eng Setup, Install Options menu when purchased.

iDPMs can be activated and controlled in the Menu Panel and the MFM (Multi-Function Module). Most but not all of the functions are common.

Multi-Function Module

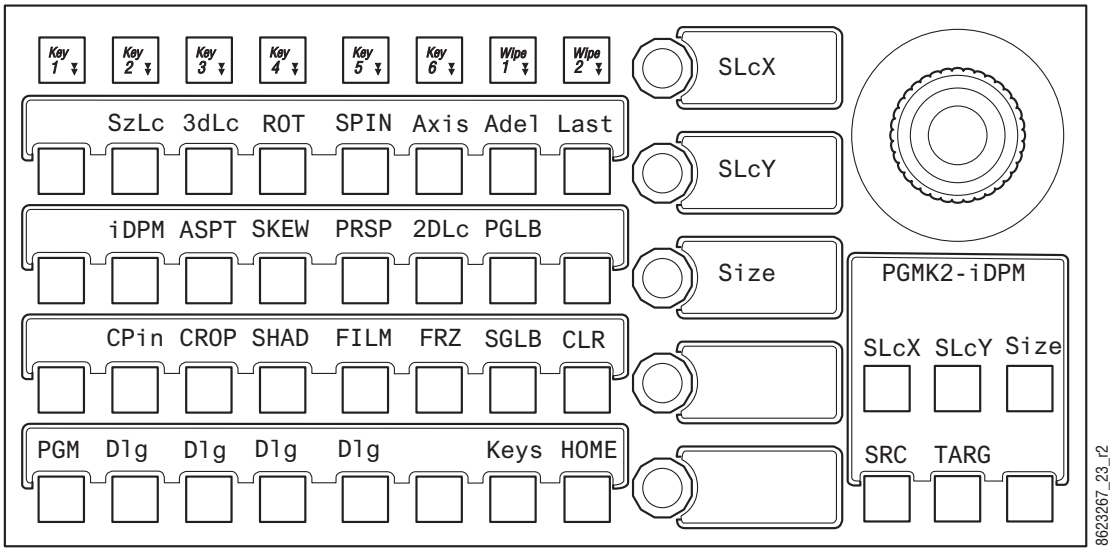
The MFM in the Kayenne Control Panel can be delegated to activate and control iDPM Channels.

Delegation

Delegate the MFM to the desired ME by pressing any of the keyer function buttons (right side) on the Source Select Module of that ME. Alternatively, you can press the ME soft button to select the ME and then press the desired keyer hard buttons on the MFM (for multiple keyer button selection, hold down one keyer button then select the rest or press them all simultaneously).

1. Press the **iDPM** button (On/Off toggle button; on is white) from Home on the MFM or Press the Key button.
2. Press the **iDPM** button in the iDPM/Key Mode (Figure 142). This will delegate the MFM to iDPM and enable iDPM for all selected keyers.

Figure 142. Multi-Function Module, iDPM Control Mode



The first time the **iDPM** button is turned on after navigating to iDPM mode, Source space is selected and Size Locate is enabled including the soft knobs. Press the **TARG** soft button (bottom button row below the joystick) to enable (change to) Target Locate mode (Figure 142). Soft knob and soft button text changes from starting with an "S" for Source to a "t" for Target, for example the text SLcX changes to tLcX to indicate Target space has been enabled. RGB button colors help identify Target space from Source space.

Source space refers to the key or keys moving along the X, Y, and Z axes of the channel while *Target* space refers to the key or keys moving along the X, Y, and Z axes of the monitor (see *Source and Target Space on page 71*).

Parameter and Soft Knob Controls

When any of the MFM positioning parameter buttons are pressed, the soft knobs and joystick buttons are delegated for control of that parameter.

- **SzLc** — Size Locate (within 3D space)

Note The X and Y modifiers are changing the same as the X and Y values for 3dLc.

- **3dLc** — X, Y, and Z 3D Locate
- **ROT** — Rotate
- **SPIN** — Spin
- **Axis** — Locate Axis
- **ASPT** — Aspect
- **SKEW** — Skew
- **PRSP** — Perspective
- **2DLc** — Post Transform (X, Y, and Z locate in 2D space)

The **PGLB** (Primary Global) and **SGLB** (Secondary Global) buttons available in the iDPM Mode in the MFM activate keyers delegated to Primary and Secondary Global Channels (iDPM Keyer delegations can only be made in the Menu Panel).

Note The **SGLB** button will only be available if the ME has been split.

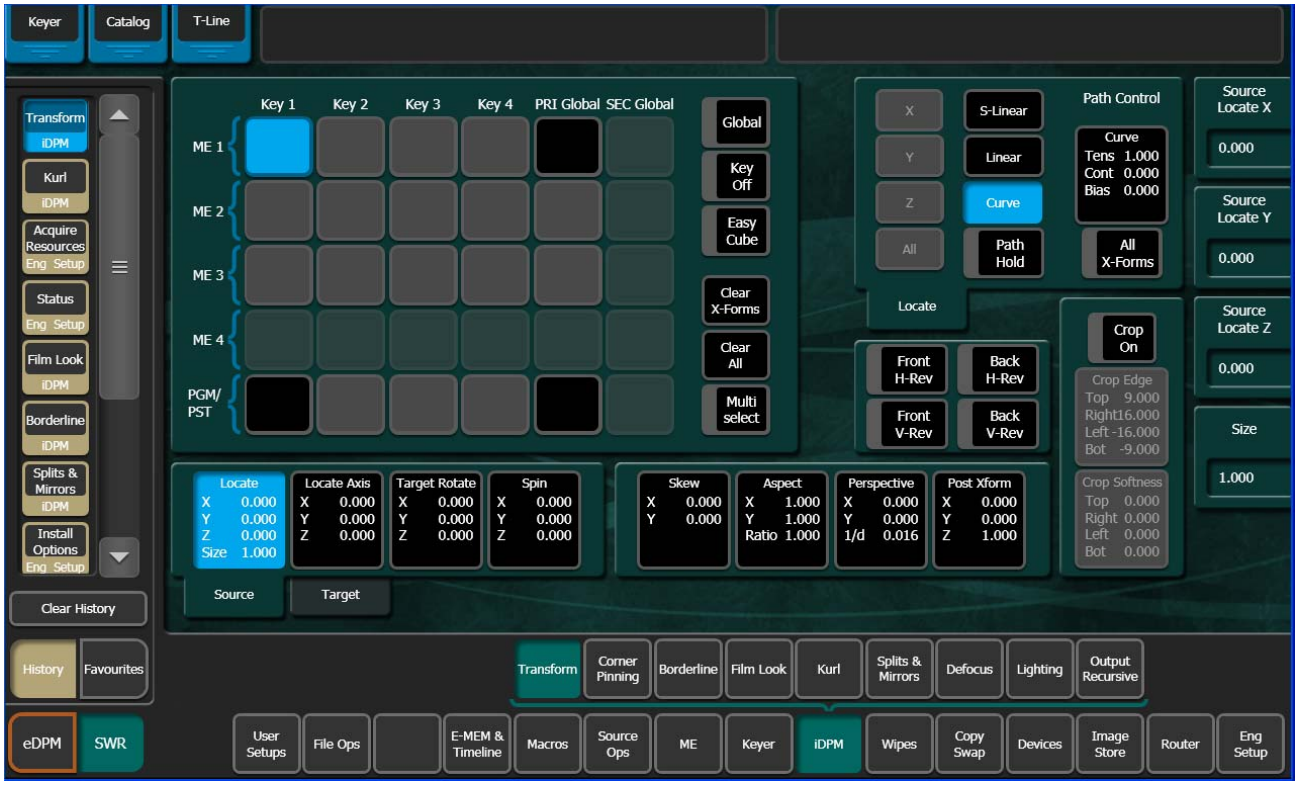
For the **CROP**, **SHAD**, **FILM**, and **FRZ** buttons, **DELG** must be pressed below each to delegate the MFM to those functions.

Transform Menu

Note Controls for the standard Shadow and Glow features are available without iDPM options in the Borderline menu (see *Borderline Menu* *on page 236*).

An iDPM activated in a keyer can be controlled with the Transform menu. The Transform menu allows you to select the keyer or Global channel to control (delegation), select the desired type of transform control, and then adjust the parameters associated with the chosen control using the soft knobs or a pop-up keypad. The menu is accessed by touching **iDPM**, **Transform** (Figure 143).

Figure 143. Transform Menu



The Transform menu has the same transform controls as the Control Panel. The Joystick (**X**, **Y**, **Z**, **Size**) can be controlled from the menu with the soft knobs or keypad entry.

Transforms Menu Delegation

The Transform menu contains a data pad matrix in the upper left for delegation (Figure 143). Data pads for keyers with iDPMs assigned will be active. Inactive keyers will be grayed out. Touch an active data pad to delegate the menu to control one of the up to 16 keyers, or to control a Global Channel (see *Global Channel Assignments*). The keyer data pads themselves indicate whether Crop is enabled, Global Assignment is on, and if the Key Signal is off.

Global Channel Assignments

The Primary Global and Secondary Global Channels are assigned in the iDPM, Transform menu, however the Secondary Global channel requires configuration in the ME, Mode menu (see *Secondary Global Channel on page 221*).

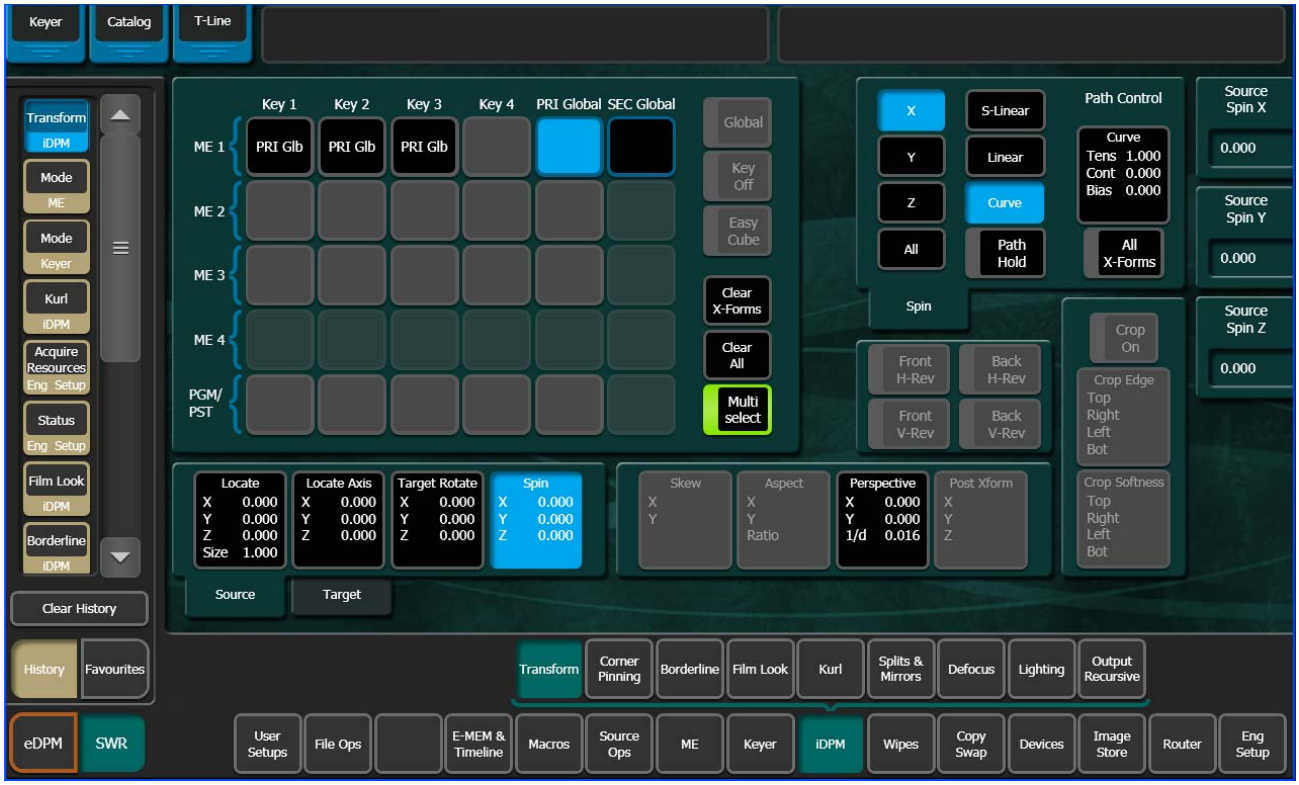
When a keyer is assigned to a Global Channel, it is also affected by transforms of that Global Channel, permitting the easy creation of complicated

multi-channel moves. Multiple keyers can be assigned to a Global channel, allowing coordinated moves of all the assigned keyers.

A keyer is associated with the Global channel by delegating the keyer, then touching the **Global** modifier button in the ME/Keyer matrix on the upper left side of the Transform menu so it is illuminated (Figure 144). Using the **Multi select** button, more than one keyer can be selected at a time. The first keyer matrix button selected with the Global channel turns blue while subsequent buttons are outlined in blue when touched.

Some functions (Crop, Reverse, Skew, Aspect, and Post Transform) are inactive for these Global Channels so they are grayed out. Global Channel assignment information will appear in the ME/Keyer data pad (**PRI Gbl /SEC Gbl**).

Figure 144. Transform Menu, Primary Global Assignment

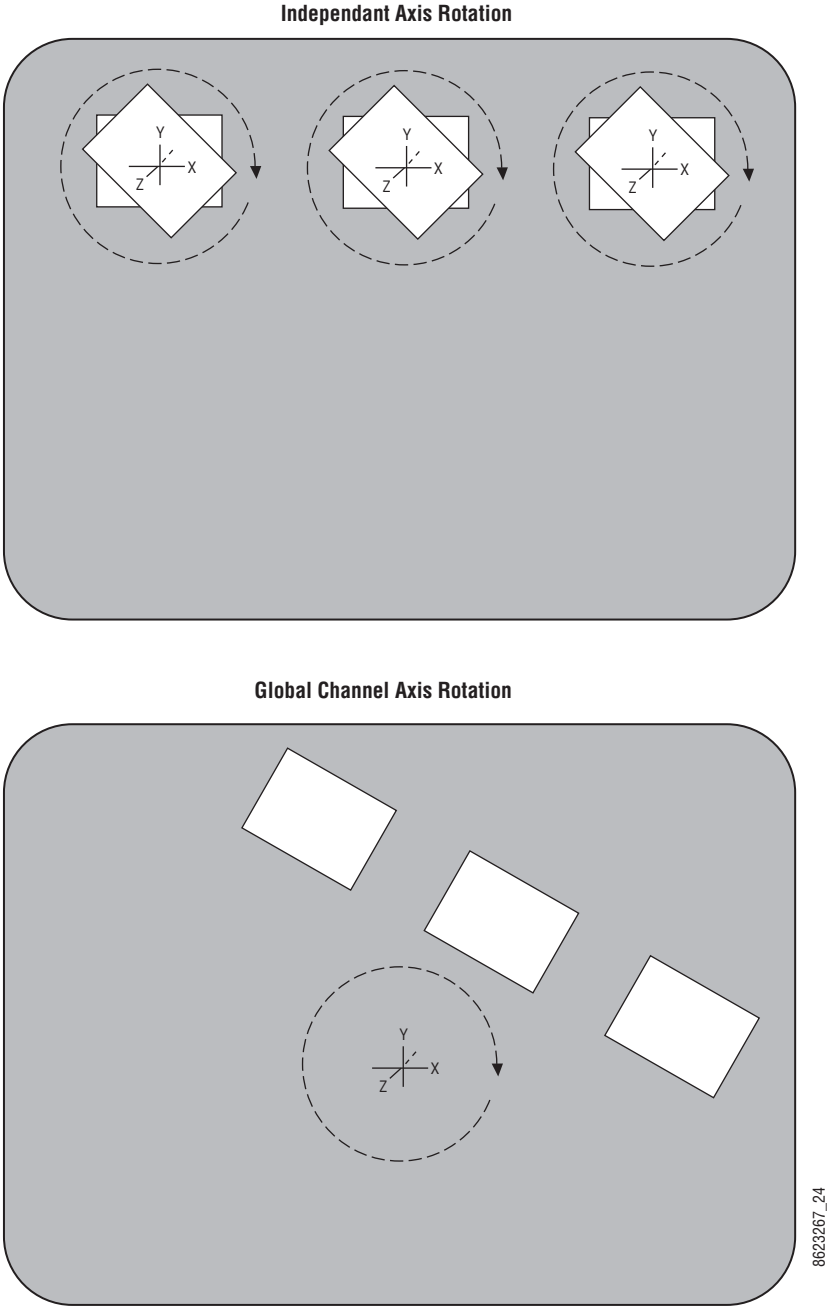


Any transform type is applied across all keyers when they are assigned as global, i.e. Locate, Rotate, Spin, and Perspective.

Note Keyer transform modifiers, i.e. Shadow, Splits & Mirrors, Output Recursives, etc., are available on a channel by channel basis and are independent from Global Transforms.

If for example you created an effect with three keyers assigned to iDPM channels on an ME, and selected those keyers and applied a Spin transform, all three keyers would spin independently around their own axis simultaneously (Figure 145). But if however you wanted all three to spin around one global axis, you could apply a Global channel to each of the three keyers for that ME, select those keyers, and apply a Spin transform. All three keyers would spin around the global axis (Figure 145, lower graphic).

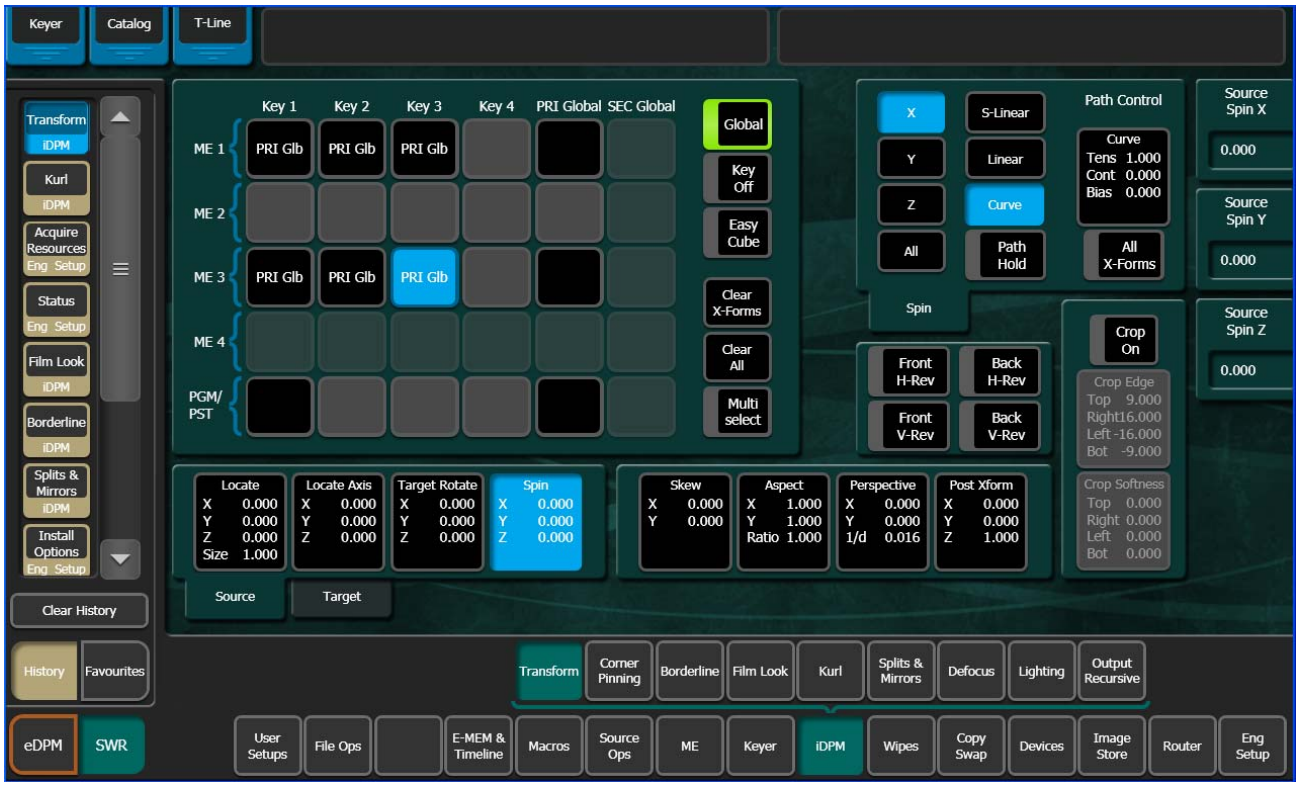
Figure 145. Spin Transform



Global Channel Control Over Multiple MEs

In the *Menu Panel only,* multiple ME Global channels can be controlled. For example if three keyers in PGM and three keyers in ME-3 are assigned to Global control, the two MEs can be combined to control all six keyers globally by touching the **PRI Global** (or SEC Global if configured with Split ME) button data pad for each ME (Figure 146). All keyers on PGM and ME-3 execute the same transform.

Figure 146. Transform Menu, Multiple ME Global Channel Control

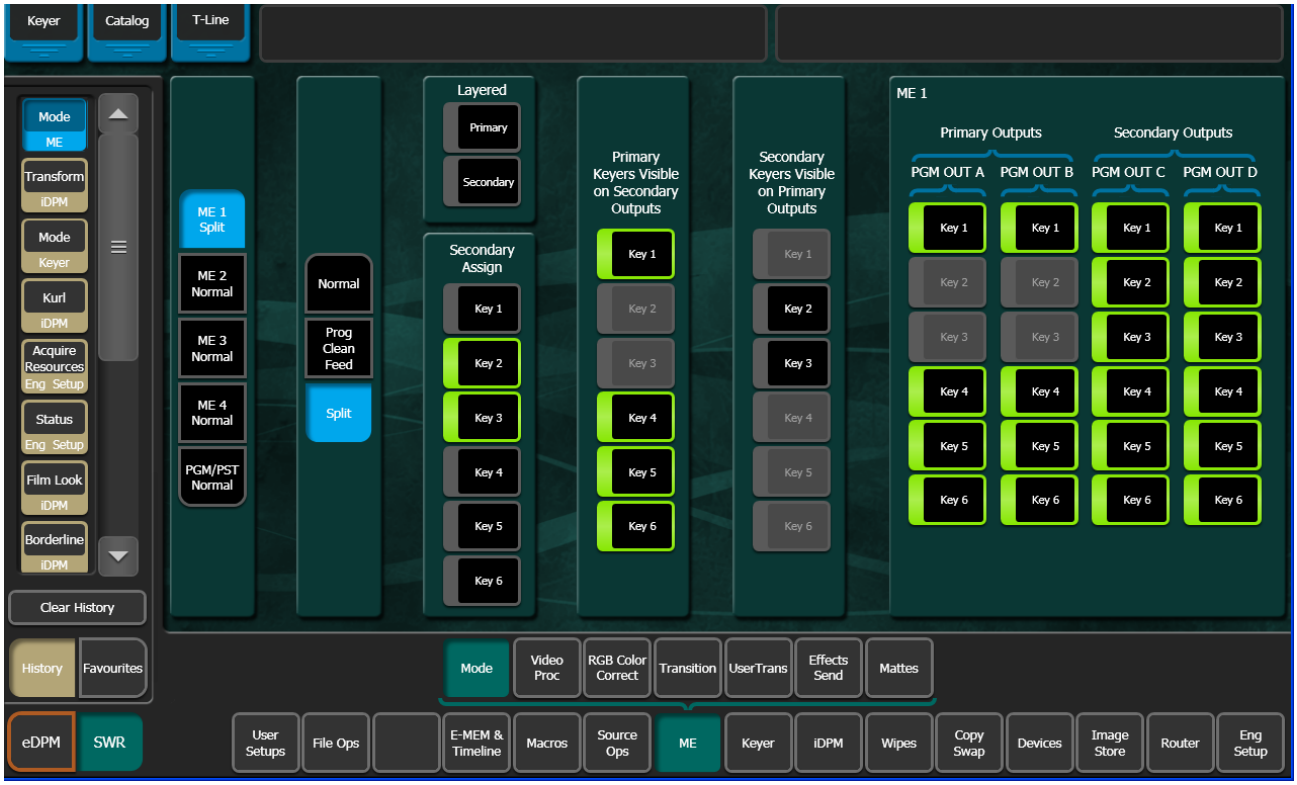


Secondary Global Channel

By splitting the ME into Primary and Secondary partitions, you can assign keyers in the Secondary Partition to global control just as with the Primary Partition. This allows you to create very complex effects on both outputs, including making keys on the Primary Partition visible on the Secondary Partition and vice versa.

The ME partition must be split into Primary and Secondary before the Secondary Global channel can be assigned. Touch **ME**, **Mode** to access the Mode menu (Figure 147).

Figure 147. Mode Menu, Secondary Global Assignment Configuration



To split MEs and assign keys to the Secondary Global Channel (Figure 147):

1. Touch **ME**, **Mode** to access the Mode menu.
2. Touch the ME button (far left) of the ME you wish to split for Secondary iDPM Global channel assignment.
3. Touch the **Split** button in the pane second from the left.
4. Select and touch the keys you wish to assign to the Secondary Global Channel in the Secondary Assign pane.
5. Repeat Steps 2-4 for each ME you wish to split and assign keyers to the Secondary Partition.
6. Touch **iDPM**, **Transform** to go to the Transform menu.
7. Activate the keyers assigned to the Secondary Partition by touching the assigned ME keyer button and touching the Global toggle button to highlight it.

   The ME keyer button displays **SEC Glb** to signify the keyers Secondary Global assignment.

Key Off Control

The **Key Off** button (see Figure 146 on page 221) is used to turn off the key signal processing for the delegated keyer, resulting in a full raster image. For example, suppose you want to fly a graphic that is normally accompanied by a key signal. Turning the key off forces the graphic to full raster, ignoring the key. The **Key Off** button is inactive for Global channels.

Easy Cube Control

When a channel is used to create a cube or slab, turning on the **Easy Cube** button (see Figure 146 on page 221) automatically translates the delegated channel to the visible face of the shape as it is rotated in space.

Keyer Partition Visibility

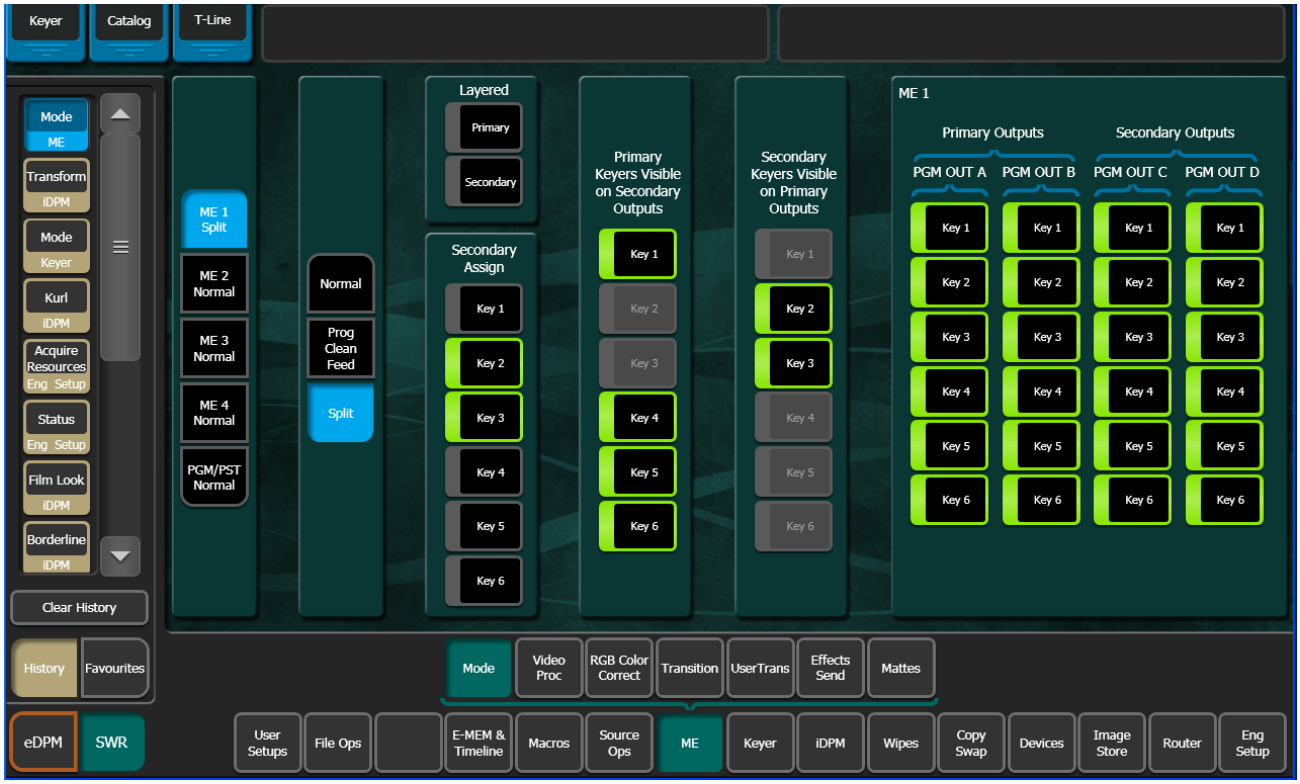
Keyers assigned to the Secondary Partition output can be made visible on the Primary Partition output and vice versa by touching the Key buttons in the Primary Keyers Visible on Primary/Secondary Partition panes.

Assigned key buttons can also be turned on and off in the ME Output pane (far right).

In the example in Figure 148, Key 2 and Key 3 on the Secondary Partition were made visible on the Primary Partition by touching Key 2 and Key 3 in the Secondary Keyers Visible on Primary Partition pane.

The keyers will be visible in the Primary Partition but are controlled only by the Secondary.

Figure 148. Mode Menu, Secondary Partition Visible on Primary Partition



Split Layered Mode

With iDPM, you can layer Keys 1-4 with iDPMs for each ME. See *ME Split Mode Operation* *on page 362*.

Transform Controls

The Source and Target transform controls below the delegation matrix delegate what 3-D transformation will be controlled with the soft knobs or pop-up keypad entry. Selecting one of the transform buttons activates the soft knobs on the right side of the Menu Panel to control specific parameters of that transform and delegates the Path Control pane to that transform.

The transform controls are organized on the menu according to Source and Target space capabilities. See *3-D Digital Effects Concepts* *on page 69* for background information about 3-D image controls, including Source and Target space.

The **Locate**, **Locate Axis**, **Target Rotate**, and **Spin** transforms can be assigned to work in either source or target space with the touch buttons at the lower-left of their pane. Selecting the **Source** button provides image adjustment using that channel's coordinate system for reference. Selecting the **Target** button provides image adjustment using the screen as the reference. Only one space button is selectable at a time.

Note **Target Rotate** displays only Target Rotate transform parameter values, even when Source space is selected. The soft knobs still adjust either the Target or Source space rotation parameters, however.

Crop Controls

The **Crop On** button located in the Crop pane, right side of the menu, is used to activate the crop feature for the delegated keyer (this button is inactive for Global channels). The Crop Edge data pad delegates the soft knobs to control each side's cropping, while the Crop Softness data pad delegates edge softness control.

Reverse Controls

The Reverse controls are located to the left of the Crop pane. The front and back sides of the transformed picture can be reversed vertically and/or horizontally with these controls.

Path Controls

The path control pane is located at the top-right of the menu. **S Linear**, **Linear**, and **Curve** interpolation touch buttons are available. When **Curve** is selected, soft knob controls for **Tension**, **Continuity**, and **Bias** soft knob become available. You can also turn off transform interpolation and hold each keyframe's values with the **Path Hold** touch button. See *Path Control* *on page 77* for an explanation of path controls.

Note Use the Path controls in the E-MEM & Timeline menu to affect all iDPM transform and effect modifiers. Path controls in the iDPM menus are only used to adjust path parameters of individual values of a transform or effect modifiers.

To specify a path for a transform, select the category of transform with the data pads at the lower area of the screen. Then select the path type in the upper-right pane, which will be labeled with that transform category. When **Curve** is selected, use the soft knobs or associated data pads to enter values for tension, continuity, and bias. See *Tension, Continuity, and Bias Controls* *on page 78* for an explanation of these controls.

All transforms except **Spin** apply the same path control to all that transform's parameters. **Spin** allows different paths to be specified for each axis of the transform. When **Spin** is selected, the **X**, **Y**, **Z**, and **All** touch buttons are-activated. The selected path will only be applied to the specified axis.

Clear Transforms

Two buttons located on the lower right side of the Enables pane (page 218) are used to clear transform settings.

Clear X-Forms – Sets all transform parameters of the delegated keyer (or global channel) to Default Keyframe values. The transform parameters reside in the panels below the data pad delegation matrix and do not include Crop. Modifiers of other iDPM settings, i.e. Shadow, Kurl, and Lighting are not affected.

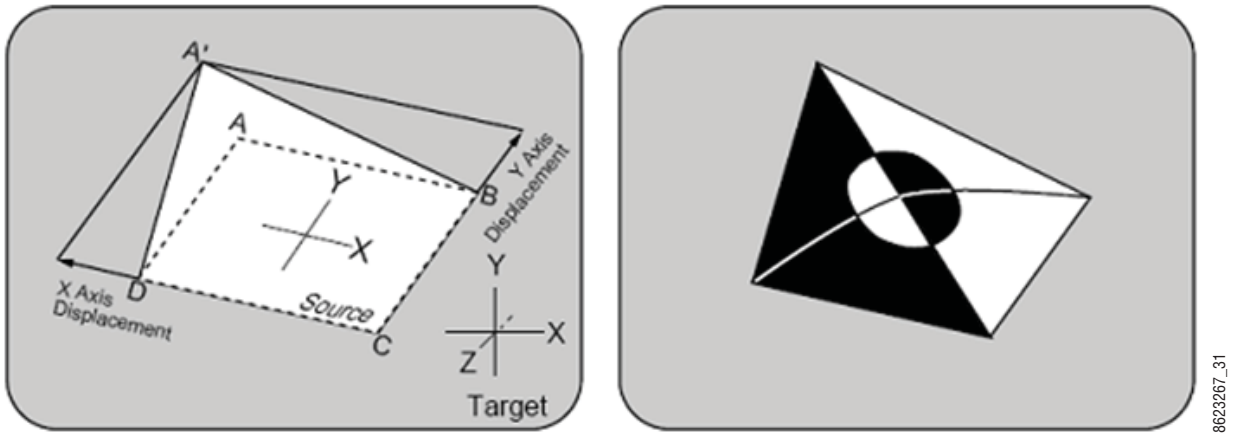
Clear All – Sets all transform parameters and all other menu settings, including Crop values, of the delegated keyer to Default Keyframe values.

Corner Pinning

Corner Pinning allows you to move the corners of a source image relative to the background. Corner Pinning is keyframeable, with all standard path control functions. The new corner locations do not need to form a rectangle.

Corner Pinning is accomplished by distorting the source to fit into its newly defined corners. The modified image remains in its original source plane, and is not "bent" along the Z axis. Corner Pinning does not change the location of the axis of rotation or spin of the source image (Figure 149).

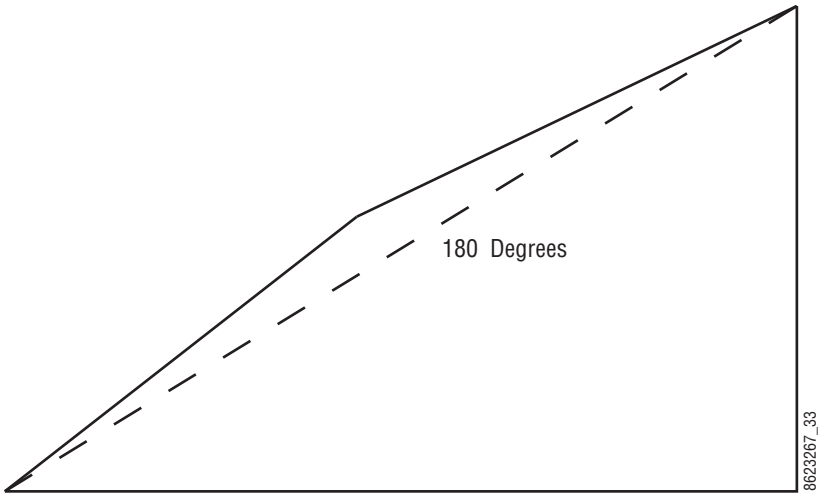
Figure 149. Corner Pinned Object



Corner Adjust Limits—Corner Pinning works for convex quadrilaterals but not for concave quadrilaterals. A convex quadrilateral is defined as a four-sided shape with all angles less than 180 degrees (Figure 150), all vertices point outwards and all diagonals lie entirely inside the quadrilateral.

Results from adjusting a corner beyond the limits are undefined.

Figure 150. Convex Quadrilateral—Corner Adjust Limits



To allow fine adjustment of an image when using Corner Pinning, the View Through (View Thru Enable) feature allows you to temporarily (for editing purposes only) reduce the opacity of an iDPM channel to let you “look through” the image to align the corners precisely with the background.

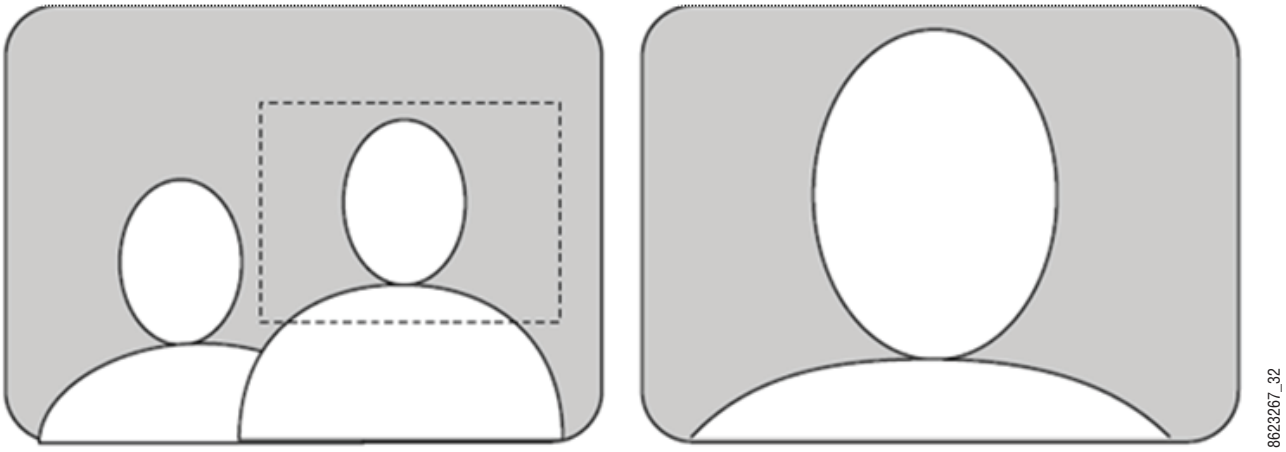
Corner Pinning and Cropping

Corner Pinning is designed to work in conjuction with cropping. Each time Corner Pinning is turned on, the pinned corners will be adjusted to match the current iDPM crop settings. After pinning the corners of an image you can crop it to select the exact portion of the source video to display in the corner pinned area.

For example, your source video could contain two people, but you may want to fly the image of only one person (Figure 151). In this case, you could build an effect, turn on Corner Pinning, use crop mode, and leave the corners at the defaults. If you now move the crops maintaining the original aspect ratio (4x3 or 16x9) you can position these crops so that only the desired person is shown. If the person or the camera moves, you can adjust the user crops to keep the person centered between the edges of the crops.

This will result in the person being centered in the video and the effect can be flown around the screen.

Figure 151. Corner Pinned Cropped Object

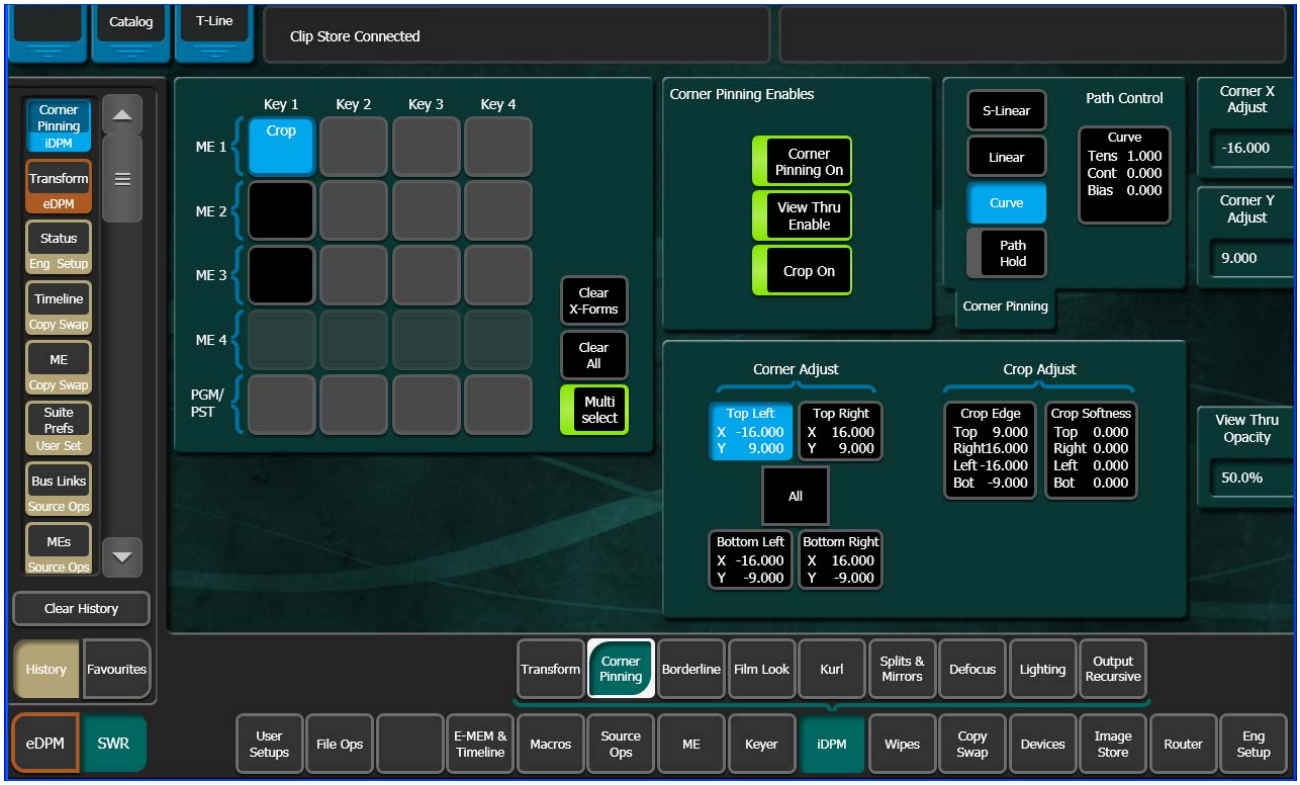


Note Toggling Corner Pinning on and off will reset the corners to the current crop values and change the pinned corners.

Corner Pinning Menu

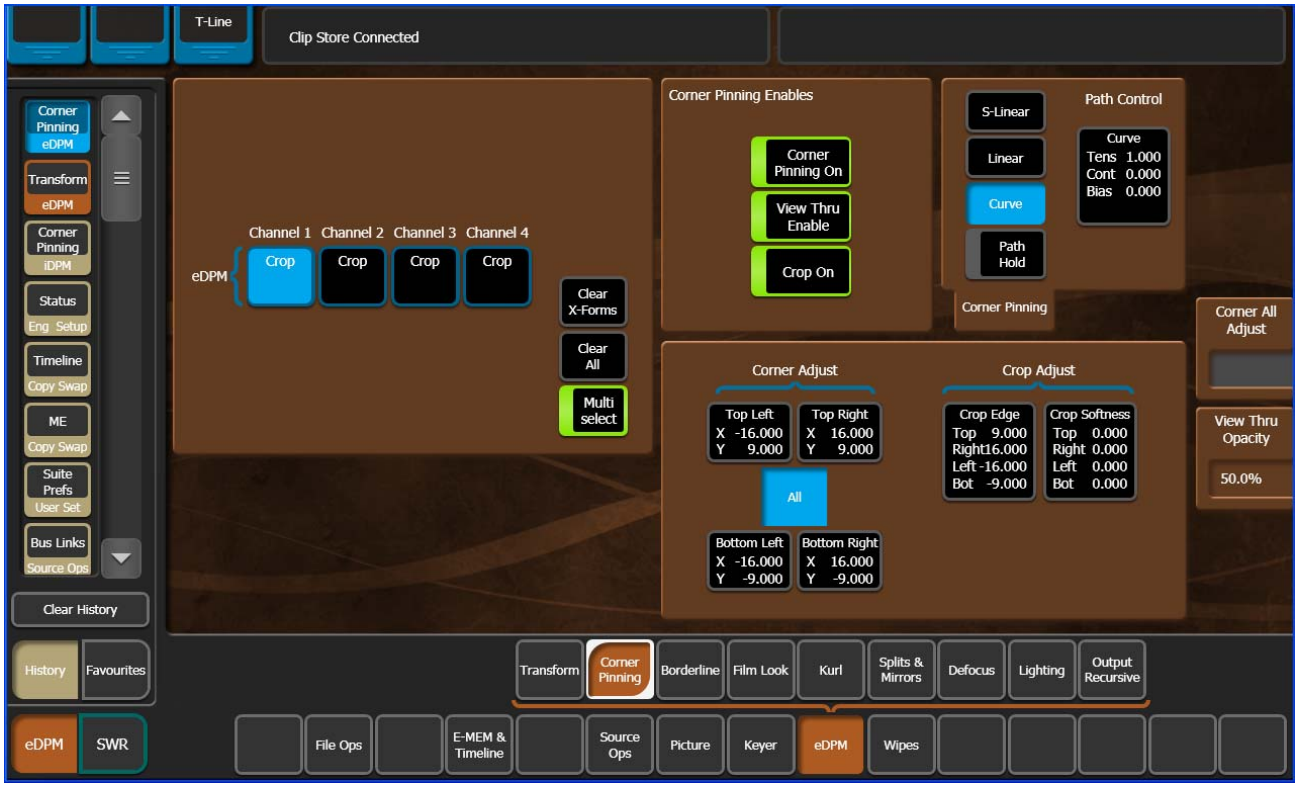
The Corner Pinning menu (Figure 152) is available in both the SWR (Switcher) (iDPM, Corner Pinning) and the eDPM (option) mode (eDPM, Corner Pinning). The menus function identically.

Figure 152. iDPM, Corner Pinning Menu



Touch the **eDPM** mode button (lower left), **eDPM**, **Corner Pinning** (Figure 153).

Figure 153. eDPM, Corner Pinning Menu



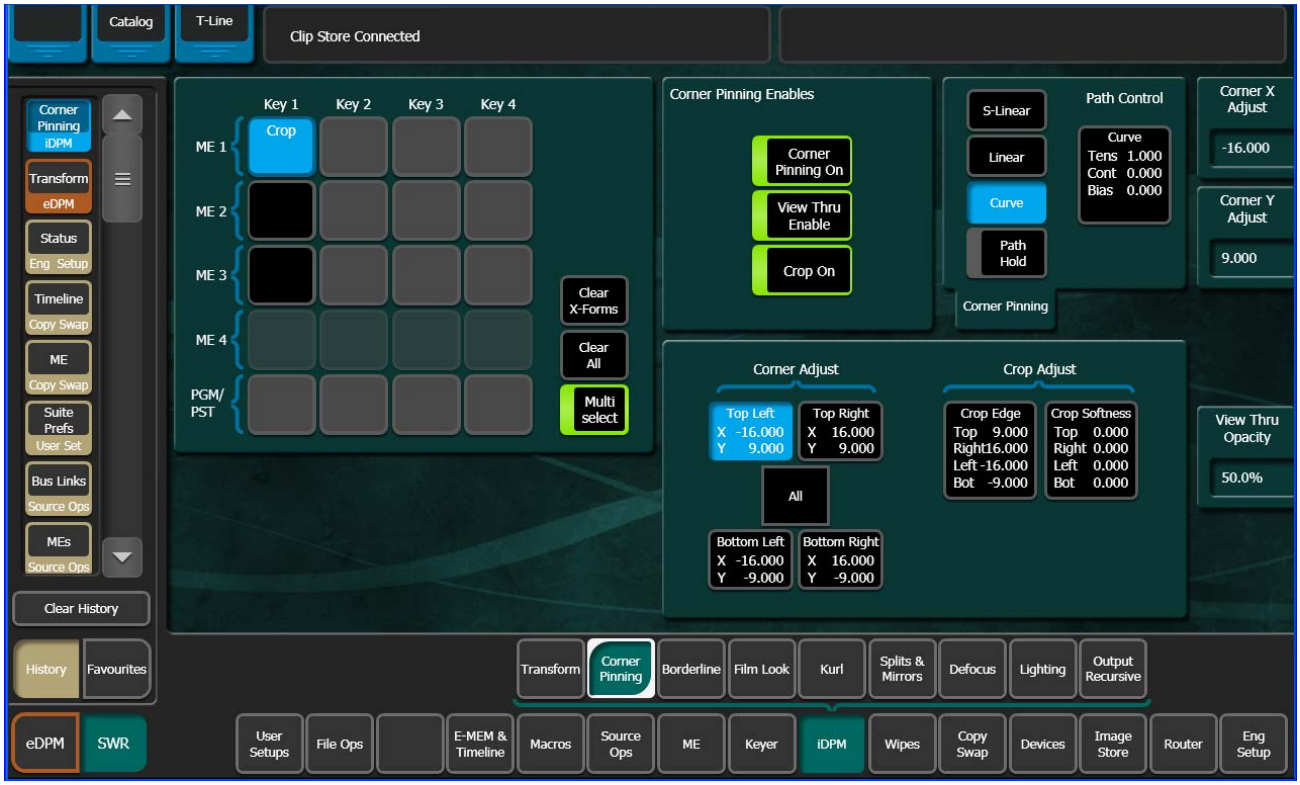
An example of how Corner Pinning would be valuable is that during a sporting event, a camera points at a shot clock. The DPM uses Corner Pinning to build a box to contain the clock and crop adjustments place the clock exactly in the box but the camera is accidentally moved and the content of the box no longer shows the entire shot clock. Using Pan and Scan, you can move the camera content to be shown correctly without moving the edges of the box.

Note Crop enables/disables and crop edge parameter changes are global. For example, if crops are enabled in the iDPM, Transform menu, and the top crop edge parameter was changed, the effect would be mirrored in the Corner Pinning menu and vice versa in the iDPM, Corner Pinning menu.

1. Select a background source.
2. Select a source for a keyer, and cut on the key over the background.
3. Go to the iDPM, Transform menu and touch the **Crop On** button to turn it on (highlights green).
4. Touch the **Crop Edge** data pad (turns light blue), the Crop Edge soft knobs will be displayed.

5. Adjust the crop edges to include the portion of the video you want in the key.
6. Go to the iDPM, Corner Pinning menu (Figure 154).

Figure 154. Corner Pinning On



7. Touch the **Corner Pinning On** button to turn it on (highlights green).

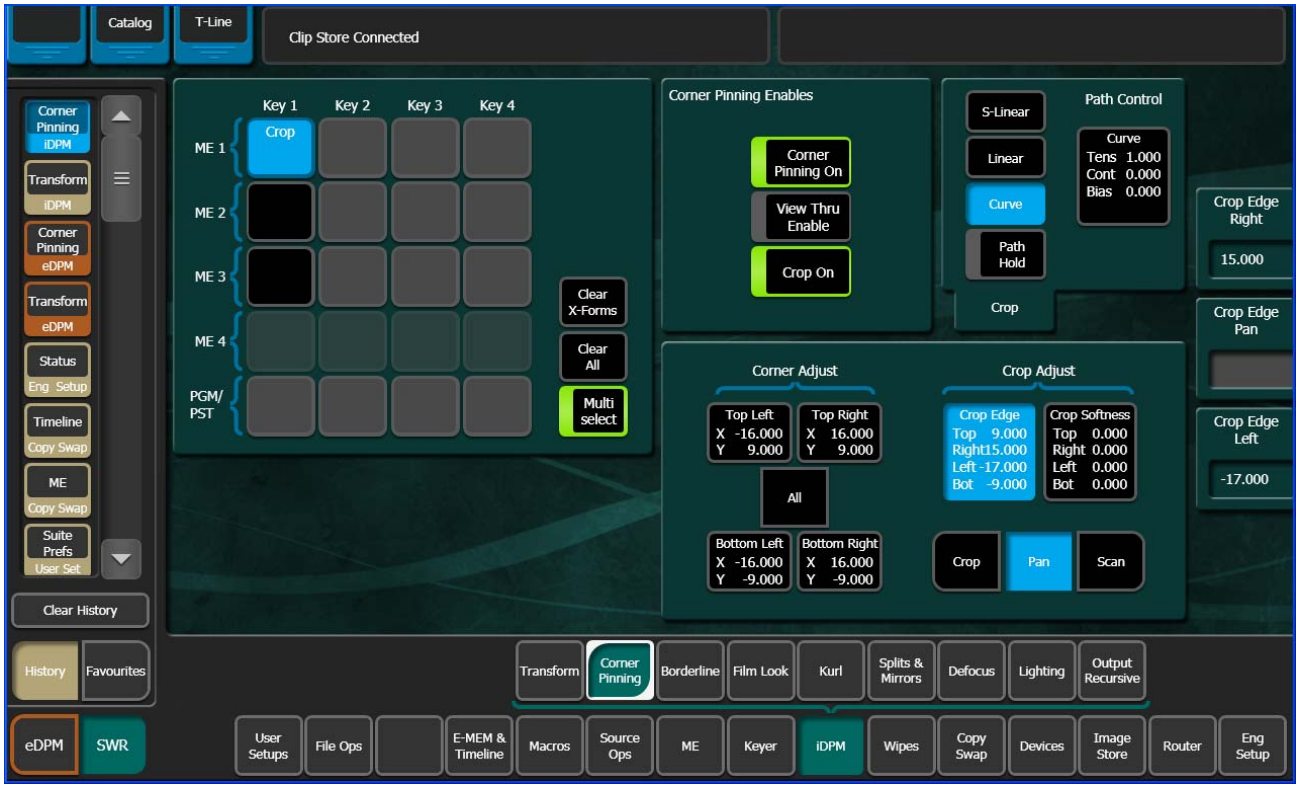
   The image will fill the screen—each corner of the key is now pinned to the corners of the monitor.
8. Touch the **All** button in the Corner Adjust area of the Corner Adjust/Crop Adjust pane. Adjusting the iDPM with the Corner Pinning **All** button enabled, acts similar to a zoom. Use the **Corner All** soft knob to adjust the size of the key; in this case to the approximate size of the shot clock.
9. Turn off All Corner Adjust.
10. Touch the **View Thru Enable** button to turn it on. This will set the opacity of the video in the key to 50% so you can see the shot clock through the video which will help you align the corners of the image to the background video (the shot clock). The opacity can be changed using the **View Thru Opacity** data pad or soft knob.

11. Touch a Corner Adjust button—**Top Left**, **Top Right**, **Bottom Left**, or **Bottom Right**, and use the **Corner Adjust X** and **Corner Adjust Y** soft knobs to pin the corner to the corner of the shot clock in the background video. This will allow you very precise adjustment. Repeat for each corner.

12. Turn off the View Thru Enable feature.

If the background video changes, you can re-center the image (shot clock in the example) using the **Pan** and **Scan** crop buttons. You 'Pan' the crop; move the crop sideways which simultaneously trims the value of the Left Crop and Right Crop, or 'Scan' the crop; move the crop up and down, which simultaneously trims the Top Crop and Bottom Crop values (Figure 155).

Figure 155. Crop Pan and Scan



1. Touch the **Crop Edge** data pad.

2. Touch the **Pan** or **Scan** button.

3. Use the **Crop Edge Pan** or **Crop Edge Scan** soft knob to pan or scan until the image is re-centered.

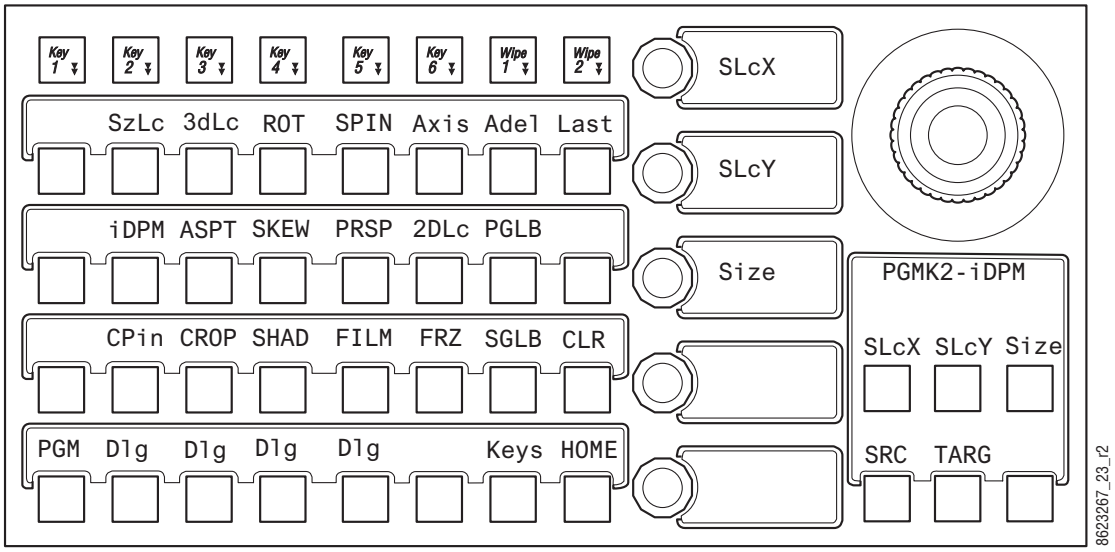
Note Panning scanning beyond (+ 16:9 for example) can have unexpected results, i.e. the picture may begin to stretch.

Corner Pinning with the Multi-Function Module

Corner Pinning can be performed from the MFM (Multi-Function Module), in the iDPM (and identically the eDPM), CPin menu.

The CPin (Corner Pinning) button has been added to the iDPM menu (Figure 156) in the MFM.

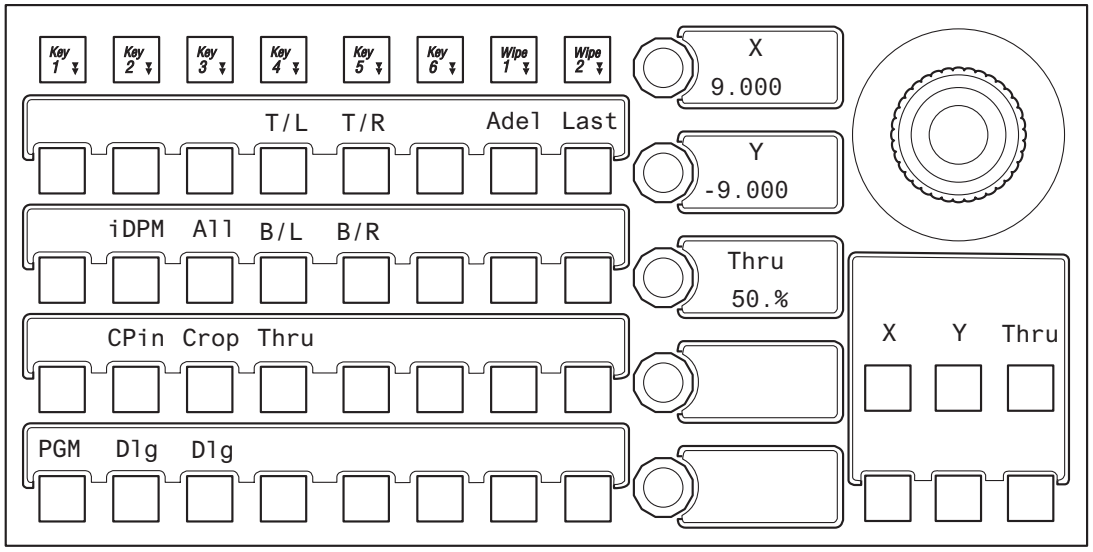
Figure 156. MFM—iDPM



Corner Pinning (Figure 157) and Crop (Figure 158) controls have been added in the CPin MFM menu. Press the **CPin** button to enable/disable Corner Pinning, press the **Dlg** button directly below to turn on Corner pinning and adjust the Corner Pinning parameters using the soft knobs.

Note Corner Pinning and Crops have their own path controls, however each corner and each crop edge share the same path. See *Editing Path Control* *on page 194* for more information about paths.

Figure 157. MFM—iDPM, CPin (Corner Pinning)



The use of the **All** and corner buttons:

T/L—Top Left,

T/R—Top Right,

B/L—Bottom Left, and

B/R—Bottom Right,

are the same as in the Corner Pinning menu (see *Corner Pinning Menu* *on page 229*). The MFM soft knobs are used for adjusting the corners when selected.

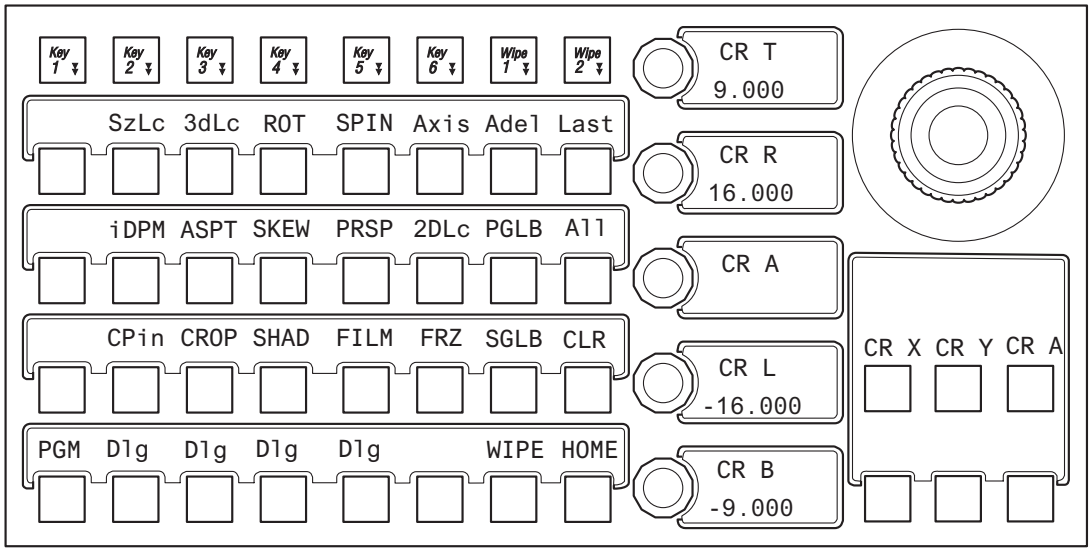
The **Thru** button performs the same function as the **View Thru Enable** button in the menu but is momentary (opacity setting is only visible when the button is held down). The opacity is adjusted with the **Thru** soft knob (Figure 157).

Crop is available in the CPin menu. When Corner Pinning is enabled, and the **Crop** button is pressed, the **All** button will be added to the Crop menu. The **All** button is a toggle that includes **All**, **Pan**, and **Scan**. Each work as in the menu. Z operation of the joystick operates the All crop adjustment (works similar to zoom), X and Y operates as Pan and Scan (Figure 158).

Crop All and Crop Edges can be adjusted using the soft knobs (Figure 158).

Note Crop Softness controls are not available for crops when Corner Pinning is enabled in the MFM, however Crop Softness controls are available in the Menu Panel.

Figure 158. MFM—Crop (Corner Pinning, Crop Menu)

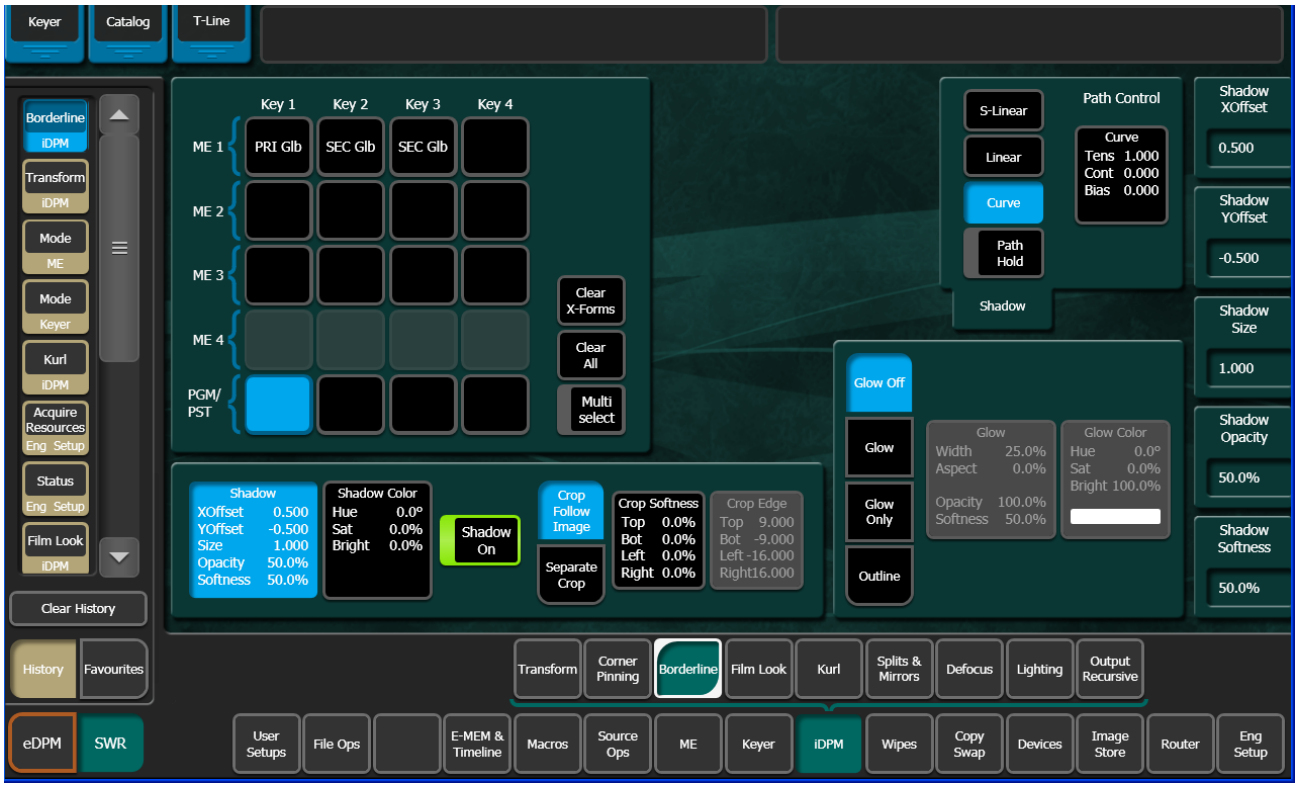


Borderline Menu

The Borderline menu is accessed by touching **iDPM**, **Borderline** (Figure 159).

Note The Borderline menu is also available in the Keyer, Borderline menu which you would use if you did not have iDPM licenses.

Figure 159. Borderline Menu



Shadow Controls

The Shadow feature is turned on with the **Shadow On** button in the lower left pane. When turned on, soft knob controls become available on the right. Different soft knob controls appear, depending on which data pad has been selected in that pane. The current parameter names and values are displayed on each data pad.

When **Shadow** is selected soft knobs for **X Offset**, **Y Offset**, **Size**, and **Opacity** are available.

When **Shadow Color** is selected soft knobs for Hue, Saturation, and Brightness are available.

Shadow Crop Controls

The Crop controls in the Shadow pane are used to adjust shadow cropping and edge softness. The current parameter names and values are displayed on the data pads.

When **Crop Follow Image** is selected, crop values of the shadow match the crop values used for the primary image. Only shadow edge softness controls are active in this mode. When the **Crop Softness** data pad is selected soft knob controls for shadow edge softness are available (Top, Bottom, Left, and Right). The total softness of the shadow edges will be the softness of the shadow edge combined with any softness of the primary image.

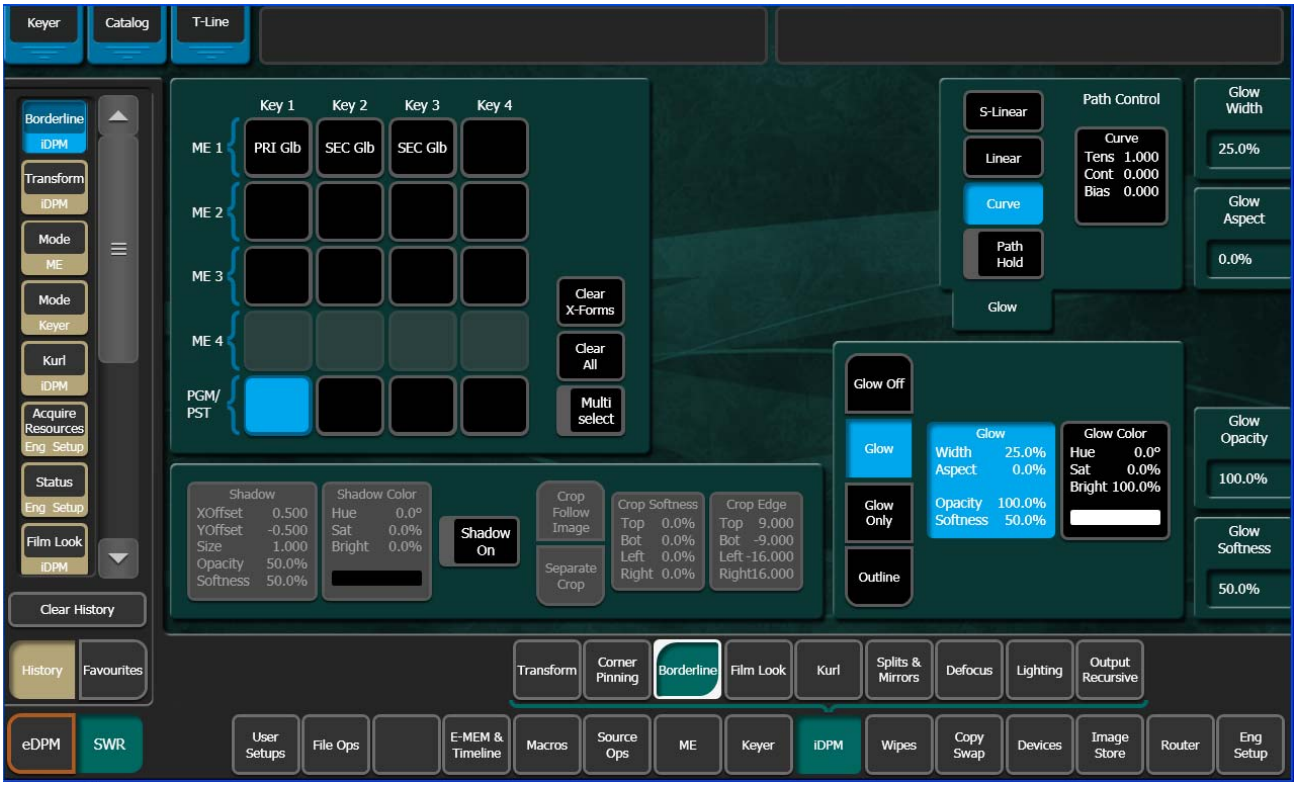
When **Separate Crop** is selected, the edges of the shadow can be given crop values different from the primary image. Touching the **Crop Edge** data pad delegates the soft knobs to control shadow edge cropping (Top, Bottom, Left, and Right).

Glow Pane

The Glow controls on the menu affect the delegated keyers. Touch the **Glow** data pad button to access the Glow controls (Figure 160).

Note Glow is provided without the iDPM option in the Keyer, Borderline menu.

Figure 160. Glow Pane



Glow Controls

The Glow pane is located at the bottom right of the Borderline menu.

Glow adds a soft edged variable opacity border around keys, leaving the original keyed image unmodified, and is a standard feature available on all Kayenne systems.

Off — The Glow effect is deactivated.

Glow — The Glow effect is applied around the keyed image which remains visible.

Note Full raster video must be resized or cropped for glow to be visible.

Glow Only — The glow effect is applied to the entire keyed area, replacing the original keyed image. Only the glow is shown.

Outline — The glow effect is shown around the keyed area, but the original keyed image is not shown. Only the border area of the glow is visible.

When the Glow pane is activated, knob controls for Glow **Width**, **Aspect**, **Opacity**, and **Softness** are available.

Note The Glow Softness parameter value is shared with Shadow Softness. Adjusting either Glow or Shadow Softness will affect both Glow and Shadow Softness.

Glow Color

When the Glow Color pane is activated, knob controls for matte **Hue**, **Saturation**, and **Brightness** become available. An approximation of the color of the matte is shown at the bottom of the pane. Use these controls to adjust the color of the Glow.

Glow Path Control Pane

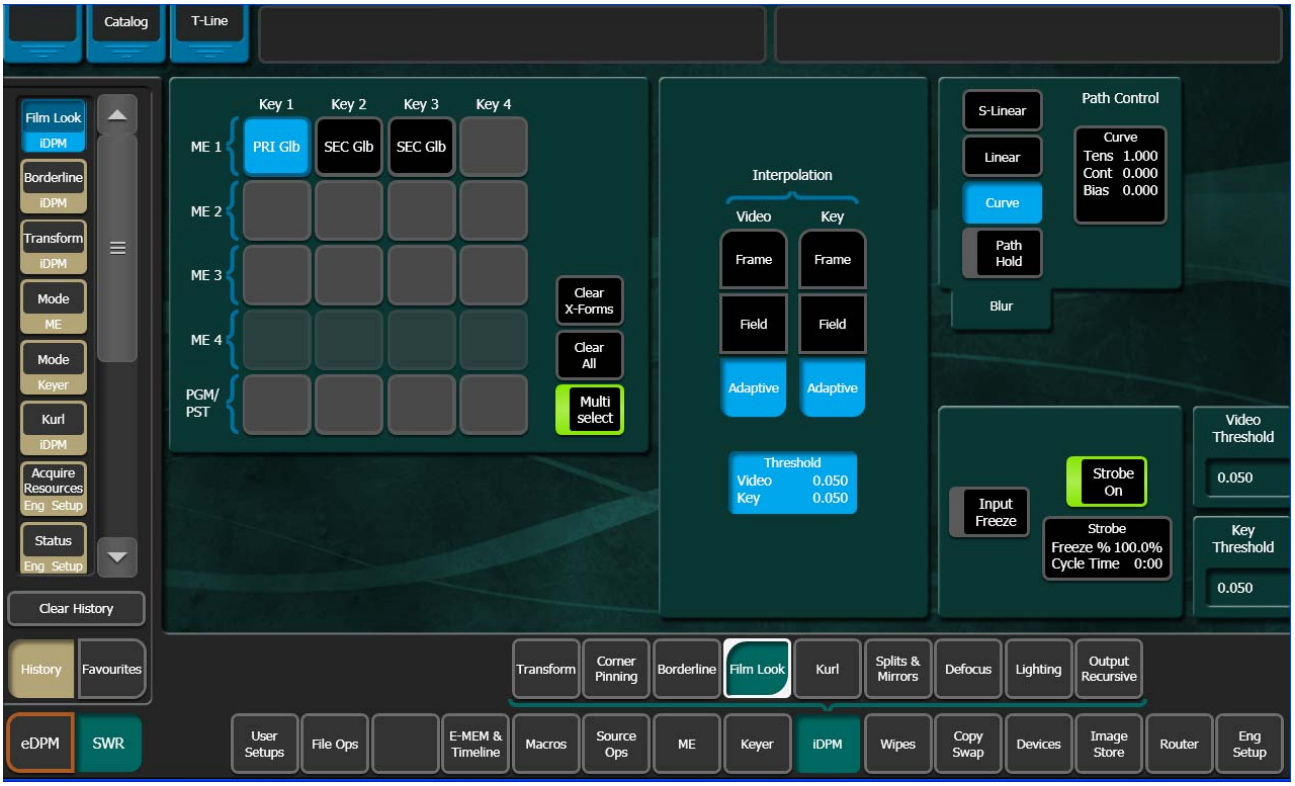
Controls for glow path, using the standard **Hold**, **S Linear**, **Linear**, and **Curve** parameters, are applied when the Glow feature is activated.

Film Look Menu

With Film Look, you can create a flicker or strobe effect (similar to an old film run through a movie projector). The affect can be adjusted to the desired look by setting the interpolation (Frame, Field, or Adaptive for Video and Key), turning on Input Freeze and/or Strobe and adjusting those

parameters with the soft knobs. Thresholds can also be adjusted for when working with cuts and artifacts (Figure 161).

Figure 161. Film Look Menu



Kurl Menu

The Kurl effects are grouped into modes, each of which has its own set of menu panes and related soft knob controls. To access the Kurl menu, touch **iDPM**, **Kurl** (Figure 162).

The Kurl modes are:

- Position/Size Modulation,
- Page Turn/Roll,
- Ripple,
- Slits, and
- Sphere.

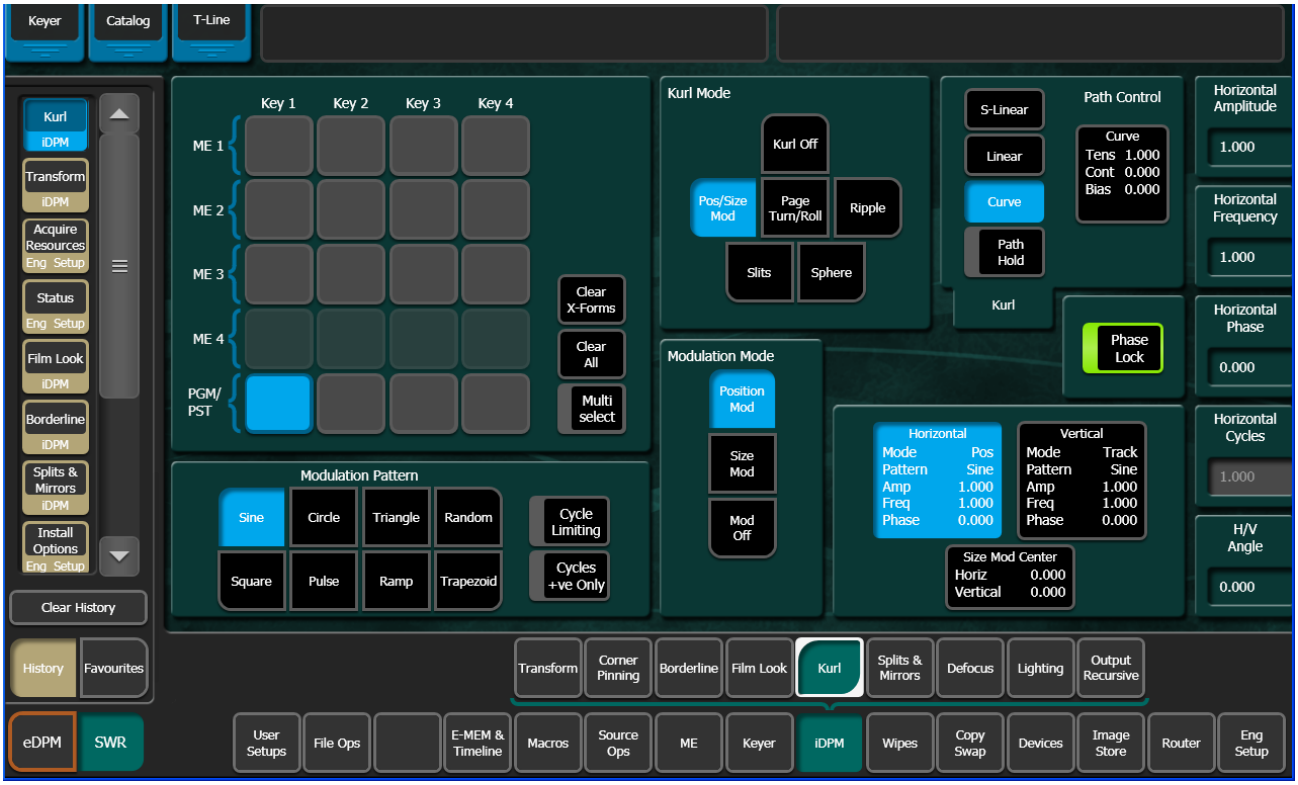
An iDPM can apply only one set of Kurl mode parameters at a time. If you wish to use more than one mode of Kurl effects simultaneously on the same video (for example, size modulation of an effect), use multiple iDPMs with re-entry (for more information, see *Re-Entry* *on page 33*).

Position/Size Modulation Mode

Position and Size Modulation is an effect in which the source video is position or size-modulated through an additive process with either a single wave train, or two wave trains with the second wave at a right angle to the first. Each of the two wave trains (horizontal, vertical) may be selected independently from a set of modulation patterns.

Touch the **Pos/Size Mod** Kurl Mode button to access the position and size modulation controls (Figure 162).

Figure 162. Kurl Menu, Position Modulation



Modulation Pane

In the Modulation pane you select the wave train axis (**Horizontal** or **Vertical**) for which the rest of the menu controls will apply. The following Soft knob controls appear on the right for the selected axis:

Amplitude — defines the modulation amplitude (the height of the pattern waves).

Frequency — defines the modulation frequency and therefore the number of pattern cycles to appear across the source.

Phase knobs — The **Phase Lock** button on the right controls whether the pattern is fixed (on) or moving (off). When **Phase Lock** is on, the **Phase** soft knob is available to control the static location of the phase of the pattern.

When off, the **Speed** soft knob is available to adjust the speed of the pattern's motion. Negative values can be entered to reverse the direction of the motion.

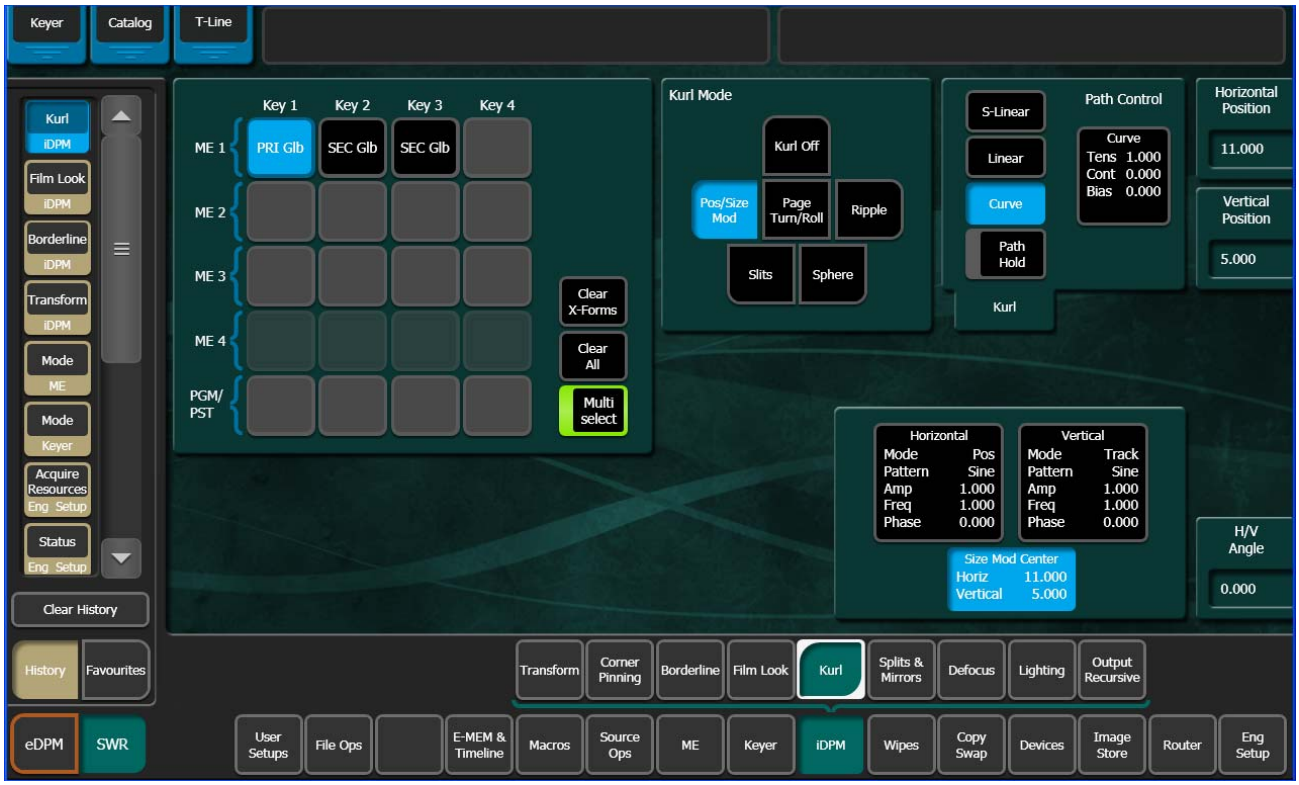
H/V Angle — defines the angle of the Position Modulation with respect to the source X and Y axes.

Mod Type Pane

With an axis selected, you select the type of modulation to be applied to that axis (**Position Mod** or **Size Mod**), or no modulation at all with the **Mod Off** button in the Modulation Mode pane. When the **Vertical** axis is selected, you can choose to have that axis' modulation values match the horizontal values with the **Track Horiz** button.

When **Size Mod** is selected in the Modulation Mode pane, the Size Mod Center data pad in the Modulation pane is active. When this data pad is selected soft knob controls for **H Position**, **V Position**, and **H/V Angle** are available (Figure 163).

Figure 163. Kurl Menu, Size Mod Center



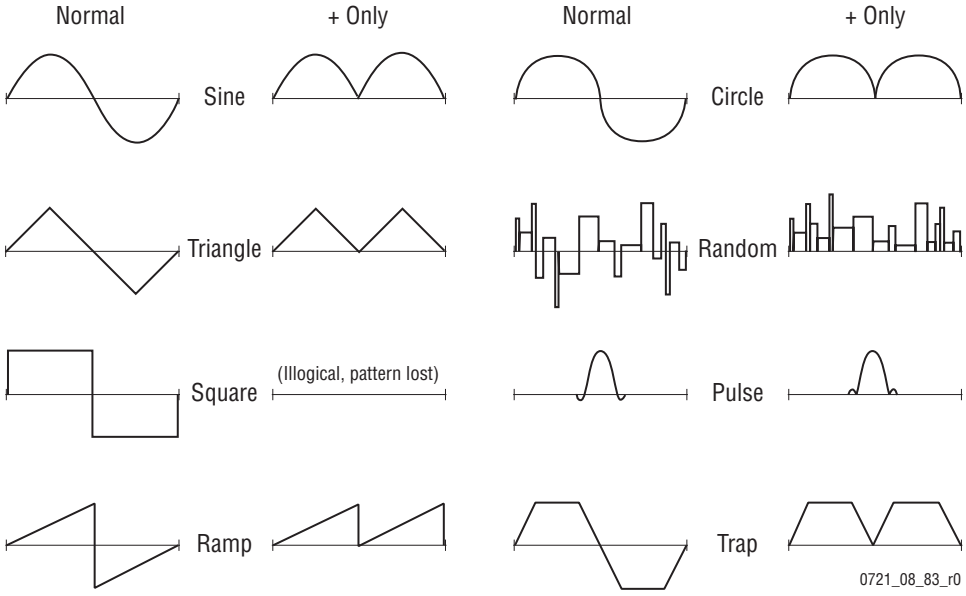
Pattern Pane

The type of wave pattern to be applied to the selected axis and modulation type is selected in the Pattern pane.

Cycle Limiting — activates the Cycles soft knob. This control can be used to limit the number of wave pattern cycles.

Cycles + ve Only — selects only the positive portion of the wave cycle. Representative wave shapes are shown in Figure 164.

Figure 164. Available Wave Patterns

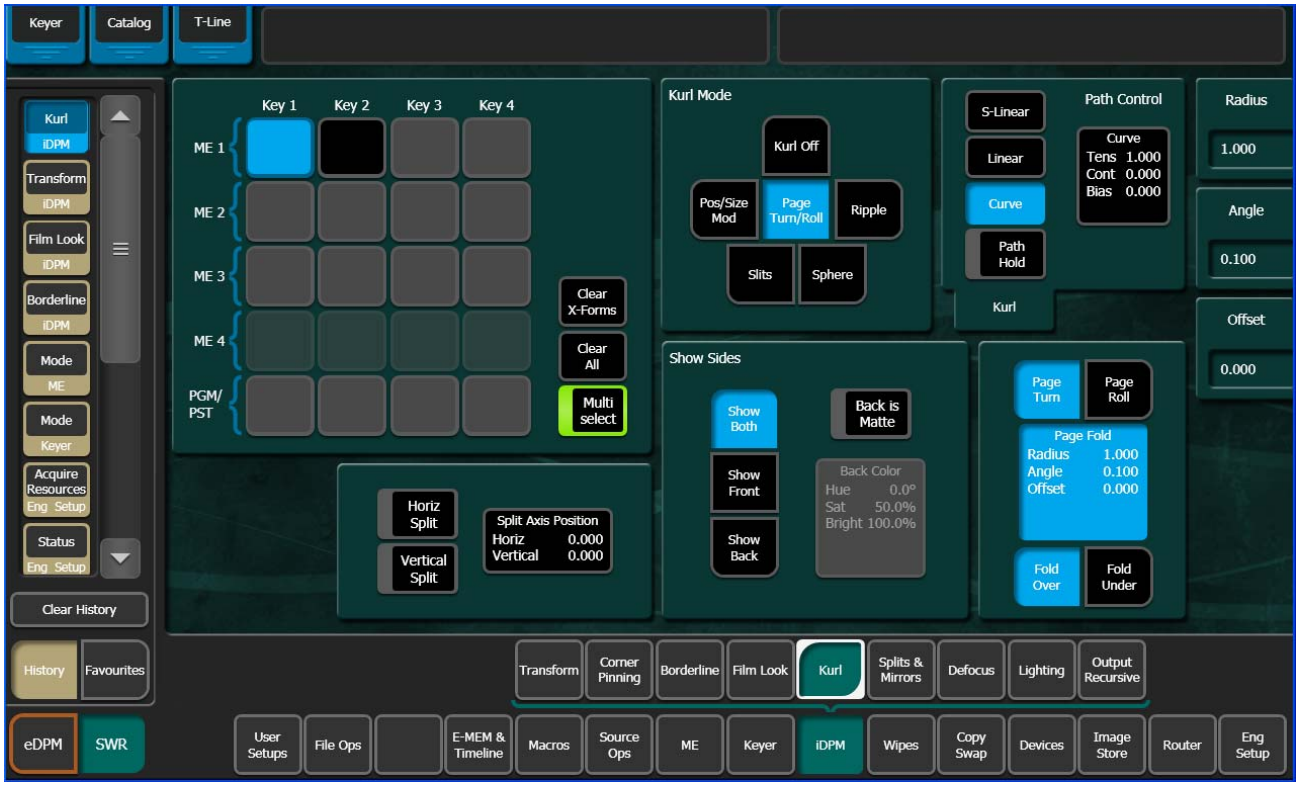


Page Turn/Roll Mode

Page Turn is a transition effect with the video being mapped to an original plane, a cylinder, and a final plane parallel to the original plane. Page Roll maps the video to an original plane and a cylinder. Page Turn and Roll are parallel projections to the target screen with no perspective.

Touch the **Page Turn/Roll** Kurl Mode button to access the Page Turn and Roll controls (Figure 165).

Figure 165. Kurl Menu, Page Turn



Page Turn Pane

The page mode (**Page Turn** or **Page Roll**), and orientation of the fold (**Fold Over** or **Fold Under** the original plane) are selected in the Page Turn pane, bottom right of menu (Figure 165).

When the Page Fold data pad is selected, the following soft knob controls are available:

Radius — adjusts the radius of the page turn cylinder affecting the sharpness of the curl.

Angle — defines the orientation of the page turn cylinder with respect to the source X and Y axes, and specifies the direction of the turn.

Offset — positions the page turn cylinder with respect to the source plane and, when interpolated between keyframes, causes the page to turn. The offset would typically change from one edge or corner of the source raster to the opposite edge or corner for the turn.

Show Sides Pane

Choices of what sides of the effect to display (**Show Both**, **Show Front**, **Show Back**) are available in the Show Sides pane. Selecting only a portion of the effect can be used for multi-pass effect creation.

When **Back is Matte** is selected, the back of the effect will be a matte color. The color of the matte can be changed by touching the Back Color data pad to bring up soft knob controls for Hue, Saturation, and Brightness.

Split Axis Pane

Split page turn and roll effects are controlled with the Split Axis pane, bottom left of menu (Figure 165). The effect can be split horizontally, vertically, or both ways using the labeled buttons (**Horiz Split**/**Vertical Split**).

Selecting the **Split Axis Position** data pad brings up **Horizontal** and **Vertical** soft knobs that control the location of the split.

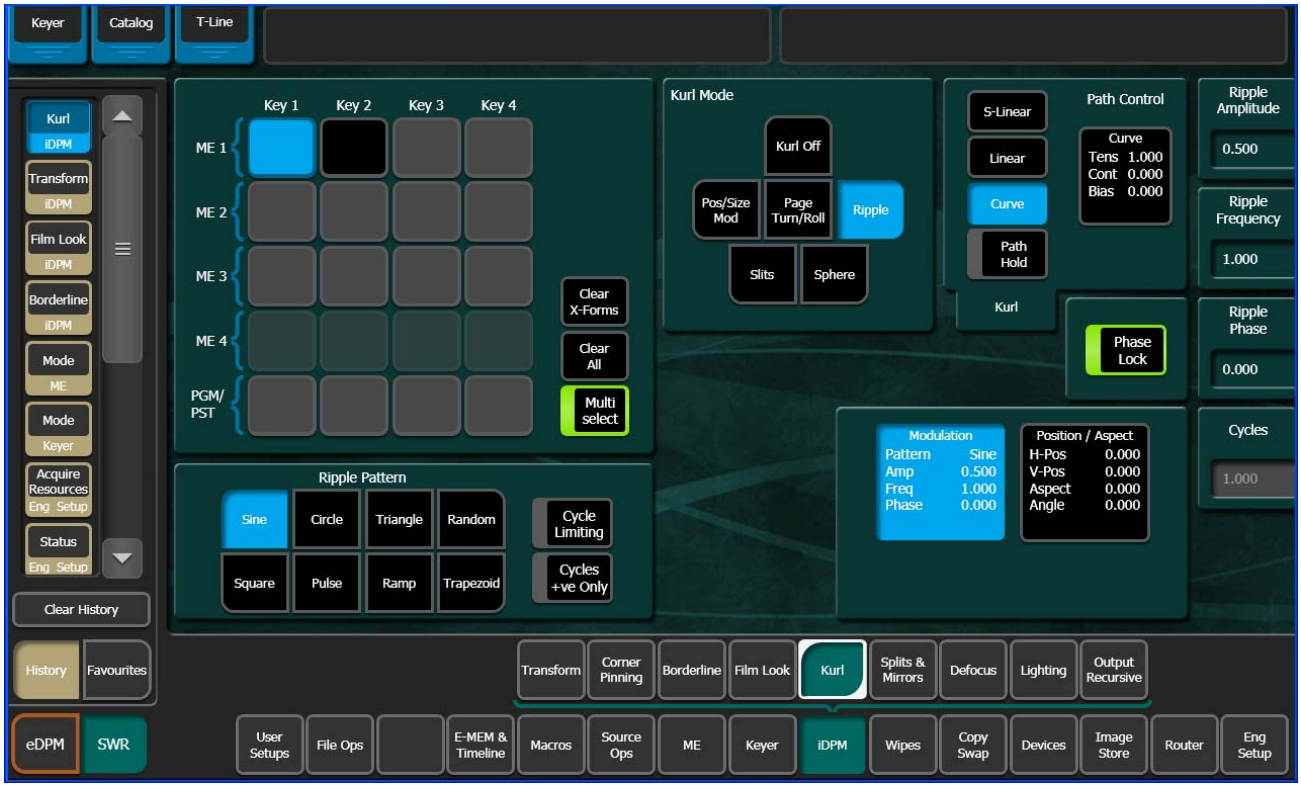
Ripple Mode

Ripple is an effect in which the source video mapped to a plane is effectively distorted into and out of the target screen by a train of concentric waves. This is a parallel projection to the target screen with no perspective.

Touch the **Ripple** Kurl Mode button to access the Ripple controls.

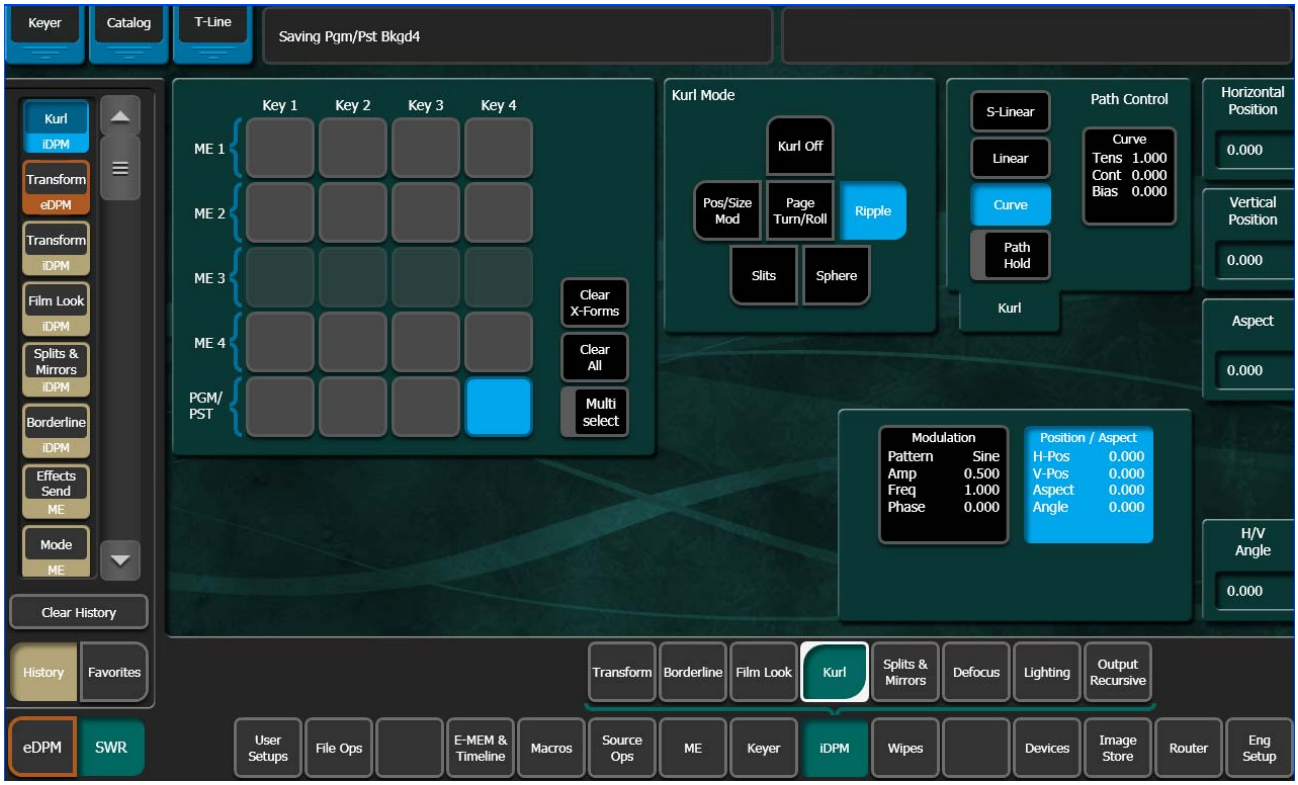
When the Modulation data pad is selected in the Ripple pane appears (lower left, Figure 166).

Figure 166. Kurl Menu, Ripple Modulation



The Ripple soft knob controls and wave patterns are the same as Position/Size (except no H/V Angle control) (see *Modulation Pane on page 240* and Figure 164 on page 242).

Figure 167. Kurl Menu, Ripple



Position/Aspect Data Pad—Soft knob controls are provided to control various attributes of the Ripple pattern (Figure 167):

H Position — controls the horizontal position of the center of the ripple.

V Position — controls the vertical position of the center of the ripple.

Aspect — stretches the ripple horizontally or vertically.

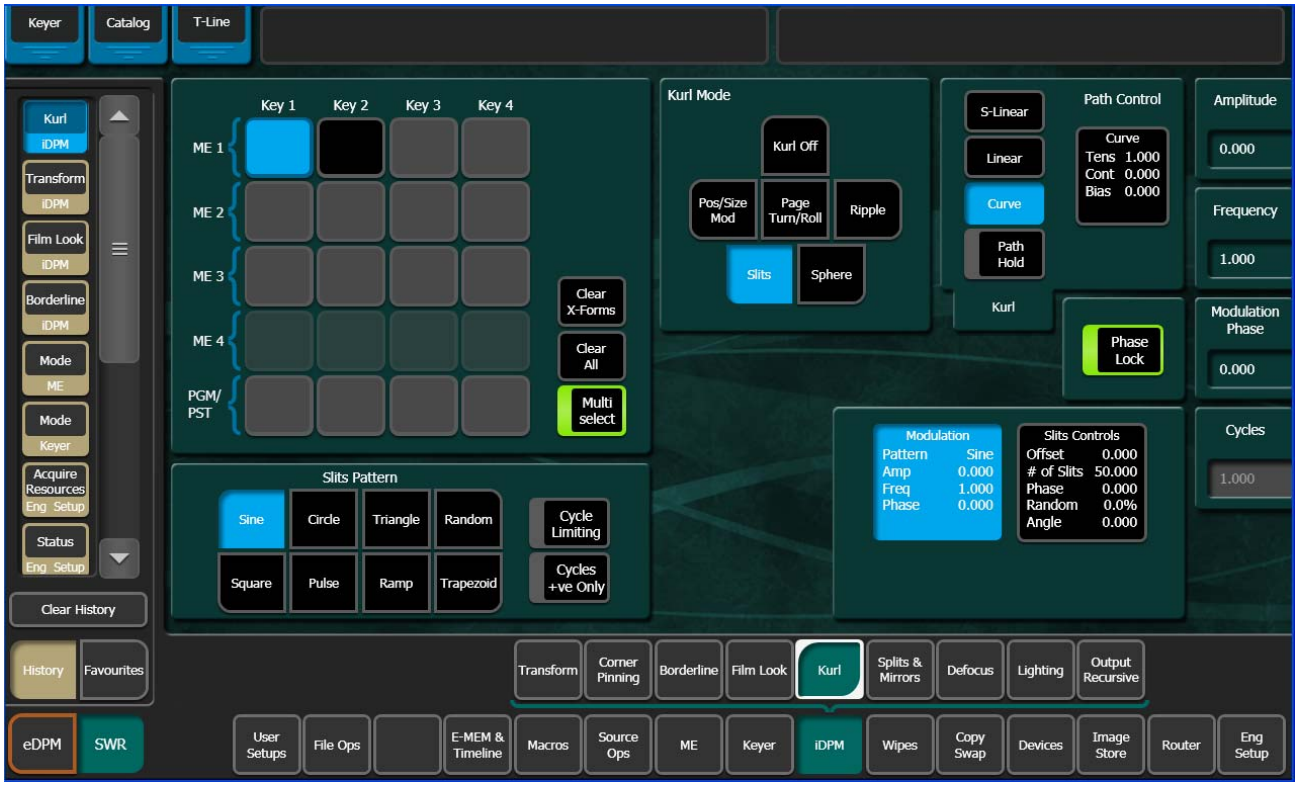
H/V Angle — adjusts the angle of the ripple, horizontally and vertically.

Slits Mode

Slits is an effect in which the source video is split into a number of parallel slits. The width of the slits may be uniform or random, and an angle may be specified. An offset function is provided which controls the amount of displacement of alternating slits in opposite directions (to cause a transition type effect).

Touch the **Slits** Kurl Mode button to access the slits controls (Figure 168).

Figure 168. Kurl Menu, Slits Modulation



The Slits modulation soft knob controls and wave patterns are the same as Position/Size (see *Modulation Pane on page 240* and Figure 164 on page 242).

Touching the **Slits Controls** data pad changes the Kurl menu to display Slits controls:

Offset — sets the distance adjoining slits move away from each other. This can be used for transition effects, using a zero offset for the starting key-frame and an off the screen offset for the ending keyframe.

# of Slits — defines the number of slits.

Phase — determines the starting point or phase of the modulation to occur at the center point.

Random — defines the degree of randomization of slit width.

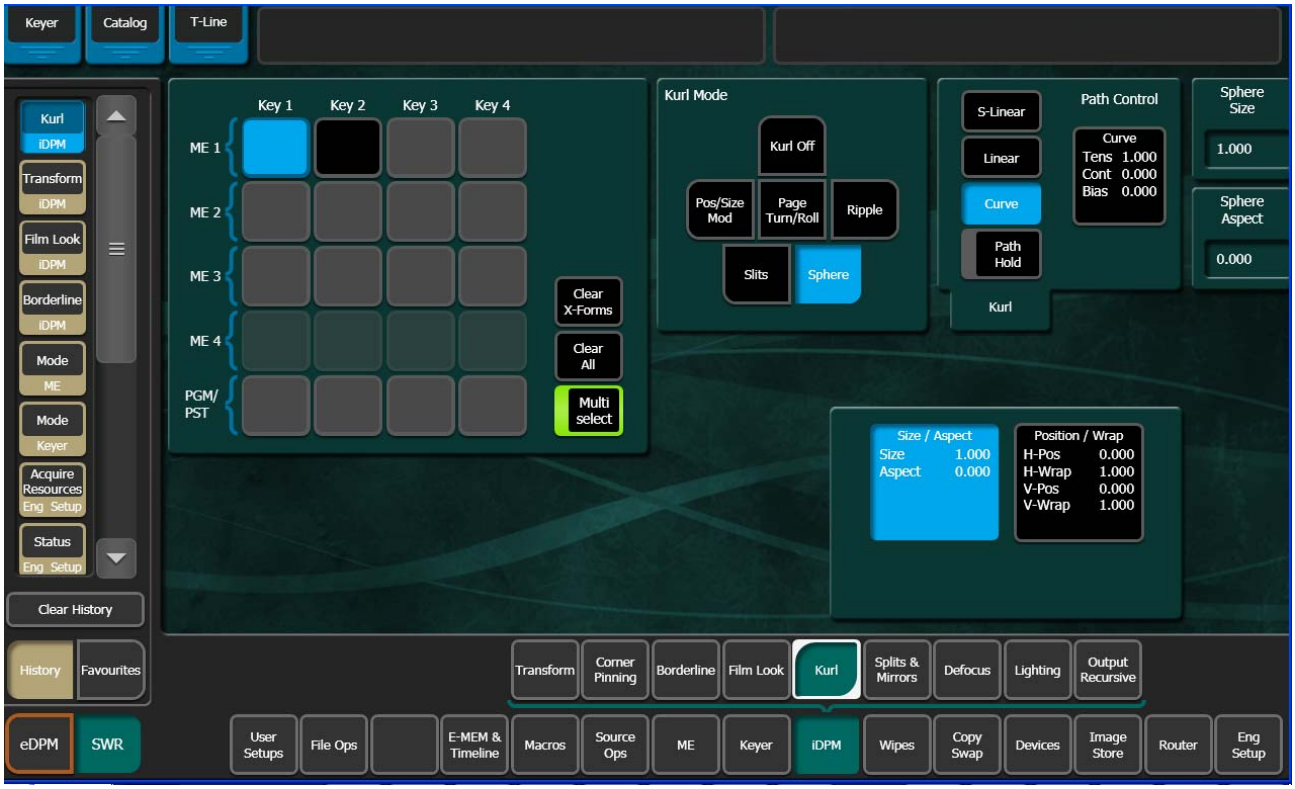
Angle — defines the angle of the slits with respect to the source X and Y axes.

Sphere Mode

Sphere is an effect in which the source video is mapped to the surface of a sphere. Controls are provided which change the aspect and size of the sphere, the point in source video to be mapped to the center of the front surface of the sphere, and the horizontal and vertical scaling of the source video to be mapped.

Touch the **Sphere** Kurl Mode button to access the sphere controls (Figure 169).

Figure 169. Kurl Menu, Sphere Size/Aspect



The following soft knob controls are available:

Size — defines the radius of the sphere before it is modified by Aspect.

Aspect — scales the horizontal and vertical dimensions of the sphere.

When the **Position/Wrap** data pad is selected in the Sphere pane, the following soft knob controls are available:

Horizontal Position — controls where the image is mapped onto the sphere by moving the image horizontally on the sphere's surface.

Horizontal Wrap —controls how much of the image is mapped onto the sphere by compressing or stretching the image horizontally.

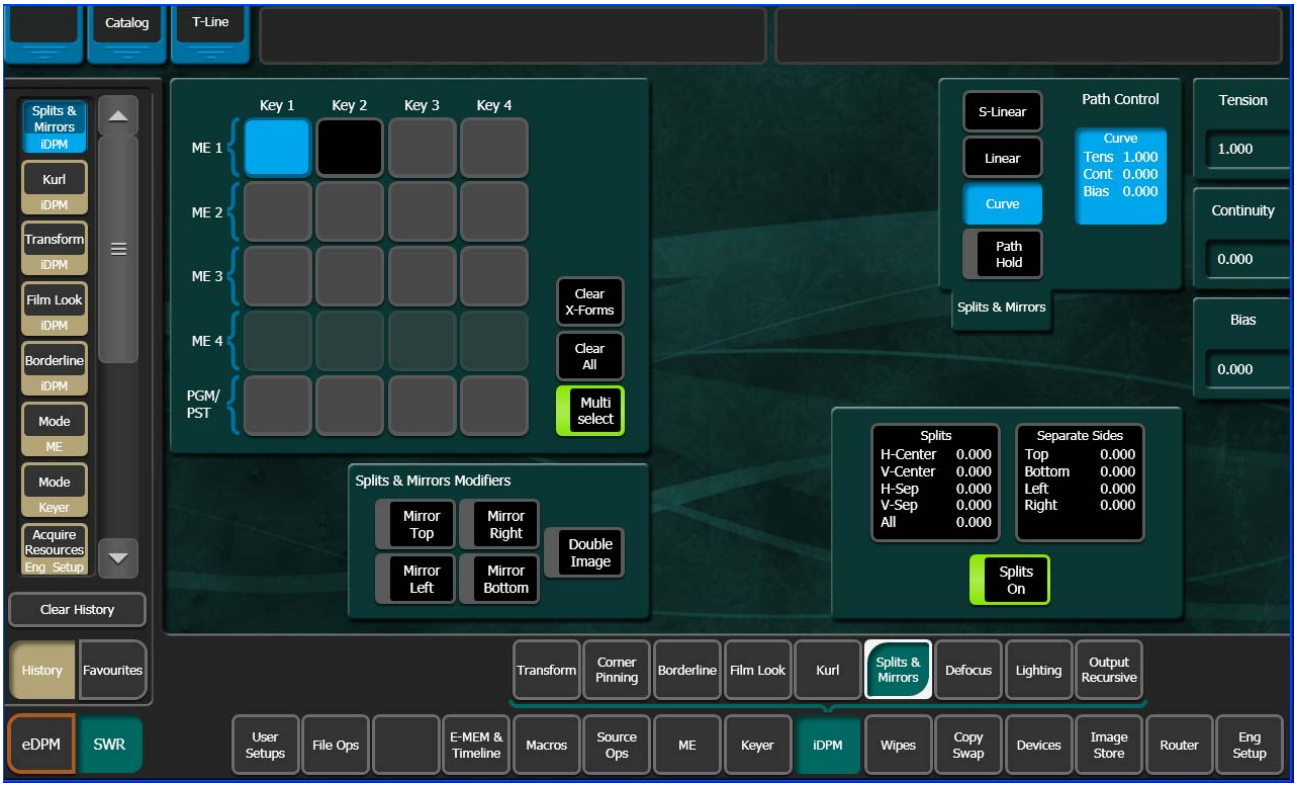
Vertical Position — controls where the image is mapped onto the sphere by moving the image vertically on the sphere's surface.

Vertical Wrap — controls how much of the image is mapped onto the sphere by compressing or stretching the image vertically.

Splits Mirrors Menu

The Splits and Mirrors effect allows you to divide a picture horizontally and/or vertically, and create mirror images of the image along these axes. Touch the **iDPM, Splits & Mirrors** button to access the Splits and Mirrors controls (Figure 170).

Figure 170. Splits/Mirrors Menu



Splits Pane

Touch the **Splits On** button in the Splits Enable pane (bottom right) to bring up the Splits controls:

When the **Splits** button in the Splits data pad is selected, the following soft knob controls are available. (Values are displayed in screen units.)

Horizontal Center — controls the horizontal position of the split.

Vertical Center — controls the vertical position of the split.

Horizontal Separation — controls the amount of horizontal separation between the split images.

Vertical Separation — controls the amount of vertical separation between the split images.

All Separation — controls both horizontal and vertical separation simultaneously. This control is additive with the other separation controls, such that changing its values changes the H and V separation values.

When the **Separate Sides** data pad is selected, individual soft knob controls for separation are available. These controls allow movement of individual Top, Bottom, Left, and Right portions of the split image.

Splits & Mirrors Modifiers Pane

The Splits & Mirrors Modifiers pane has mirror and double image controls.

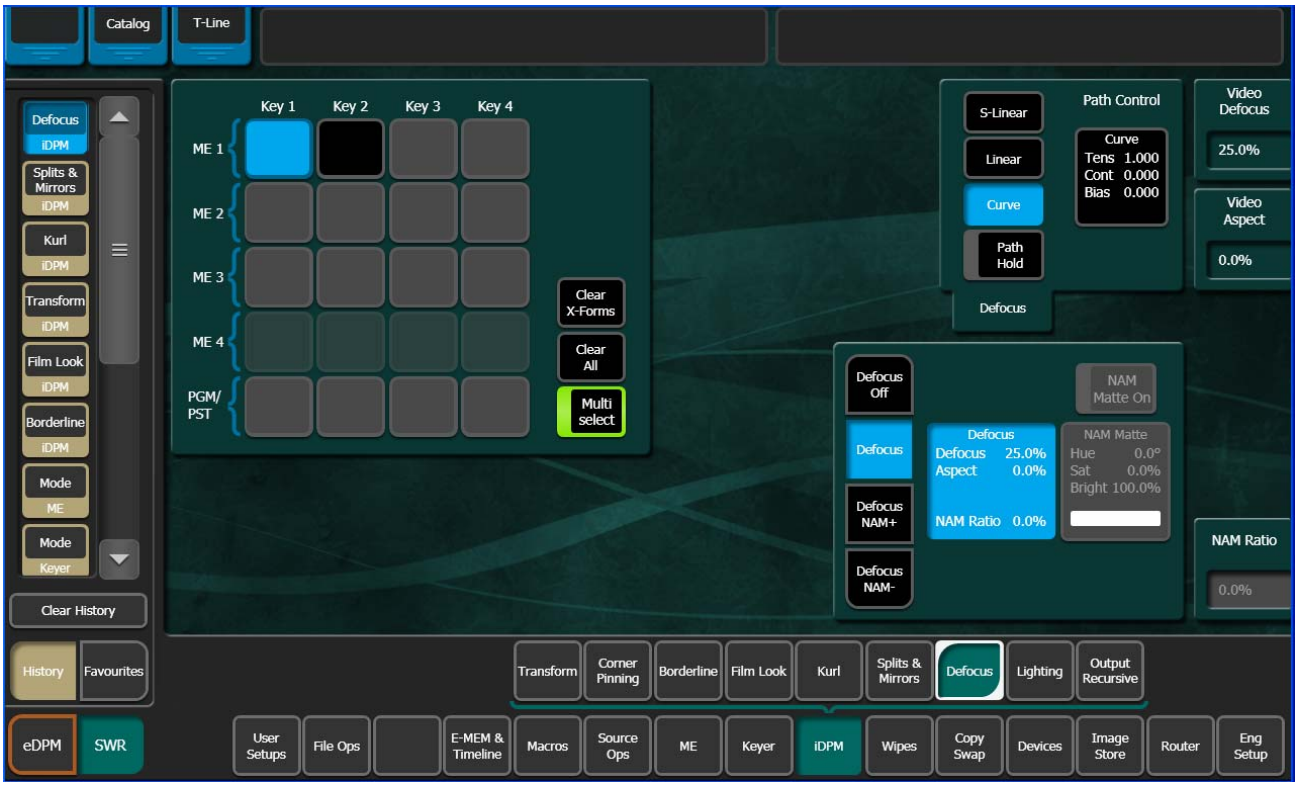
The mirror buttons replicate the side of a picture about the axis location to the opposite side. Mirror orientation is based on the picture's source space. It is possible to simultaneously reflect multiple sides by turning on the **Mirror Top**, **Mirror Right**, **Mirror Left** and **Mirror Bottom** buttons. The original picture for that side is always reflected. A side that has been mirrored to the opposite side will not be mirrored a second time.

When **Double Image** is on, the area of separation is filled by extending the interior sides of each half of the original split picture to the axis position. At large separation values the picture will be doubled about the axis. This control only has an effect when separation exists between the splits.

Defocus Menu

Defocus blurs the actual keyed image, and is available with the iDPM option. Touch **iDPM**, **Defocus** to access the Defocus menu (Figure 171).

Figure 171. Defocus Menu



Defocus Pane

Defocus Off — The Defocus effect is deactivated.

Defocus — The Defocus effect is applied to the original keyed image.

Defocus NAM + — The defocused image is compared to the original image on a pixel by pixel basis, and the lighter (higher luminance) pixel of the two is used in the final image. *Defocus NAM + can be used to simulate a fog filter type effect.*

Defocus NAM - — The defocused image is compared to the original image on a pixel by pixel basis, and the darker (lower luminance) pixel of the two is used in the final image.

When the Defocus pane is activated, soft knob controls for **Video Defocus**, **Video Aspect**, and **NAM Ratio** are available.

Video Defocus — adjusts the total amount of defocus applied to the image.

Video Aspect — adjusts the percentage of defocus applied to the vertical and horizontal axes of the image.

NAM Ratio — adjusts the level of luminance at which the Defocus effect will be applied to NAM pixels. This value applies to both NAM + and NAM - modes.

NAM Matte Pane

NAM Matte On button — When selected a matte color is applied to the selected NAM (lighter or darker) portion of the keyed image.

When the NAM Matte pane is activated, knob controls for matte **Hue**, **Saturation**, and **Brightness** become available. An approximation of the color of the matte is shown at the bottom of the pane.

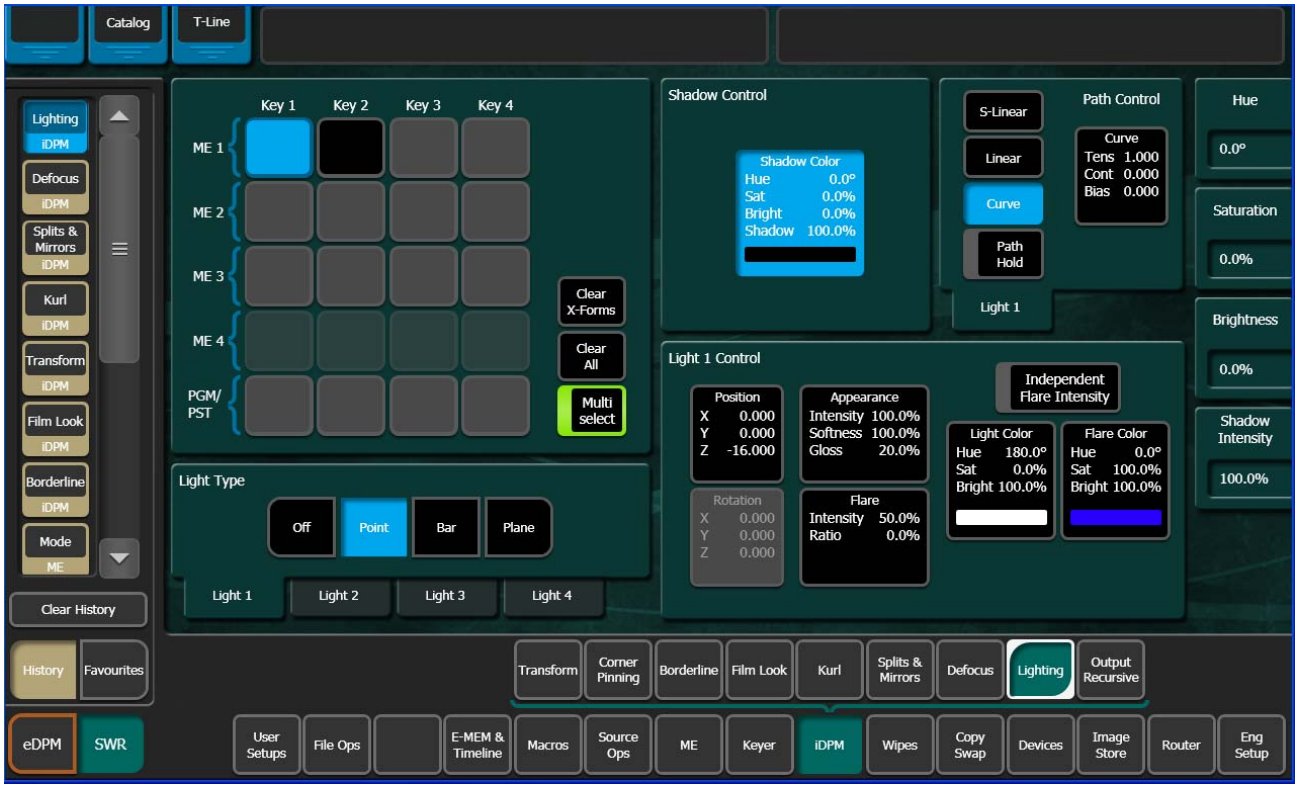
Lighting Menu

The Lighting menu provides four colored light sources positional in 3D space for each delegated keyer. Each light source can be a Point, Bar, or Plane. The apparent reflection of the light source simulates the physics of incident light falling on a surface, including specular effects and light falloff due to distance and geometry. The lighting parameters interact with one another, permitting the creation of subtle effects, and are keyframeable.

Some extremely low lighting values (particularly **Light Softness**) when used in combination with other lighting values can create visible artifacts (stair-step aliasing). Due to the intricate lighting parameter interactions, if these values were restricted to prevent all potential artifacts, other useful lighting effects would be impossible. For this reason, values that might cause aliasing are allowed. If a lighting effect looks bad, adjust the settings to correct its appearance.

The Lighting menu is accessed by touching **iDPM**, **Lighting** (Figure 172).

Figure 172. Lighting Menu



Light Type Pane

The four tabs (**Light 1-4**) in the Light Type pane delegate the menu to a particular light source.

Shadow Control Pane

The Shadow Control pane applies to all of the light sources for the delegated keyer and controls ambient lighting effects. You can control the color of the ambient lighting, and the amount of shadow falloff for the light sources. Soft knobs for **Hue** degrees, and **Sat**, **Bright**, and **Shadow** percentage are available when the data pad has been selected.

Light Type Pane

The Light Type pane is used to turn on or off the delegated light source and provides various other controls of that light source. Soft knobs are activated when appropriate to control the various lighting parameters.

Light Type

OFF — turns off the light source.

Point — simulates a spotlight type of lighting effect that radiates light evenly in all directions.

Bar — simulates lighting from a bar-shaped long, thin lighting source.

Plane — simulates the glare that would be reflected from an image if a bright light were shined on it from infinity.

Light Control Pane

Position

Used with **Point** and **Bar** light sources to control the position of the point light, or the position of some point along the bar light, with respect to the X, Y and Z axes in 3D space.

Rotation

Used with **Bar** and **Plane** light sources to control the direction of the bar light, or the direction that the plane light faces along the X, Y and Z axes. Setting Rotation to 0 places the Plane light directly behind the viewer's head.

Appearance

Intensity — provides soft knob control of the overall reflectivity of the surface of the picture.

Softness — control of softness of the edge of the light. 100% creates maximum softness, 0% gives a hard edge. At extremely small values some aliasing artifacts may appear.

Gloss — provides soft knob control of how much light is scattered as it is reflected off the surface of the picture. At 100% the lighting acts like it is reflecting off of a mirror. At 0% the light acts like it is reflecting off of a frosted piece of glass.

Flare

When light reflects off a surface two lighting components result, the primary reflected light and a glare (flared halo) of scattered light. The Flare controls provide soft knobs to adjust this lighting component.

Intensity — controls the amount of the flare light scattered off the surface.

Ratio — controls the ratio between the primary light and the flare light. 100% is all primary light, 0% all flare light.

Independent Flare Intensity

This button allows independent control of the primary and flare components of the light. When Off, changing the value of one control will alter the appearance of the other component of the light. The actual values reported on the menu will not be different, but the changes will interact automati-

cally to create the resulting image. When On, changing the values for one lighting component will not after the appearance of the other component.

Light Color, Flare Color

Provides soft knob controls of the Hue, Saturation, and Brightness of the Light or Flare lighting.

Lighting Path Controls

Path controls are available for Lighting parameters and provide soft knob control for Light Tension, Continuity, and Bias when the Curve button and Curved data pad are touched. A **Path Hold** button is also provided.

Lighting with Page Turn/Roll Effects

To use Lighting with Page Turn/Roll, you need to use one keyer for the Front side of the Page Turn and another keyer for the Back side. The same effect then needs to be loaded on both keyers, with one having only the Front selected in the Page Turn menu and the other having only the Back selected. The keyer priority will also need to be set appropriately to support fold over or under.

Lighting and Post Transform Space

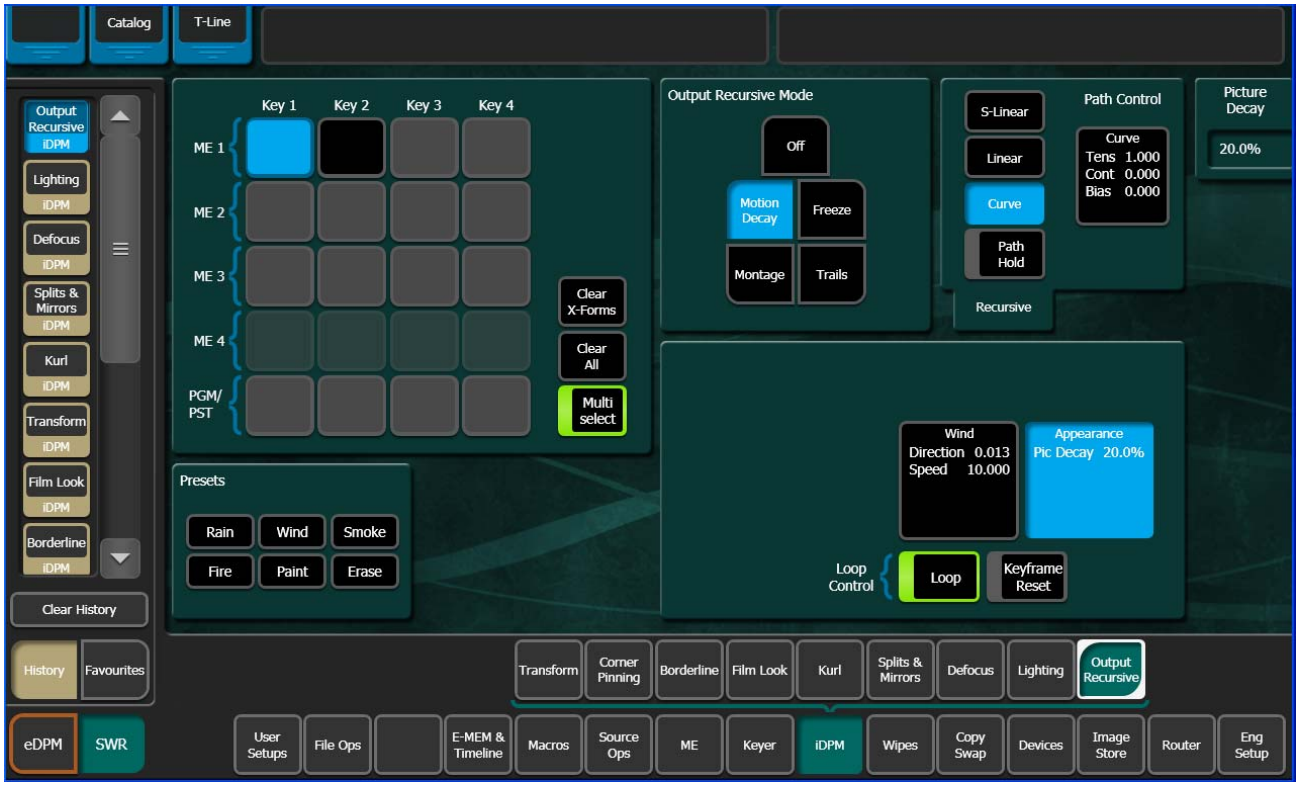
The 3-D perspective of a lighting effect is not ignored for Post Transform moves. Lighting effects are not fixed to the surface of the Post Transform manipulated plane, but will shift during the move, just like an X or Y Locate move.

Output Recursive Menu

The Output Recursive menu is used to select the keyers you wish to control (delegation), the desired type of output recursive control, and then adjust the parameters associated with the chosen control using the soft knobs or pop-up keypads.

The menu is accessed by touching **iDPM, Output Recursive** (Figure 173).

Figure 173. Output Recursive Menu

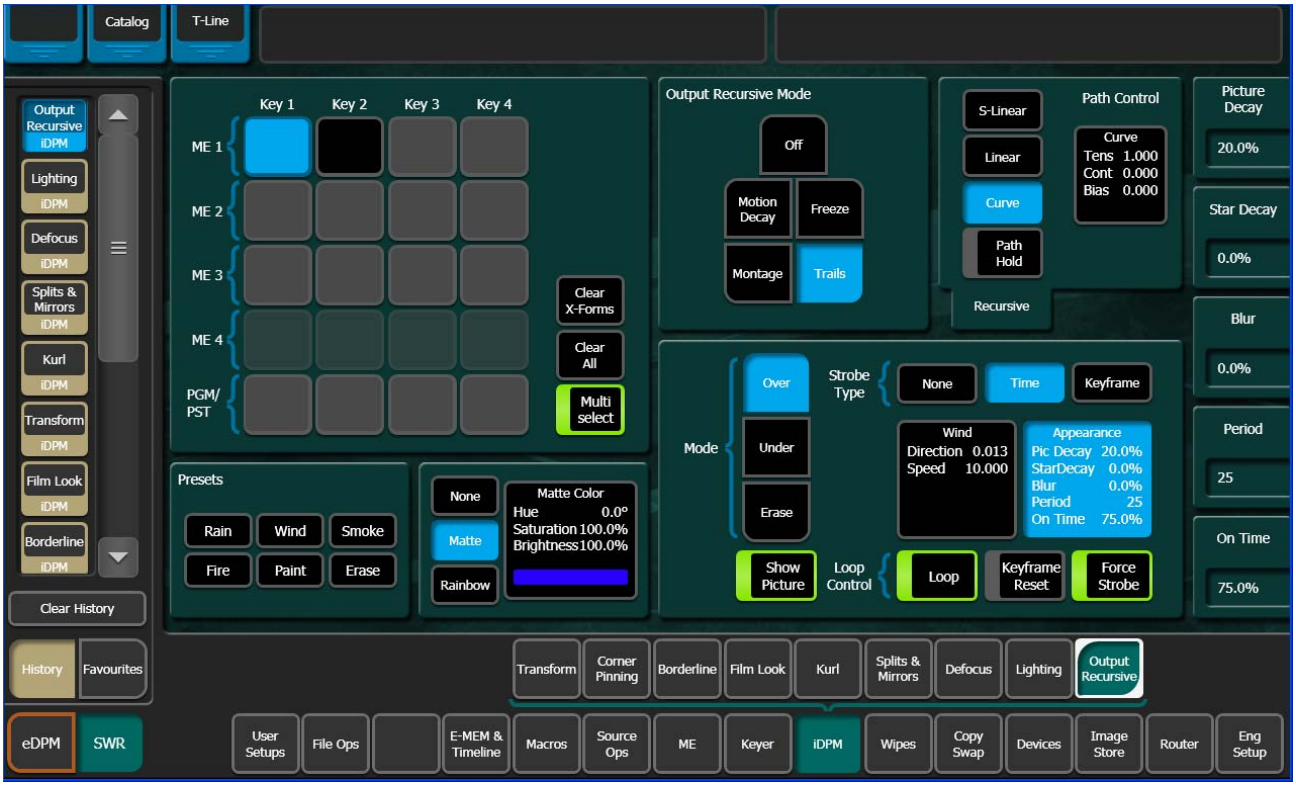


Output Recursive Presets

The Output Recursive system has a set of presets that can be selected to simplify creating effects with Output Recursive.

Rain, **Wind**, **Smoke**, **Fire**, **Paint**, and **Erase** effect buttons are provided, the **Fire** button has been touched in the example in Figure 174.

Figure 174. Output Recursive, Effect Presets



Further adjustments can be made using the soft knobs and data pads available with the effects menu that is displayed (Trails, Montage, etc.):

Rain — provides a vertical streaking of the image that resembles rain.

Wind — provides trailing particles that resemble wind.

Smoke — provides a dark grey, disintegrating trail that resembles smoke.

Fire — provides a red, disintegrating flame effect.

Paint — allows you to apply or "paint" the current image anywhere on the display using the joystick.

Erase — allows you to erase the current effect using the joystick.

Output Recursive Modes

Touch any of the four modes in the Output Recursive Mode pane to create keyer special effects. Each mode displays specific controls for parameters when touched (Figure 174 on page 256).

Motion Decay Mode

Causes motion in the image to leave a blurred remnant in the area from which it was removed (Figure 174 on page 256).

Appearance button — displays the "Pic" or Picture Decay value from the soft knob data pad.

Wind button — displays the Direction and Velocity (speed) values from the soft knob data pads.

Loop button —

- **ON** — starts the recursive effect
- **OFF** — stops the recursive effect and returns to live video

Keyframe Reset button — used to control when images are frozen, only available when the **Keyframe** mode button is selected as the Strobe Type.

- **ON** — A keyframe triggers a reset, followed by a new single strobe. It resets that loop by creating a new frozen image at each keyframe that has the **Keyframe Reset** button on.
- **OFF** — does not change the frozen image at each keyframe

Force Strobe — When an effect passes over or stops on a keyframe, a single strobe event is triggered. While the effect sits on a keyframe with keyframe-strobe on, no additional events are triggered. The "history" of the prior single event is discarded, and a single strobe is triggered again.

- **ON** — accumulates a field/frame of video within the Output Recursive loop.
- **OFF** — No action is taken.

Freeze Mode

Freeze is used to freeze and modify an image using the soft knobs for playback (Figure 174 on page 256).

Soft knob parameters are also displayed in the **Appearance** data pad:

Picture Decay — causes the frozen image in the Output Recursive to fade away evenly over time.

Note Additive effect with Star Decay.

Star Decay — causes random pixels of the frozen image in the Output Recursive to fade away over time.

Note Additive effect with Picture Decay.

Period — defines the number of frames in a Strobe Cycle. **Period** is only available when **Time** is selected as the Strobe Type.

On Time — sets the percentage of the period that the image is unfrozen. The default is 0.0%. **On Time** is only available when **Time** is selected as the Strobe Type.

Strobe Type buttons — set the type of strobe effect that will cause the automatic freezing of the new image.

- **None** button — turns Strobe Off
- **Time** button — freezes a new image at an adjustable time interval (normal strobe)
- **Keyframe** button — freezes a new image at each keyframe

Loop button

- **ON** — starts the recursive effect
- **OFF** — stops the recursive effect and returns to live video

Keyframe Reset button — is used to control a frozen image. It is only available when the **Keyframe** mode button is selected as the Strobe Type.

ON — A keyframe triggers a reset, followed by a new single strobe. It resets that loop by creating a new frozen image at each keyframe that has the **Keyframe Reset** button on.

OFF — does not change the frozen image at each keyframe

Force Strobe button — When an effect passes over or stops on a keyframe, a single strobe event is triggered. While the effect sits on a keyframe with keyframe-strobe on, no additional events are triggered. The "history" of the prior single event is discarded and a single strobe is triggered again.

- **ON** — Accumulates a field/frame of video within the Output Recursive loop.
- **OFF** — No action is taken.

Montage Mode

Creates a montage of still images (Figure 174 on page 256).

Soft Knob Button Group:

Picture Decay — causes the frozen image in the Output Recursive to fade away evenly over time.

Note Additive effect with Star Decay.

Star Decay — causes random pixels of the frozen image in the Output Recursive to fade away over time.

Note Additive effect with Picture Decay.

Strobe Timing:

Period — defines the number of frames in a Strobe Cycle. **Period** is only available when **Time** is selected as the Strobe Type.

On Time — sets the percentage of the period that the image is unfrozen. The default is 0.0%. **On Time** is only available when **Time** is selected as the Strobe Type.

Strobe Type buttons — set the type of strobe effect that will cause the automatic capture of the new image.

- **None** — turns Strobe Off
- **Time** — freezes a new image at an adjustable time interval (normal strobe)
- **Keyframe** — freezes a new image at each keyframe

Loop button —

ON — starts the recursive effect

OFF — stops the recursive effect and returns to live video

Keyframe Reset button — used to control when images are frozen. It is only available when the **Keyframe** mode button is selected as the Strobe Type.

- **ON** — A keyframe triggers a reset, followed by a new single strobe. It resets that loop by creating a new frozen image at each keyframe that has the **Keyframe Reset** button on.
- **OFF** — does not change the frozen image at each keyframe

Force Strobe button — When an effect passes over or stops on a keyframe, a single strobe event is triggered. While the effect sits on a keyframe with keyframe-strobe on, no additional events are triggered. The "history" of the prior single event is discarded, and a single strobe is triggered again.

- **ON** — accumulates a field/frame of video within the Output Recursive loop.
- **OFF** — No action is taken.

Mode buttons —

- **Over** — places the image over the remnant or “montage”.
- **Under** — places the image under the remnant.
- **Erase** — erases the image and remnant.

Show Picture parameter button —

- **ON** — (default) displays the live video image in addition to the still montage.
- **OFF** — displays only the montage without the live video image.

Matte Control buttons —

None — No matte

Matte — allows you to create a matte fill for the montage and activates the Hue, Saturation, and Brightness soft knobs for modifying the matte.

Rainbow — allows you to create an alternating RGB rainbow matte fill for the montage and activates the Hue Speed, Saturation, and Brightness soft knobs for modifying the matte.

Matte Parameter — activates the soft knobs for Hue (or Hue Speed for Rainbow Matte), Saturation, and Brightness and displays those values.

Trails Mode

Leaves a trail of partial images behind as the image is moved around the screen. A "wind blown" effect can be added to the images (decay settings can be adjusted to look like particles) (Figure 174 on page 256).

Soft Knob Button Group:

Picture Decay — causes the frozen image in the Output Recursive to fade away evenly over time.

Note Additive effect with Star Decay.

Star Decay — causes random pixels of the frozen image in the Output Recursive to fade away over time.

Note Additive effect with Picture Decay.

Strobe Timing:

Period — defines the number of frames in a Strobe Cycle. **Period** is only available when **Time** is selected as the Strobe Type.

On Time — sets the percentage of the period that the image is unfrozen. The default is 0.0%. **On Time** is only available when **Time** is selected as the Strobe Type.

Appearance button — located bottom left of the menu, displays the "Pic" or Picture Decay value from the soft knob data pad.

Wind button— displays the Direction and Velocity (speed) values from the soft knob data pads.

Strobe Type buttons — set the type of strobe effect that will cause the automatic capture of the new image.

- **None** button — turns Strobe Off.
- **Time** button — freezes a new image at an adjustable time interval (normal strobe).
- **Keyframe** button — freezes a new image at each keyframe.

Loop button —

- **ON** — starts the recursive effect.
- **OFF** — stops the recursive effect and returns to live video.

Keyframe Reset button — is used to control when images are frozen. It is only available when the **Keyframe** mode button is selected as the Strobe Type.

- **ON** — A keyframe triggers a reset, followed by a new single strobe. It resets that loop by creating a new frozen image at each keyframe that has the **Keyframe Reset** button on.
- **OFF** — does not change the frozen image at each keyframe

Force Strobe button — When an effect passes over or stops on a keyframe, a single strobe event is triggered. While the effect sits on a keyframe with keyframe-strobe on, no additional events are triggered. The "history" of the prior single event is discarded, and a single strobe is triggered again.

- **ON** — accumulates a field/frame of video within the Output Recursive loop.
- **OFF** — No action is taken.

Mode buttons —

- **Over** — places the image over the remnant or “montage”.
- **Under** — places the image under the remnant.
- **Erase** — erases the image and remnant.

Show Picture Parameter

- **ON** — (default) displays the live video image in addition to the still montage.
- **OFF** — displays only the montage without the live video image.

Matte Control buttons —

- **None** — No matte.
- **Matte** — allows you to create a matte fill for the montage and activates the Hue, Saturation, and Brightness soft knobs for modifying the matte.
- **Rainbow** — allows you to create an alternating RGB rainbow matte fill for the montage and activates the Hue Speed, Saturation, and Brightness soft knobs for modifying the matte.
- **Matte** Parameter — activates the soft knobs for Hue (or Hue Speed for Rainbow Matte), Saturation, and Brightness and displays those values.

eDPM Operations

The Kayenne eDPM option is like an external four channel DVE built into the switcher. Unlike iDPMs, eDPMs are not tied to keyers so they can be mapped to any source select button or delegated to any of the six keyers on any ME. Any of the four outputs (eDA, eDB for the Primary Partition and eDC eDD for the Secondary Partition) can be combined and composited for re-entry, allowing multiple eDPM Channels on one keyer. eDPM channels run on their own timelines which makes this feature very flexible.

Note iDPMs and eDPMs are software options (and hardware in the case of eDPM) and must be enabled in the Eng Setup, Install Options menu when purchased.

eDPMs can be combined with iDPMs to create up to 20 licensed DVEs (on a 4-ME system). Combining iDPMs with eDPMs can be very powerful and free up switcher ME resources. For example mapping a composite of six DVEs with iDPMs only, would require the use of two MEs with keyers from each. With the addition of eDPMs, you could:

- On the same ME, create four iDPM transforms on Keyers 1-4 and then create two eDPM transforms (perhaps a graphic and a clock) and assign those transformed sources to Keyers 5 and 6,
- Map the ME to a PGM PST source select button and have a composite of six DVEs on one source to take to air, then
- Assign the ME source to one of the four keyers on PGM PST and key the composite of DPMs, or
- Apply an additional transform to the composite with a PGM PST iDPM on any of the first four keyers and transform the entire composite.

eDPM Channels assigned to the Primary Partition can be made visible in the Secondary and vice versa.

The Kayenne eDPM option has similar menus and controls to the iDPM option.

eDPM and Effects

eDPM is completely separate from the rest of the Switcher Master E-MEM so you can recall and run effects from the eDPM independently, or, you can use the Master E-MEM timeline to recall and run the eDPM. This allows you to control the eDPM exactly as you would with an external DPM. Also, you can have multiple E-MEM registers recalling the same eDPM effect.

The switcher timeline and the eDPM timeline can be different registers and have different lengths. If you run the timeline from the eDPM Timeline, it will run the effect as created in the eDPM or if you run it from the Master E-MEM timeline (Switcher mode), it will run until the Master E-MEM timeline is complete.

If your E-MEM effect in the Master E-MEM only has one keyframe, you must insert an additional keyframe to run the entire eDPM effect timeline.

Note For E-MEMs learned using versions earlier than 2.0 to work properly, you must reconstruct a timeline for the proxy sublevels to run. The proxy sublevel register has been created but is limited to a single keyframe.

Recalling and editing eDPM timelines from the Master E-MEM timeline is truly independent and does not effect the keyframes in the eDPM. Inserting keyframes in the Master E-MEM's eDPM sub-level timeline creates a key-frame which is a 'proxy' to drive the eDPM's timeline.

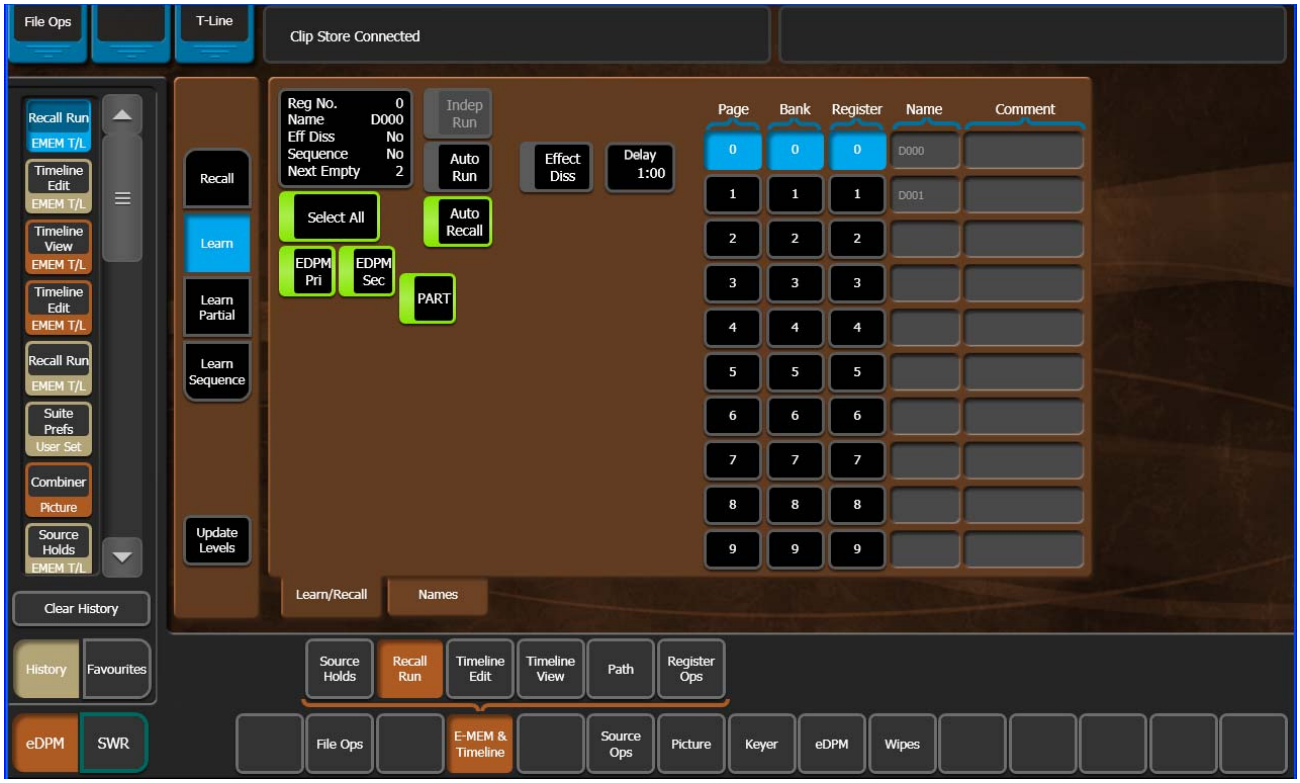
- When running an eDPM timeline from the Master E-MEM timeline, pauses on the eDPM side are ignored.
- Start delays on the Master (Switcher) side are executed before eDPM timeline.

eDPM Partitioning

The eDPM partition boundary is a sub-level in the eDPM Primary partition. Figure 175 shows the **Select All**, **EDPM Pri** and **EDPM Sec**, and **PART** buttons. These buttons are used to enable/disable the partition settings and control the Channel settings in the Picture, Combiner menu.

Note Unlike Master E-MEM Part level, the PART in eDPM is a sub-level of eDPM Primary and cannot be enabled unless eDPM Primary is also enabled.

Figure 175. eDPM Partitions



In the Control Panel, the eDPM Primary and Secondary partitions are available in the eDPM menu of the Master E-MEM Module. The **PART** button is provided in the eDPM menu delegation so the eDPM Master E-MEM partition can be enabled/disabled.

eDPM Definable Sub-levels

The Master E-MEM eDPM sub-levels (eDPM Pri and eDPM Sec) can be configured as Definable (controlled) or Not Assigned in the User Setups, Suite Prefs, E-MEM Prefs, eDPM menu (see *Advanced E-MEM Operations on page 206* for information about defining/assigning E-MEM sub-levels).

The example in Figure 176 shows the two defined eDPM sub-levels in the Master E-MEM Timeline for ME 3.

Figure 176. eDPM Sub-levels in the E-MEM Master Timeline

Using definable sub-Levels allows for the recall of eDPM effects from Local E-MEM. For example, effects created for ME 1 can have the eDPM definable sub-levels and will then run eDPM effects.

Aux Delegation

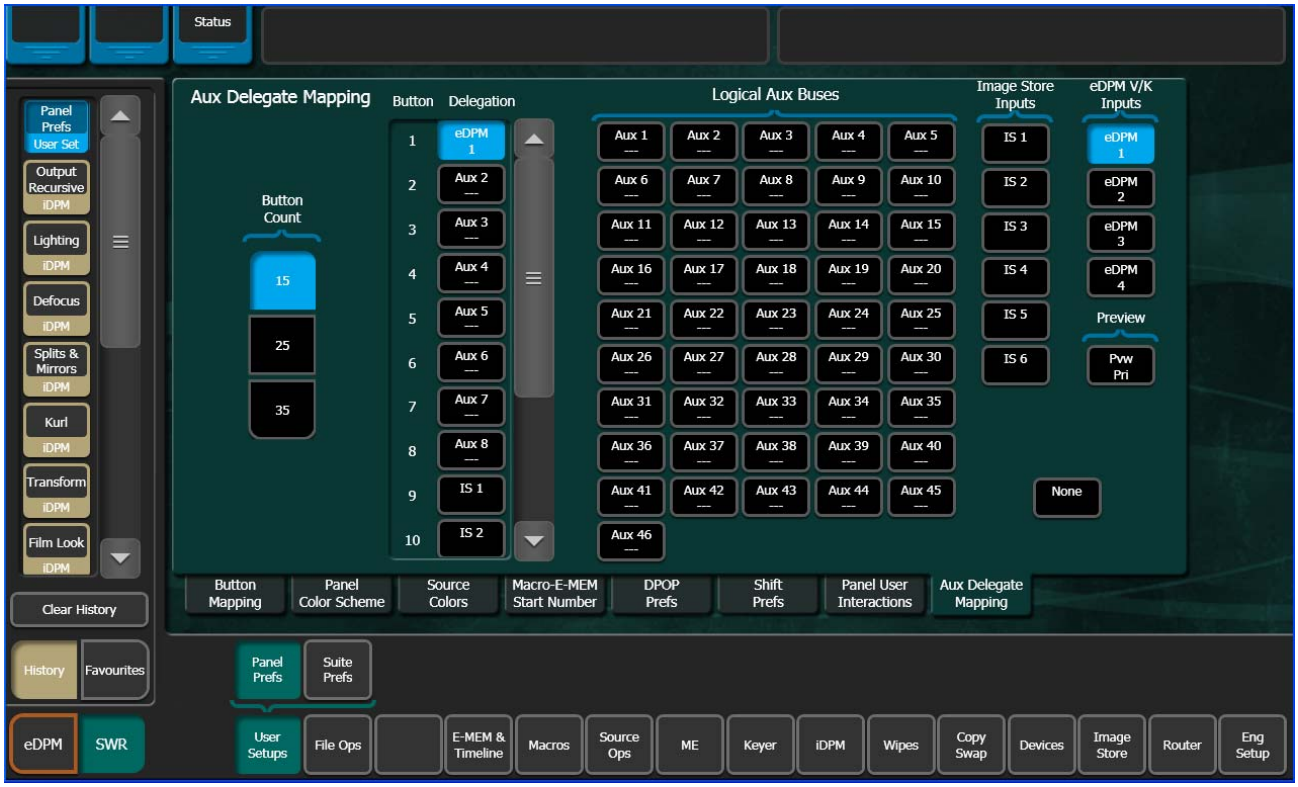
eDPM input source selection is provided in three locations:

- Switcher Mode, Source Ops menu, eDPM Inputs,
- eDPM Mode, Source Ops, or
- The Local Aux Module (or any ME using the **Aux** delegation button on the Source Select Module).

To assign the delegation for the eDPM V/K inputs to the Local Aux Module:

1. Go to the Aux Delegate Mapping menu by touching **User Setups**, **Panel Prefs**, **Aux Delegate Mapping** (Figure 177).
2. Select a Local Aux Module button in the Button/Delegation scrolling list (Figure 177).
3. Select an eDPM channel (**eDPM 1-4**) in the **eDPM V/K Inputs** button delegation column (Figure 177, right side of menu).
4. Repeat Steps 2 and 3 for up to four eDPM inputs.

Figure 177. eDPM, Aux Delegate Mapping Menu



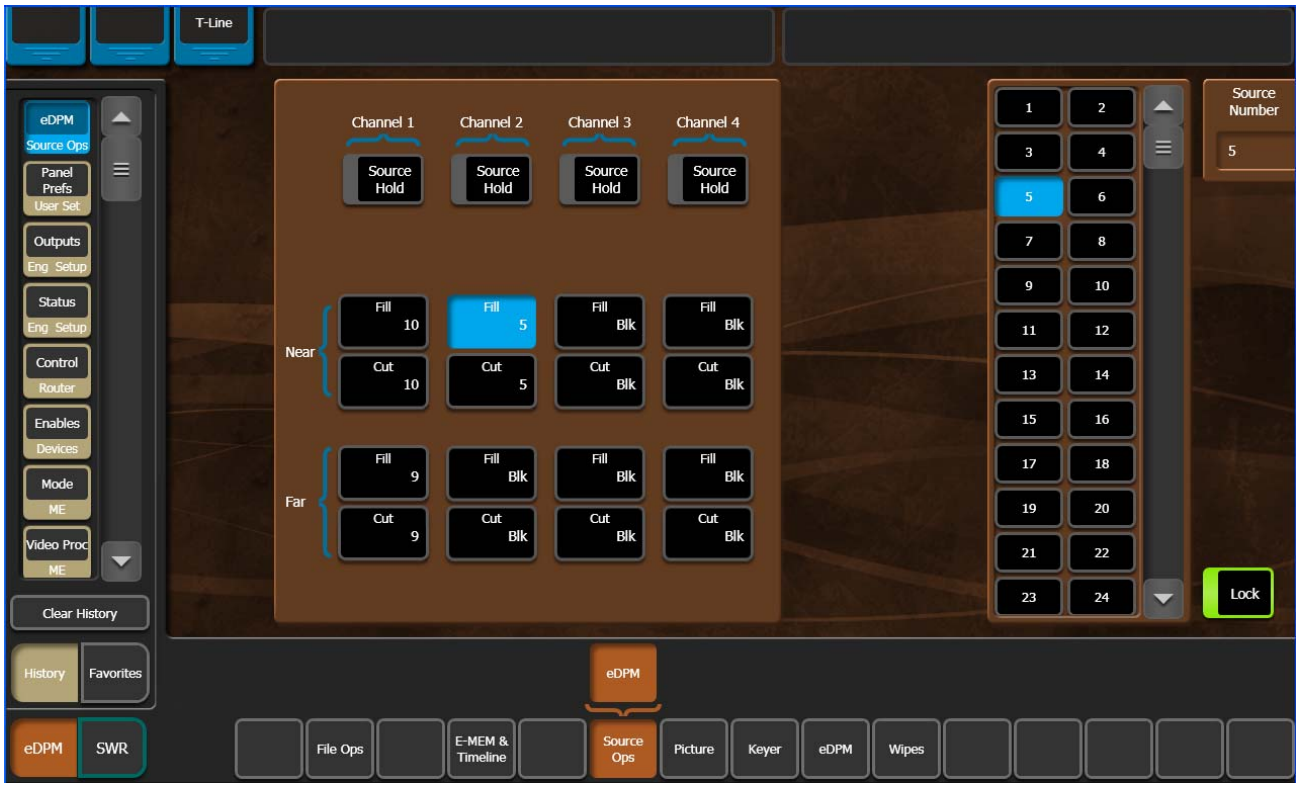
Assigning Sources

Assigning sources for eDPM transform can be done in either the eDPM Mode Source Ops, eDPM menu or from the Control Panel.

Source Ops Menu

To access the eDPM menu, touch **Source Ops**, **eDPM**.

Figure 178. eDPM Source Ops, eDPM Menu



To assign sources in the eDPM Mode Source Ops, eDPM menu (also available in the Switcher Source Ops menu):

1. Touch the input channel button for the channel you wish to assign a source (Channel 1-4).
2. Scroll and touch the source you wish to assign to the eDPM channel from the Sources scrolling list (Figure 178, right side of menu).

Note If you touch an eDPM Fill button first, then a source, the Cut and Fill signal for that channel will be the same. Touch the Cut button to assign a different source for the Cut button.

3. Repeat Steps 1 and 2 for up to four input sources for each eDPM channel.

Source Ops from the Control Panel

Assigning Sources

To assign sources to an eDPM output (eDA, eDB, eDC, or eDD):

1. Press the eDPM channel input destination button (see *Aux Delegation* *on page 265*) on the Local Aux Module (or ME delegated as Aux).
2. Press the source select button with the source for the eDPM on the Local Aux Module (or delegated ME).
3. Repeat steps 1 and 2 for up to four eDPM sources.

Split Key

From the Local Aux Module, a split key can be performed to select the cut signal. When selecting sources into the eDPM channels, both the video and key (cut) signals are changed at the same time. The Local Aux Module provides a Key Split button to independently select the key (cut) signal.

1. Select a video source.
2. Hold down the **Key Split** button and select the desired key source.
3. Release the **Key Split** button.

The control panel will display the currently selected video source. Press the **Key Split** button at any time to verify the key (cut) signal.

Button Mapping eDPMs to an ME

Map the eDPM outputs to the source select buttons on the MEs in the User Setups, Panel Prefs, Button Mapping menu (see *Button Mapping* *on page 127*).

Note eDPM sources are identified as eDA, eDB, eDC, and eDD and all have a corresponding key (cut) signal already associated with those outputs, therefore the key signal outputs of the eDPM channels do not need to be mapped on the switcher for normal operations.

eDPMs and the MFM

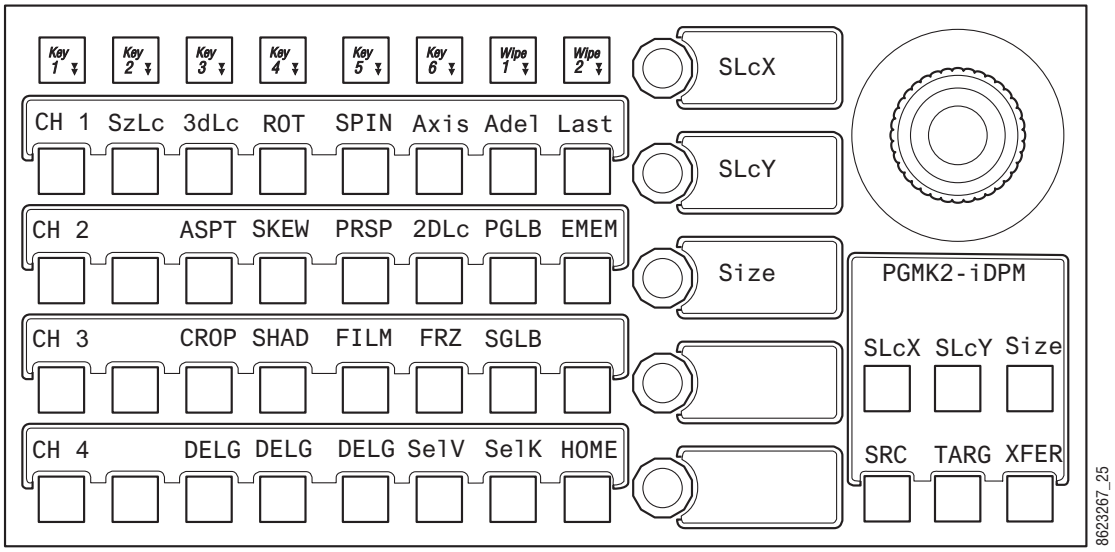
Parameter controls (joystick and buttons) work very similarly to that of iDPM in the MFM (see *Parameter and Soft Knob Controls* *on page 216*).

Many of the same controls as in the Menu Panel are available in the MFM. From the Home menu, press the eDPM soft button. eDPM Channels 1-4 can

be selected (including multi-select) and the soft knobs and joystick are delegated to controlling eDPM parameters (Figure 179).

Note All keyer buttons will be disabled in the eDPM mode.

Figure 179. Multi-Function Module, eDPM Control Mode



You can scroll through video, key, or video/key sources within an eDPM from the MFM, in eDPM, E-MEM Mode using the **SelV** and **SelK** soft buttons:

SelV — When toggled on (white) allows you to scroll through Video-only sources for the selected eDPM using the soft knobs (Channels 1-4).

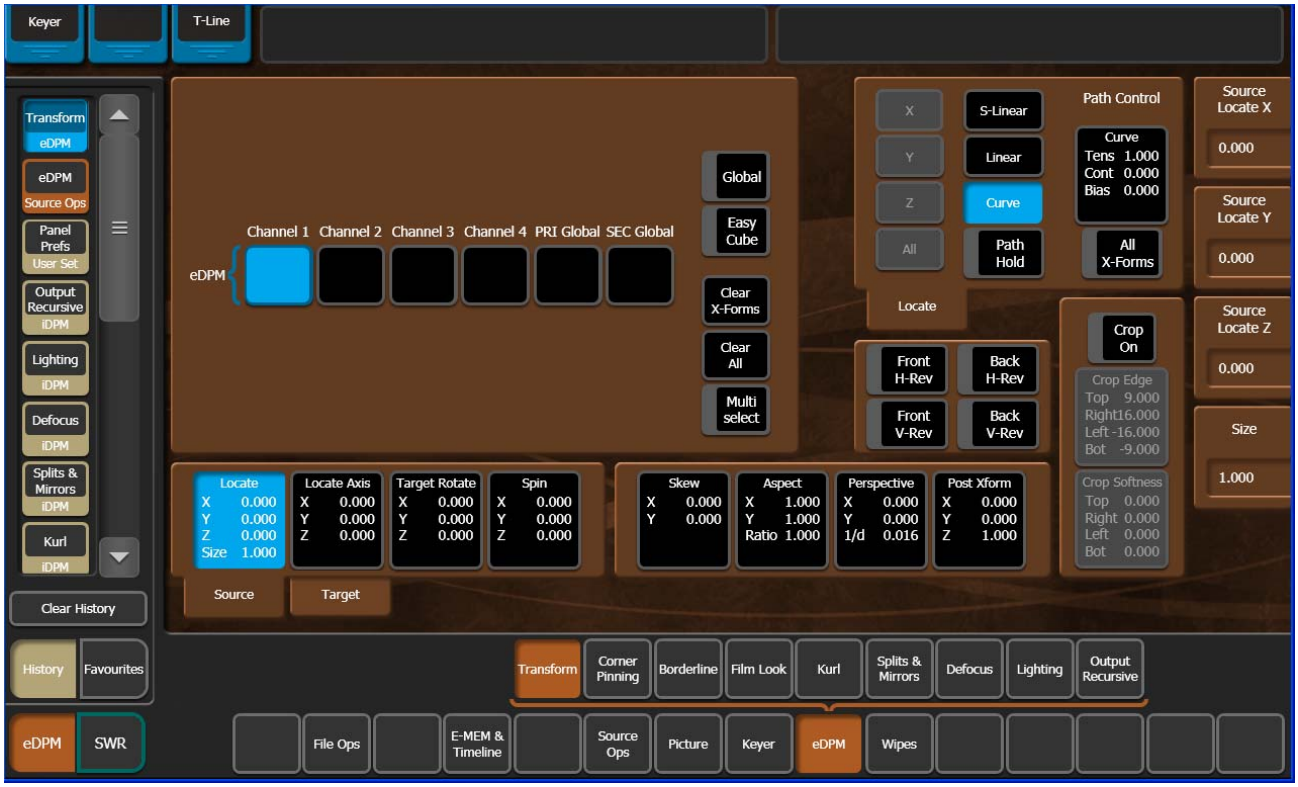
SelK — When toggled on (white) allows you to scroll through Key-only sources for the selected eDPM using the soft knobs (Channels 1-4).

SelV and **SelK** — When both are toggled on (white) allows you to scroll through Video/Key sources for the selected eDPM using the soft knobs (Channels 1-4).

eDPM Mode Menus

Touching the **eDPM Mode** button (bottom left) changes the menu to the eDPM Mode (Figure 180).

Figure 180. eDPM Mode & Menus



eDPM Effects Menus

The eDPM Transform menu is identical to the iDPM Transform menu (*Transform Menu on page 217*) in all ways except the ME/Keyer selection matrix (upper left pane) is replaced with the four channels of the eDPM (Figure 180), however the functionality is the same in regard to selecting channels and Global Channels.

The remainder of the eDPM effects menus operate the same as in iDPM:

- Borderline (*Borderline Menu on page 236*),
- Film Look (*Film Look Menu on page 238*),
- Kurl (*Kurl Menu on page 239*),
- Splits & Mirrors (*Splits Mirrors Menu on page 248*),
- Lighting (*Lighting Menu on page 251*), and
- Output Recursives (*Output Recursive Menu on page 255*).

eDPM Category Menus

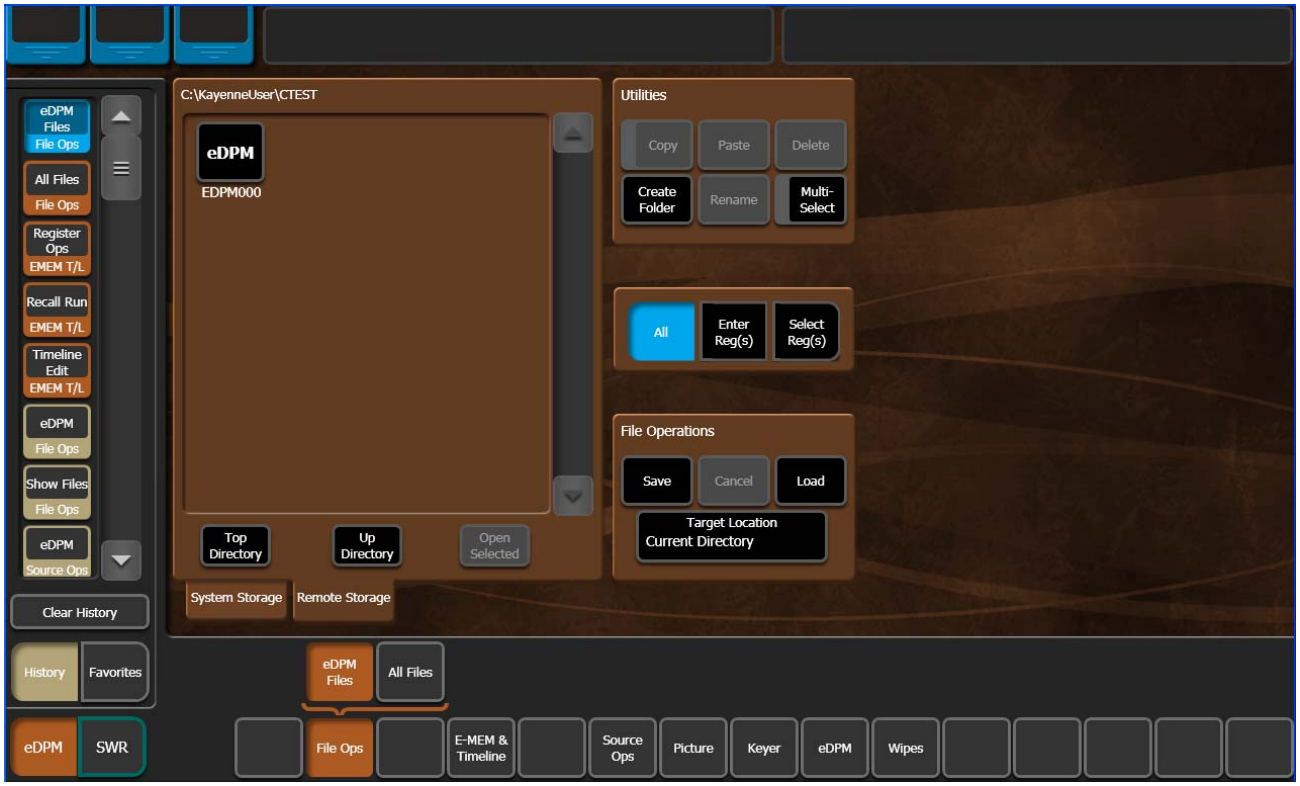
The eDPM Mode category menus for the Kayenne eDPM option operate independently from the Switcher Mode (there is access to eDPM menus in the Switcher Mode for convenience).

File Ops Menu

The eDPM File Ops menu allows you to create folders and save, load, and manage the 1000 eDPM register files and all files.

To access the eDPM File Ops menu, touch **File Ops**, and either the **eDPM** or **All Files** menu button. The eDPM File menu controls are identical to the Switcher Mode file operations (*File Operations* *on page 153*).

Figure 181. eDPM File Ops, eDPM Files Menu



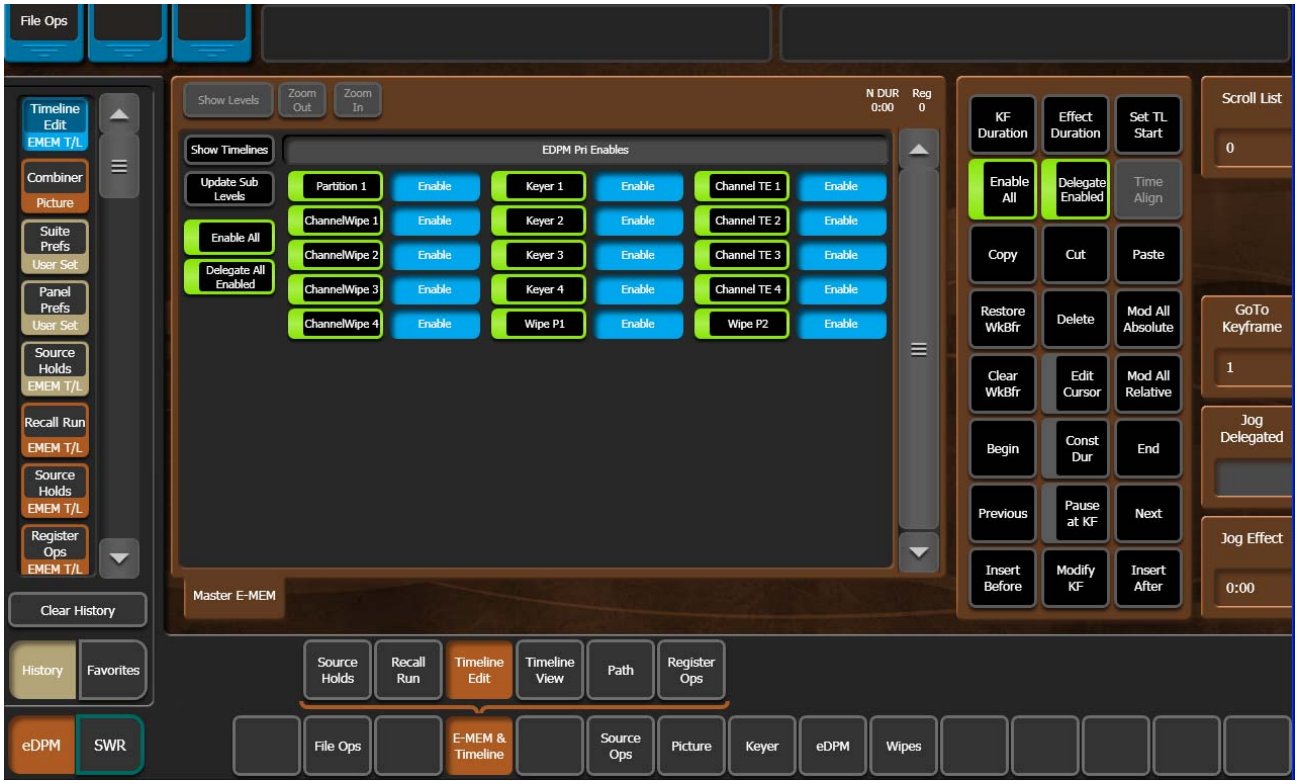
E-MEM & Timeline Menu

The eDPM E-MEM & Timeline menu controls are identical to that of the Switcher Mode (*E-MEM Operations* *on page 181*), including the advanced Partial Keyframing and Define E-MEM features (*Advanced E-MEM Operations* *on page 206*).

Note Define E-MEM for eDPM partitions are enabled in the E-MEM Prefs, ME Partition menu.

To access the eDPM Timeline Edit menu, touch **E-MEM & Timeline**, **Timeline Edit** (Figure 182).

Figure 182. E-MEM & Timeline, Timeline Edit Menu



eDPM output channels have their own timelines, independent of the Switcher Mode.

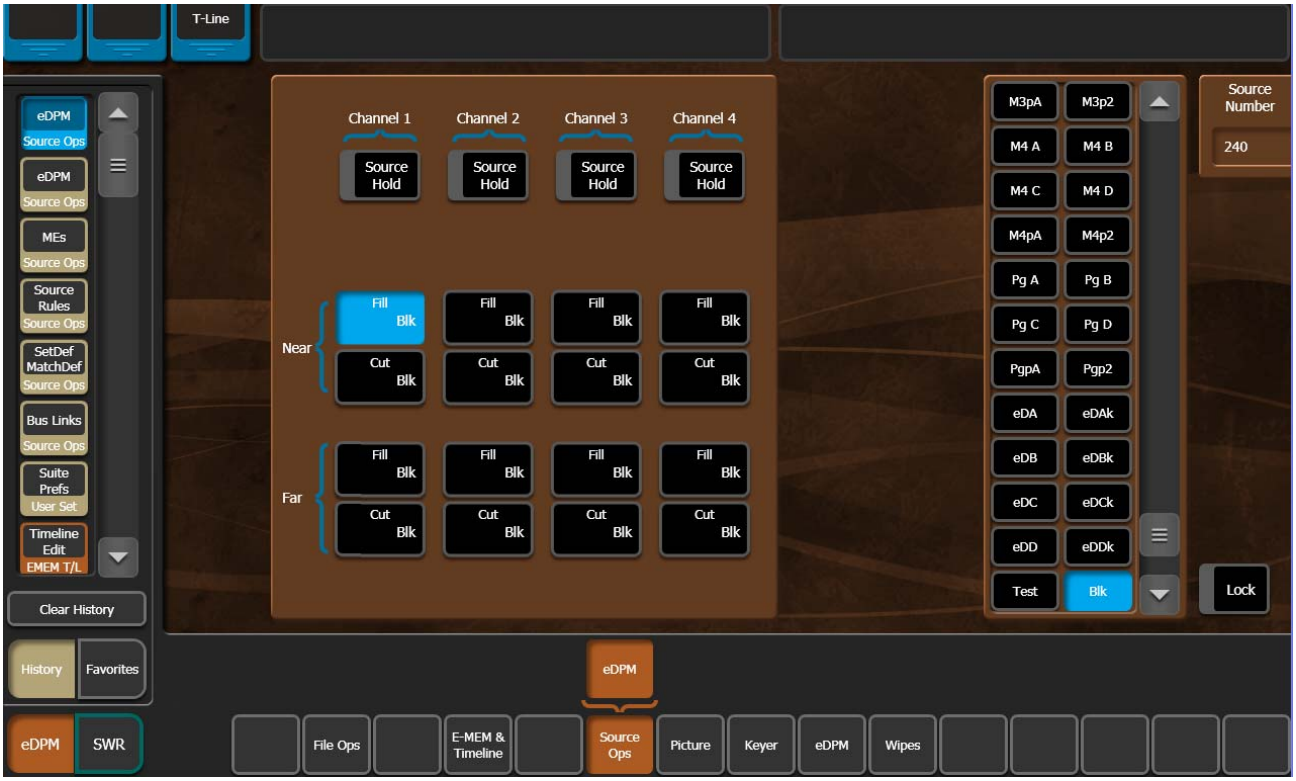
Note Editing (insert, modify keyframes, etc.) can only be performed in the eDPM Mode menus. You can only view the eDPM timelines in the Switcher Mode.

Source Ops Menu

The eDPM **Source Ops** menu provides Source Holds (*Source Holds in Effects on page 200*) and Near and Far side (*Front and Back, Near and Far on page 74*) source selection for eDPM Channels 1-4 using the scrolling list with **Lock** button at the right of the menu.

To access the Source Ops, eDPM menu, touch **Source Ops**, **eDPM** (Figure 183).

Figure 183. Source Ops, eDPM Menu



Picture Menu

The eDPM Picture menu provides controls for the Combiner, Video Processor, and RGB Color Correction functionality. The Video Processor and RGB Color Correction menu controls function identically to those in the Switcher Mode.

Combiner Menu

For eDPM, the Combiner assigns which channels will be controlled by the eDPM Secondary E-MEM system. eDPM channels can be made visible on both Primary and Secondary partitions.

The Primary Partition is made up of outputs eDA and eDB and the Secondary Partition consists of outputs eDC and eDD. The four eDPM channel assignments default to the Primary Partition, however any eDPM channel can be assigned to the Secondary Partition using the Secondary Assign pane just as with iDPM (supports Secondary Global Channel). Also, as with iDPM, channels on the Primary Partition can be made visible on the Secondary Partition and vice versa (see *Keyer Partition Visibility on page 223*).

To access the eDPM Combiner menu, touch **eDPM**, **Combiner**.

Figure 184. Picture, Combiner Menu

The process for assigning a Global Channel to eDPMs is the same as assigning Global Channels to iDPMs (see *Global Channel Assignments on page 218*).

Keyer Menu

The Keyer menu controls for eDPM function identically to those in the Switcher Mode but for eDPM Channel Keys 1-4.

eDPM Menu

See *eDPM Effects Menus on page 270*.

Wipes Menu

The eDPM Wipes menu controls function identically to those in the Switcher Mode (*Transitions on page 165*) for eDPM Channel Key Wipes 1-4.

Split Key

Sometimes you may wish to use the key cut signal of one source with the key fill or video signal of another source. For example, you may have a Character Generator creating matte filled characters, but wish to use a different signal to fill the characters. A split key is used to accomplish this.

On the Kayenne system, the source select buses by default tally the key fill signal. When the **Split Key** button is held down the key cut signal is tallied.

To Perform a Split Key:

1. Set up a standard key by pressing one of the **Key 1-Key 6** Transition Element buttons in the Transition Module, then selecting the source on that key bus that contains the fill signal you wish to use for the split key.
2. Hold down the **Split Key** source select modifier button, then press the key source select button of the source with the key cut signal you wish to use. The new key cut signal is then used with the selected key fill signal.

To Restore a Normal Key:

1. Determine what source is being used for the key fill signal.
   - Observe the key source select bus of the split key and see what source is currently selected, or
   - Look at the ME Status display, which always shows the source names of any key cut signals.
2. Hold down the **Split Key** source select modifier button, then press the source button of the key fill signal identified above. The original key cut signal for that source is then used for that key.

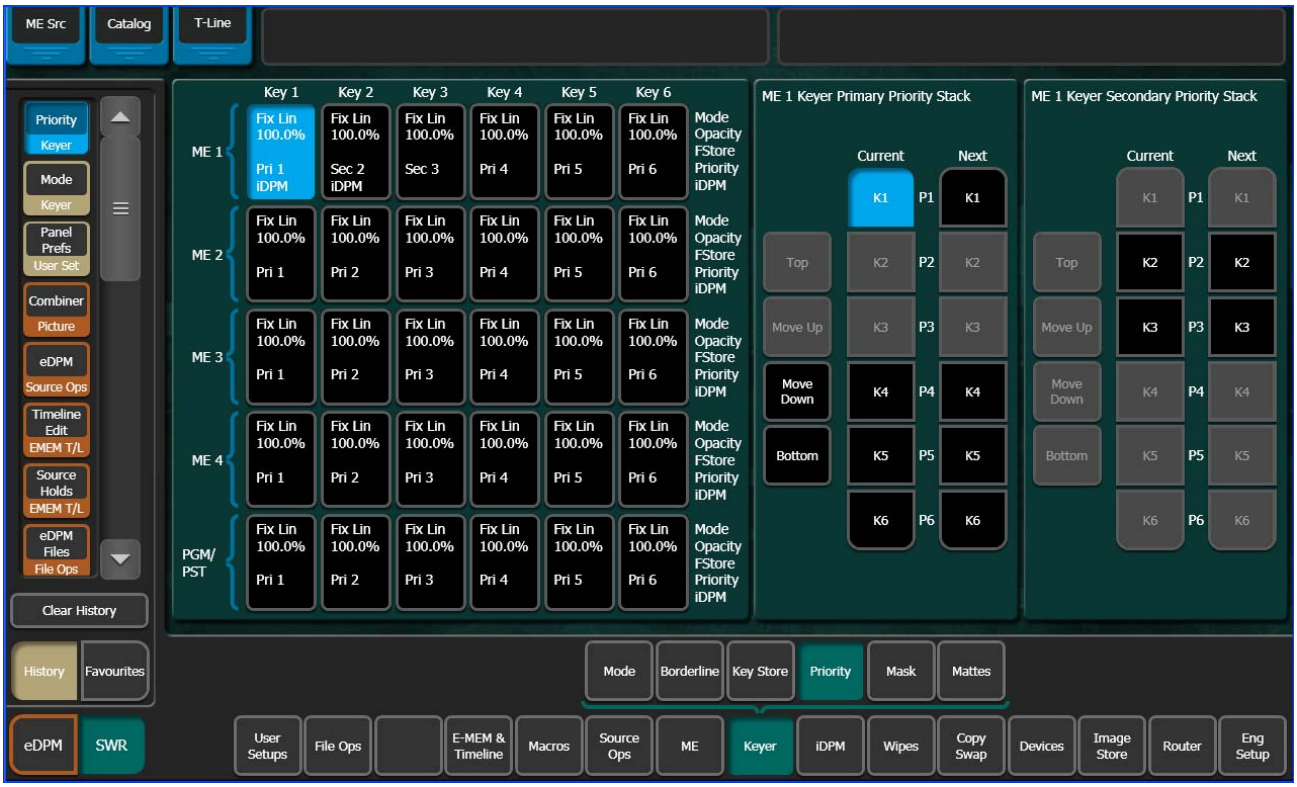
Keyer Priority

Video switchers with only two keyers per ME use a simple key over/key under mechanism to control the stacking of the keys. Only one key can be located over the other. The Kayenne system has six keyers per ME, so more complex stacking is possible. Keys can be placed between other keys, using key priority.

To Change the Current Keyer Priority:

1. Go to the Keyer-Priority menu in the Menu Panel by pressing **Keyer**, **Priority** (Figure 185).

Figure 185. Keyer Priority Menu, Current Stack Selected



2. If not already set up, turn on the desired keys and arrange them so they overlap, observing the Program monitor. This will make the changes in key priority visible. For demonstration purposes, you can use four preset pattern keys.

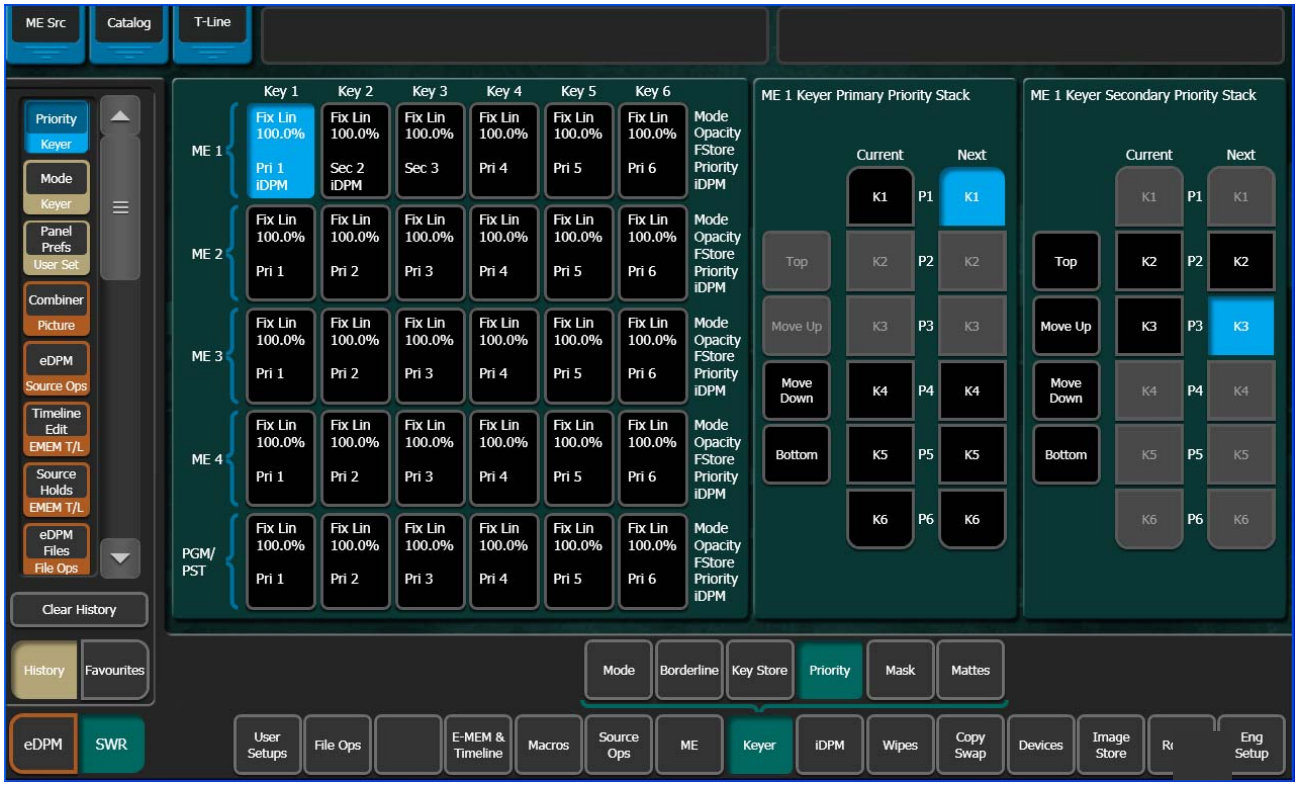
3. Select the keyer you wish to move in the stack in the Current column, then use the **Top**, **Move Up**, **Move Down**, and **Bottom** buttons on the left to place the key in the desired location. The key priority order changes immediately, as a cut.

To Transition Between Different Keyer Priorities:

Key priority transitions use a Current priority stack and a Next priority stack. The transition occurs between the two stacks.

1. Press the **Key Prior** Transition Element button in the Transition Module (button row under status display, far left function button).
2. If not already set up, turn on the desired keys and arrange them so they overlap, observing the Program monitor. This will make the changes in key priority visible. For demonstration purposes, you can use four preset pattern keys.
3. Delegate that ME for preview in the Preview button group on the System Bar. This shows the end result of the transition (the Next priority).
4. Go to the Keyer-Priority menu in the Menu Panel by pressing **Keyer**, **Priority**.
5. The current stack in the menu is automatically set to what is currently being output. You can change the Current priority stacking order if desired, as described on page 276.
6. Set up the Next priority stacking order, selecting the keyers in the Next column and then using the **Top**, **Move Up**, **Move Down**, and **Bottom** buttons (Figure 186). The new stack will be visible on the preview monitor.

Figure 186. Keyer Priority Menu, Next Stack Selected



7. Select the type of transition, using the **Mix**, **Wipe 1**, or **Wipe 2** buttons in the Transition Module. If you selected a wipe, go to the Wipes menu by double pressing one of the **Wipe** buttons, and then select the pattern and any modifiers to be used with the wipe.
8. Move the lever arm or press the **Auto** button in the Transition Module to perform the key priority transition. The transition is shown on the Program monitor.

Key Store

The following features are defaults for Key Store:

- Source Memory is always on.
- Source Memory is provided for each Key Store—Keyer mode and settings for the last use of the Key Store will be recalled.
- Key is black upon reset—If there is not a Key Store loaded, it will not be placed on-air.

Key Store Operations

Each full keyer can store two frames of memory; each frame containing both Keyer Video (fill) and Key (cut), that together create the Key Store.

Each Key Store can save the use of other switcher resources. For example instead of using an Image Store channel or another keyer, you could store a station ID or a replay graphic (still) for a sports show in a Key Store and switch the image within the keyer.

In the Keyer, Key Store menu (Figure 187), each Store has two frames, Frame Store 1 and Frame Store 2. Each can 'Grab', 'Store', and 'Use' a still image for a key source. So in addition to Live video, you have up to two fill/cut images that can be interchanged on any full keyer source.

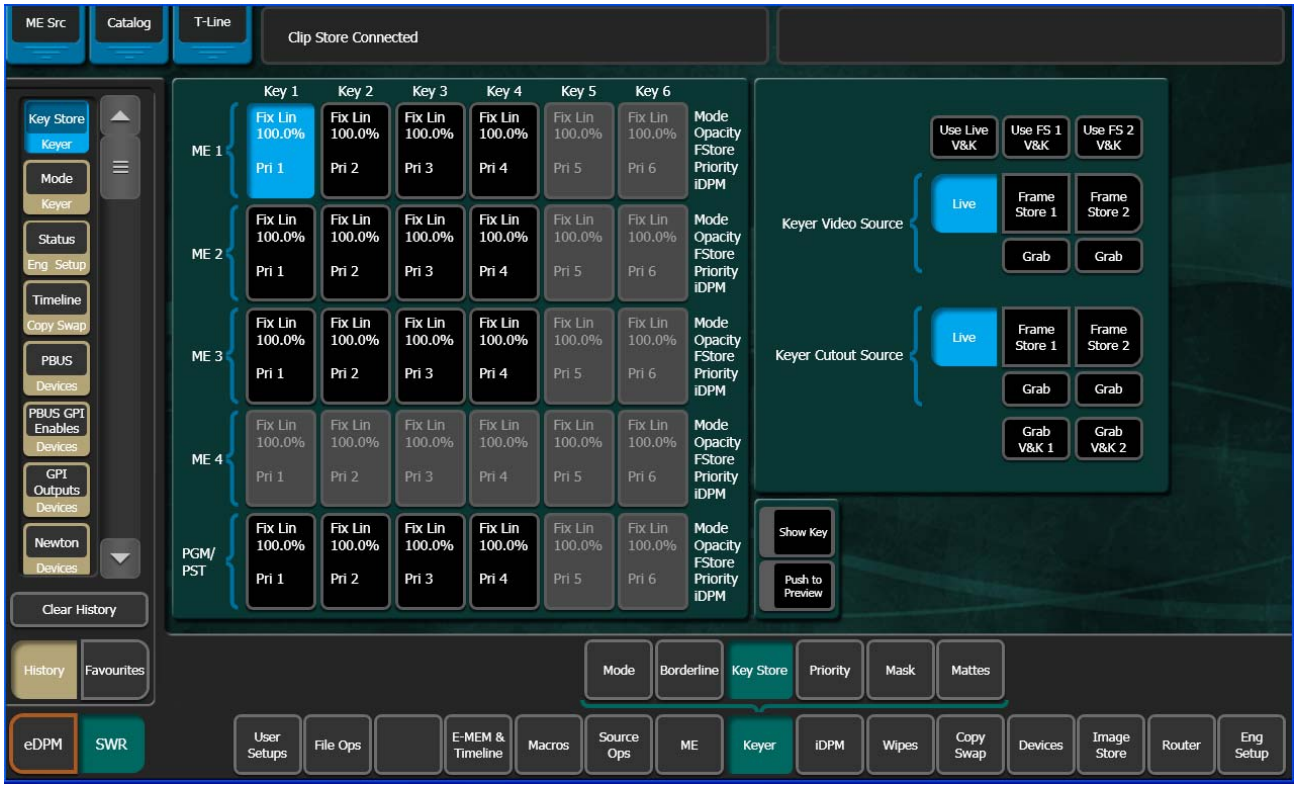
The fill and cut from Live, and Frame Store 1 and Frame Store 2 pages can be used in any combination, for example you can use the fill from Keyer Video Source, Frame Store 1 with the cut from Keyer Cutout Source, Frame Store 2. You can even use the Live video from the Keyer Video Source and the cut from Keyer Cutout Source, Frame Store 1.

Each Key Store has Key Store source memory not controlled by the source memory settings in Suite Prefs.

On power cycle or reboot, Key Stores will have to be reloaded with the correct video. They default to black keyed with black which will not show up on a monitor.

Key Store is E-MEMable and keyframeable.

Figure 187. Key Store Menu



Grabbing and Using a Key Store Image

The keyer settings are defined in the Eng Setup, Source Definition menu where for example you can set a key to a Linear or Shaped Video. You will need to define these parameters when creating a Key Store.

Note If not defined, the key will be full raster white.

You can 'Grab' both a video and key frame simultaneously by touching either the **Grab V&K 1** or **Grab V&K 2** button, located below each Frame Store page, or you can touch a **Grab** button for any of the four Video/Cutout Frame Stores (Figure 187).

Once you have grabbed fill and key images in Key Store, you can 'use' them for the selected key source:

1. Touch the full keyer with which you want to use Key Store (Figure 187, left).
2. Touch either the **Use Live V&K**, **Use FS 1 V&K**, or **Use FS2 V&K** to select the Video and Key source image (Figure 187), or
   a. Touch the Keyer Video Source you want as fill.
   b. Touch the Keyer Cutout Source you want as the key cut.

Show Key button—Shows the cut signal for the selected Key Store source.

Push to Preview button—Shows the current Key Store image on Preview.

Chroma Key Operating Notes

Introduction

The Kayenne system features chroma keyers with powerful controls. These controls offer subtle adjustments to allow successful keying of difficult subject matter (fine hair, smoke, translucent objects, etc.), and to overcome some problems resulting from imperfect chroma key set coloring or lighting. The Kayenne chroma key also has an Auto Setup feature that can create an excellent chroma key under most circumstances without the need for manual adjustment.

See *Chroma Key on page 48* for background information that can help you better understand the chroma key controls. The following information provides more detailed instructions on how to set up a chroma key using the Auto Setup feature and use the manual controls in the Keyer menu.

Auto Setup

The first step of setting up most chroma keys is to use Auto Setup. Auto Setup automates the first steps to achieving a chroma key. Auto Setup performs the following:

- Calculates primary suppression Hue and Luminance.
- Sets primary suppression Selectivity and Chroma to defaults.
- Calculates Clip Low, and sets Clip Hi to default.
- Sets all the secondary suppression values to duplicate the primary suppression values, but turns secondary suppression off.
- Changes Opacity temporarily to 100% to permit an accurate backing color sample, and then returns it to its original setting.
- Sets Key Position and Size values to default (0).

Two different Auto Setup algorithms are available, one for well designed and lighted sets (**Reshape** off), and the other for more challenging sets (**Reshape** on). Depending on individual circumstances, additional manual adjustments may be required after you use Auto Setup.

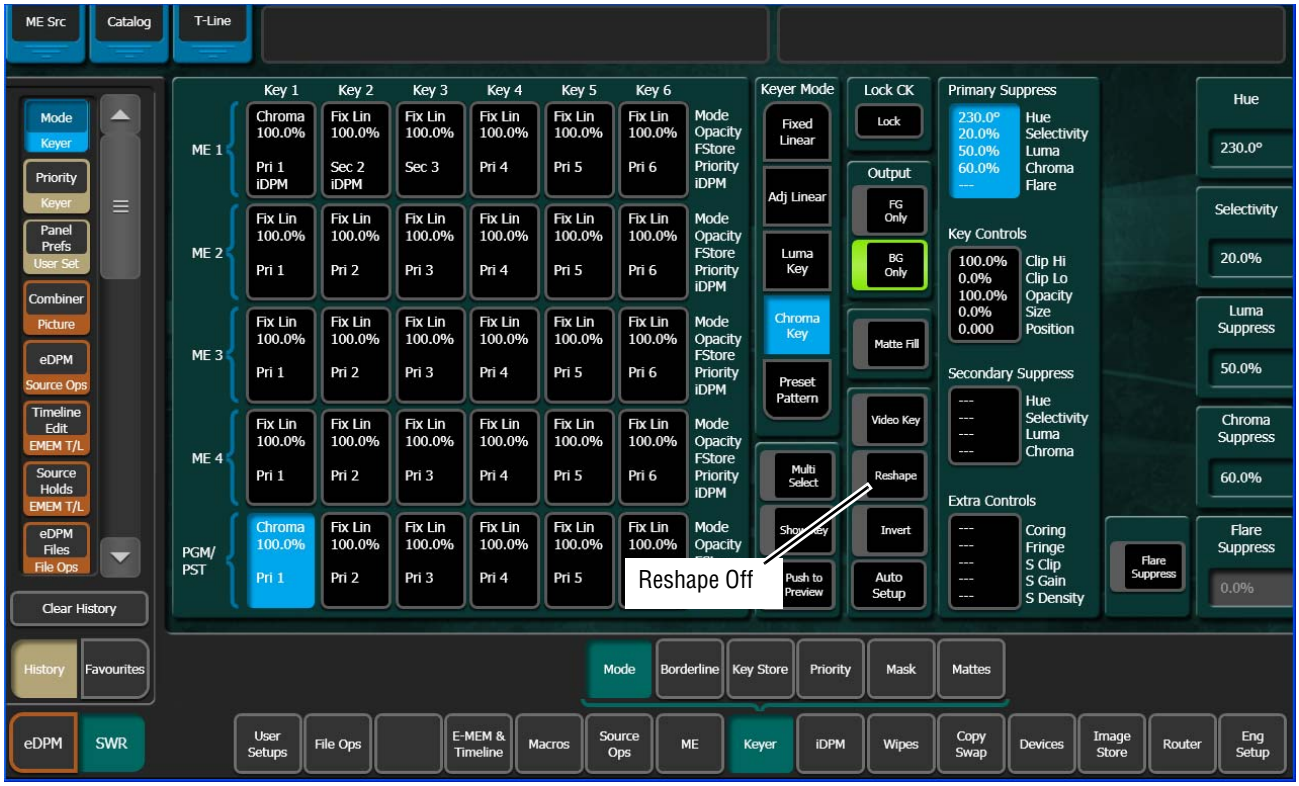
After an Auto Setup has been initiated, you can cancel it by pressing the **Auto Setup** button again, but the chroma key will retain the default settings imposed.

To Chroma Key Using Auto Setup:

1. Press one of the **Key 1-Key 6** Transition buttons on an ME to delegate the keyer you wish to use.

2. Choose on the selected keyer's key bus the chroma key source containing the chroma key backing color.
3. Select **Chroma** as the key type in the Multi-Function Module (**Keys**, **Chro** buttons), if necessary (source memory may automatically select this key type).
4. Choose on the A bus the source that will be used to replace the backing color of the chroma key source.
5. Go to the Keyer menu (double press the **Keyer 1-Keyer 6** button for that keyer in the Keyer Transition Module) and make sure **Reshape** is off for the keyer you are using (Figure 188).

Figure 188. Keyer Menu, Chroma Key Reshape Off



6. Press the **Keys**, **Auto** (Auto Setup) button on the Multi-Function Module. Preview for that ME will now display the chroma key source with a superimposed cursor. The cursor actually represents a box of 16 x 16 pixels.
7. Use the joystick to position the cursor on the backing color. Select a darker area, if one exists, to optimize the backing color suppression.
8. Press the button on top of the joystick. The chroma key will be set up automatically using the average of the colors selected by the cursor box. Because **Reshape** was off, fine edges of the key will be preserved.

9. If this chroma key is acceptable, you are done. If set, lighting, or other conditions prevent the result from being acceptable, you need to decide whether to adjust the chroma key manually or use Auto Setup with Reshape.

   - Manual adjustment permits retention of fine edge detail (see *Manual Chroma Key Adjustments* *on page 283*). In particular, if there are problems with translucent areas (hair, smoke) secondary suppression controls can be useful (see page 287).
   - Auto Setup with Reshape produces a chroma key with harder edges, but accommodates wider set variations (see below).

To Chroma Key Using Auto Setup with Reshape:

If the set is lit unevenly or has other problems, Reshape is available to help solve the problem. A better alternative, if time permits, is to adjust the lighting on the set to even out the backing color. This may improve the key so that Reshape is not needed.

1. If you decide you must use Reshape, follow the Auto Setup procedure described above, but in Step 5 touch **Reshape** on in the Keyer menu to turn it on (its green indicator will illuminate). After selecting the backing color area and touching the top button on the joystick, the chroma key will be set up with coarser values better able to handle set variations.
2. If this chroma key is acceptable, you are done. If you are still not satisfied, you can fine tune the chroma key using manual adjustments.

Manual Chroma Key Adjustments

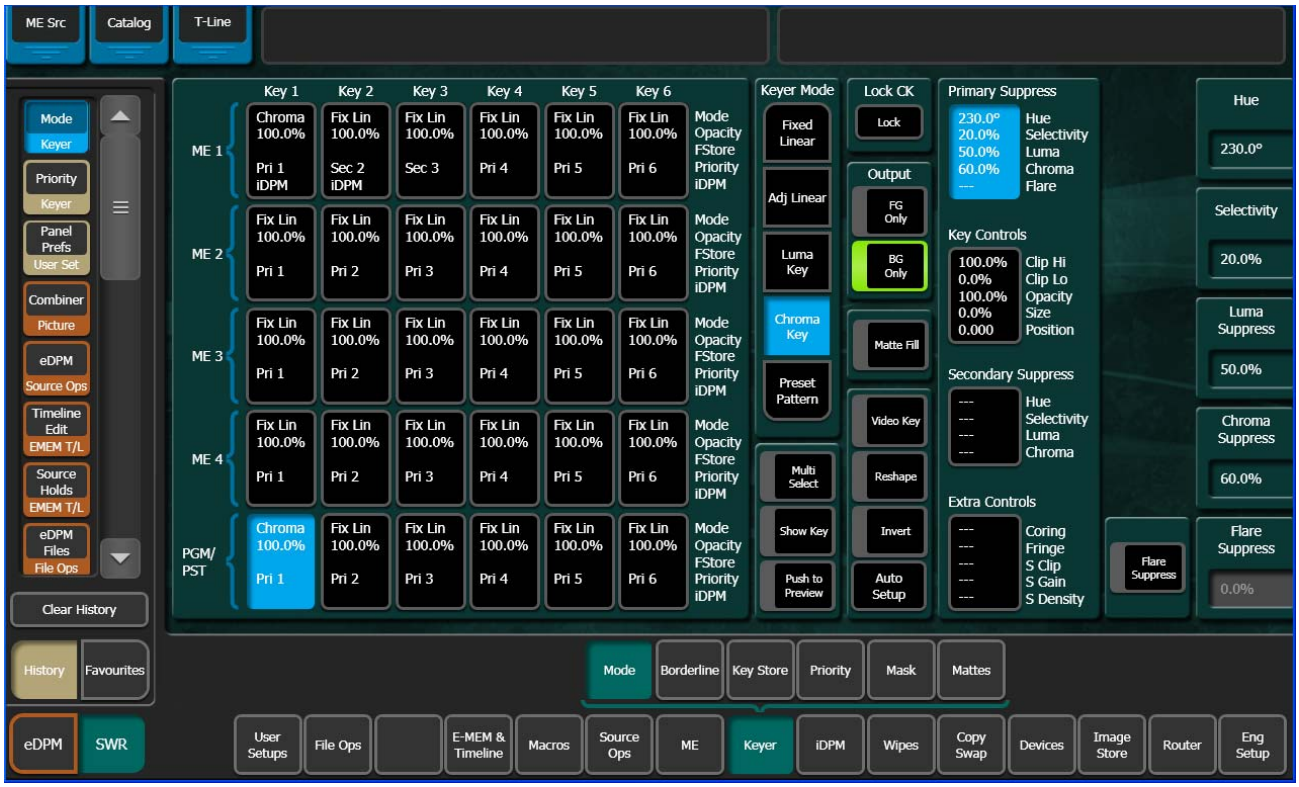
If the Auto Setup of the hue fails to provide a suitable chroma key, additional controls are available in the Keyer menu for fine tuning the key. Chroma key manual set up consists of choosing the best set of compromises to provide adequate detail and color fidelity to meet your needs. While using this menu you need to view the chroma key scene on a monitor. A vectorscope and waveform monitor can also be very useful when setting up a chroma key. During set up you need to focus your attention on particular areas of the foreground, background, and/or composite. The areas you look at will change depending on the individual controls being used. The **FG Only** and **BG Only** buttons can be used to remove extraneous picture information, allowing you to view only those areas of the composite.

Chroma key set up procedures follow a recommended order, as indicated by the numbered steps displayed on the menu. However, requirements can vary depending on each individual scene. You may need to go back to earlier steps and readjust previous settings to optimize the key. Understanding what the chroma key controls do will help you decide what adjustments are required for your individual situation.

Access Keyer Menu and Delegate Keyer

Press the **Keyer** Menu Panel button, then touch the **Mode** category selection button. You can also double press the **Chro** button in the Multi-Function Module to access this menu. Delegate the keyer you wish to set up on the left side of the screen, then touch the **Chroma Key** Mode button (Figure 189).

Figure 189. Keyer Chroma Menu, Pri Suppress Controls



Primary Suppression

Primary suppression is the most critical chroma key parameter, and the easiest to set. Auto Setup should take care of this, but manual adjustments can be made if desired. If primary suppression is set wrong, however, it will be impossible to achieve a good chroma key with the other controls.

Primary Suppression should be set while looking at the foreground. Ideally the backing color will appear as a small dot on the vector scope and a perfectly flat line on the waveform display, but this never occurs due to set lighting variations, shadows, etc. This means you will need to pick the best suppression for the overall look of the key.

1. Touch the stage 1 **Pri Suppress** data pad, if necessary, to activate these controls (Figure 189).

2. Adjust Hue, Selectivity, Chroma, and Luma primary suppression to eliminate the backing color.

   - **Hue** can be set accurately with Auto Setup. **Hue** should center on the primary color of the backing area of the foreground scene. Depending on where **Luma** and **Chroma** primary suppression are set, adjusting **Hue** may not make any noticeable change on the scene. **Chroma** suppression should be preset to 100% and **Luma** set to 0%. Hue can then be tuned to remove the backing color.

   - **Selectivity** may need to be increased if there are colors in the foreground image that are being suppressed. **Selectivity** should be set as low as possible without including colors that should not be suppressed. For example, when keying on green, a greenish yellow shirt might be affected by the suppression. If so, adjust the selectivity high enough to reject that color. Too high a selectivity is one of the classic causes of a noisy key. If the foreground subject is stationary, consider using a force mask instead of increasing selectivity.

   - **Chroma** suppression can be set accurately with Auto Setup. To adjust, increase **Chroma** suppression and observe the backing color dot on the vector scope move toward the center. You want to center it exactly, so no chroma exists in the backing area. 100% chroma suppression is the correct setting for all chroma keys. At this point, you will probably see a line through the center of the vector scope. With increased selectivity, this line will become an arc.

   - **Luma** suppression adjustments may be necessary if shading is visible in the backing area with **FG Only** selected, or if the shading adversely affects the background image. Primary Luma suppression is hardly ever desired when Reshape is on. To adjust, increase **Luma** suppression and observe the backing color move toward black. You want to make the backing color just black. Increasing this control too much will make the chroma key hard and noisy. When not enough, highlights will be added to the background. Note that incomplete luminance suppression is not necessarily bad. The highlights added to the background will match the shading on the backing wall, adding natural shadows and perhaps eliminating the need to add artificial shadows.

   - All the above adjustments may need to be revisited later.

3. Another potential artifact of chroma keying is a tinting of the overall foreground subject due to lighting splash from the backing color or lens flare. **Flare Suppression** adds a small amount of color to the entire foreground image to cancel the splash or flare. Typically less than 2% of the backing color is needed to neutralize the flare.

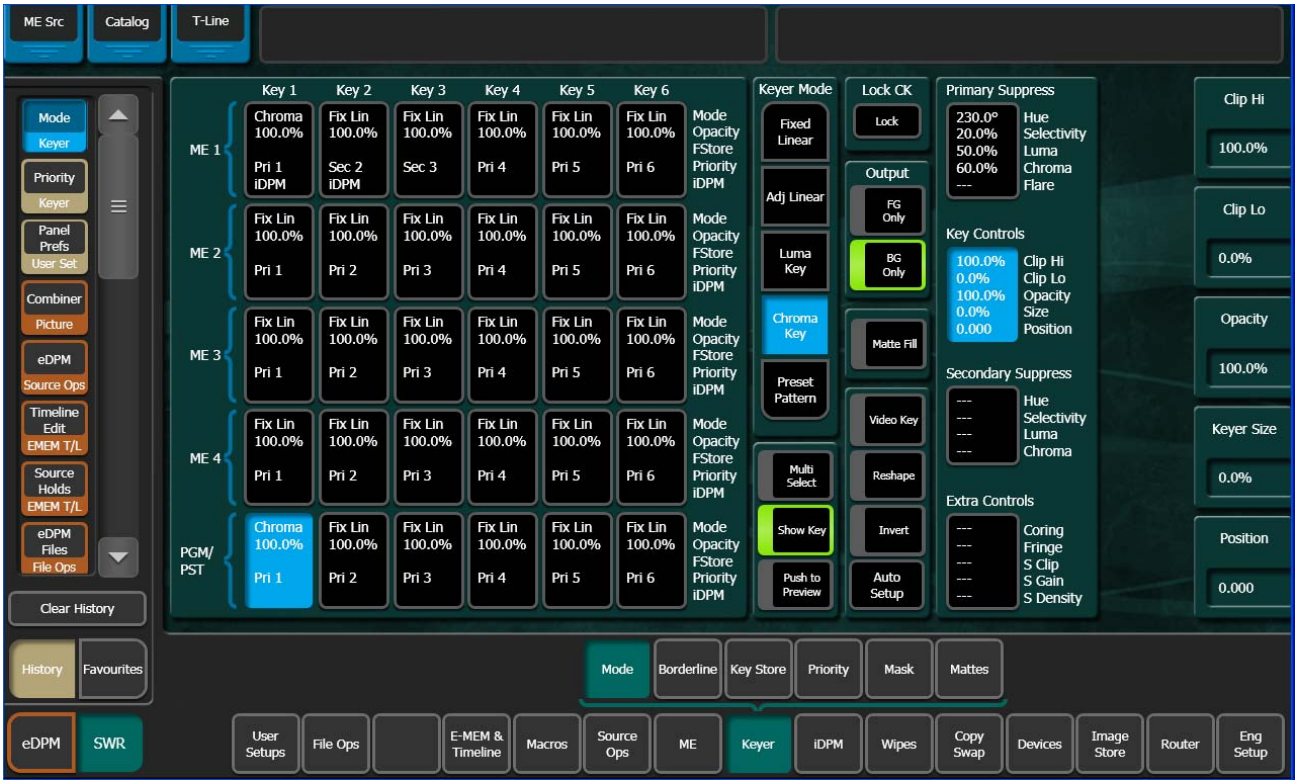
Key Controls

The purpose in adjusting **Clip Hi** and **Clip Low** is to cause the proper hole to be cut in the background. All areas of the backing color should be full background while all areas of the foreground should make the background completely invisible. The easiest way to do this is to observe the key signal while making your adjustments.

The smaller the difference between **Clip Hi** and **Clip Lo**, the higher the keyer gain. High gain amplifies noise present in the transition between transparent and opaque. The correct setting is with **Clip Hi** and **Clip Lo** set to just barely achieve opacity and transparency, respectively.

1. Touch the stage 2 **Key Controls** data pad to activate these controls. You can now manually adjust keyer clipping controls.
2. Select **Show Key** in the Keyer menu (Figure 190) and look at the ME preview output on a picture and waveform monitor.

Figure 190. Key Controls



3. Adjust **Clip Hi** so that all areas of the foreground objects are white. If **Clip Hi** is set too low (too far clockwise), much of the translucent areas will be forced to be fully opaque, hardening the key and darkening the transition area between background and foreground.

4. **Clip Low** can be set accurately with Auto Setup. Adjust **Clip Low** so that all areas of the backing color are black. If **Clip Lo** is set too high (too far counter-clockwise), translucent areas will be forced fully translucent, hardening the key.

Note When adjusting clip levels, remember that areas on the edge of the foreground subject should show as shades of gray. Gray indicates areas of translucency, which is desirable in chroma keying.

5. Check the final results with **Show Key** off and the chroma keyer in normal mode (**FG Only** turned off). Note that incorrect adjustments can create a hard, noisy key.

6. If the chroma key now looks good, you are done. If dark edges are present, there may be too much primary **Luma** suppression or **Clip Hi** or **Clip Low** may be set improperly. If adjusting these parameters fails to solve the problem, you should consider activating the Reshape feature.

Reshape

Reshape is useful when shading variations exists in the backing color. A better alternative, if time permits, is to adjust the lighting on the set to even out the backing color. This may improve the key so that Reshape is not needed. Reshape helps with backing color suppression at the expense of a harder looking key with more noticeable edge artifacts.A drawback of Reshape is loss of detail in the keyed edge. For example, smoke and hair in the foreground will probably be lost.

1. Touch the **Reshape** button to activate this feature.

2. Set primary **Luma** suppression to 0.

3. You can now readjust the **Clip Hi** and **Clip Low** controls if necessary to fine tune the key as described above.

4. When **Reshape** is on, key resizing and positioning also become available to clean up the key edges.

   - **Size** narrows the key signal and can remove much of the blue or green edge on the foreground subject.
   - **Position** moves the key signal left and right, and can be used to reduce a color edge along only one side of the foreground.

Secondary Color Suppression

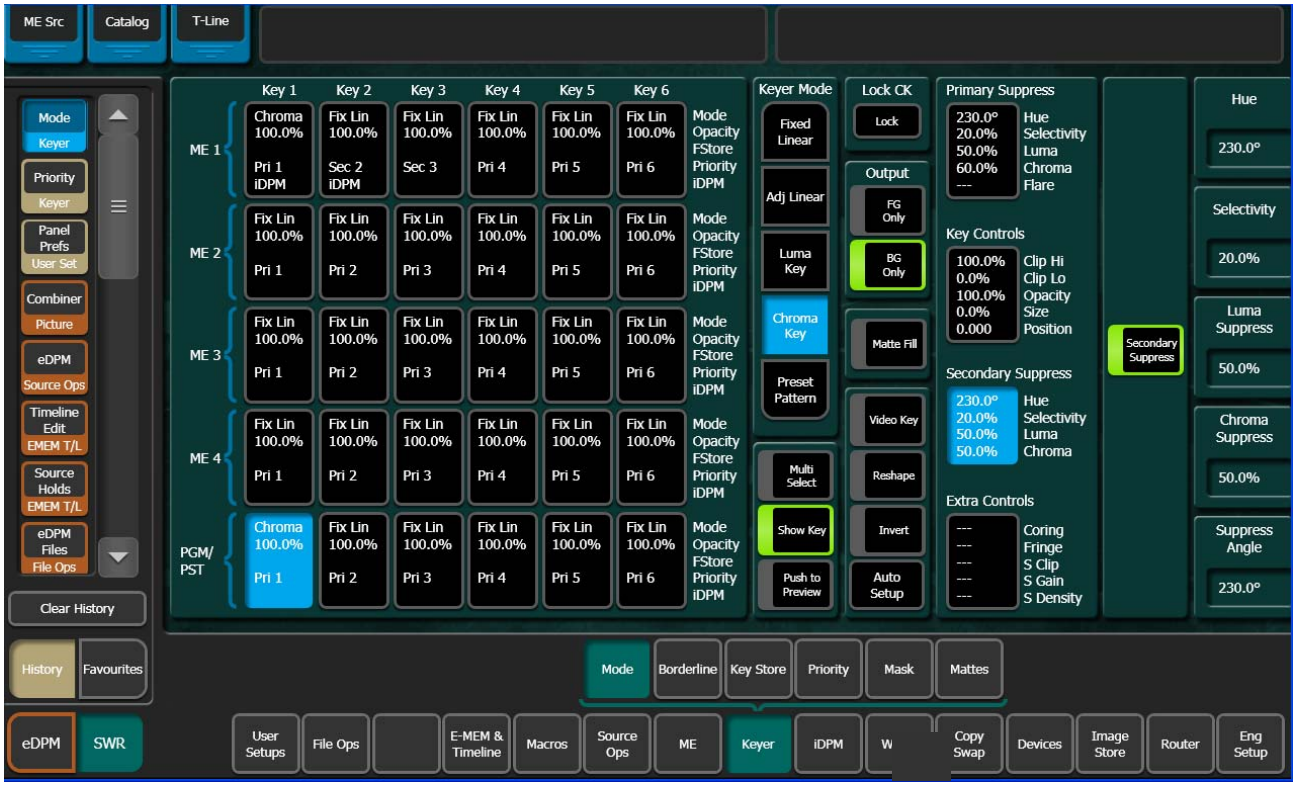
Secondary color suppression is intended to improve the color of translucent areas (e.g., glass or smoke) or fine detail near the edge of a foreground subject (e.g., hair). These areas can be take on some of the backing color. Much less secondary suppression will be needed than is used for primary suppression, because the foreground color is only partially corrupted by the backing color. Because there is a mixture of backing color and fore-

ground color, the secondary suppression Hue and the direction (Angle) will be different from primary suppression. Primary suppression removes the backing color, while secondary suppression corrects the color in translucent areas.

Note If Reshape has been applied, it is unlikely enough edge detail will remain to use secondary color suppression.

1. Touch the stage 3 **Sec Suppress** data pad and then touch the **Secondary Suppress** button to activate this feature (Figure 191).

Figure 191. Sec Suppress Controls



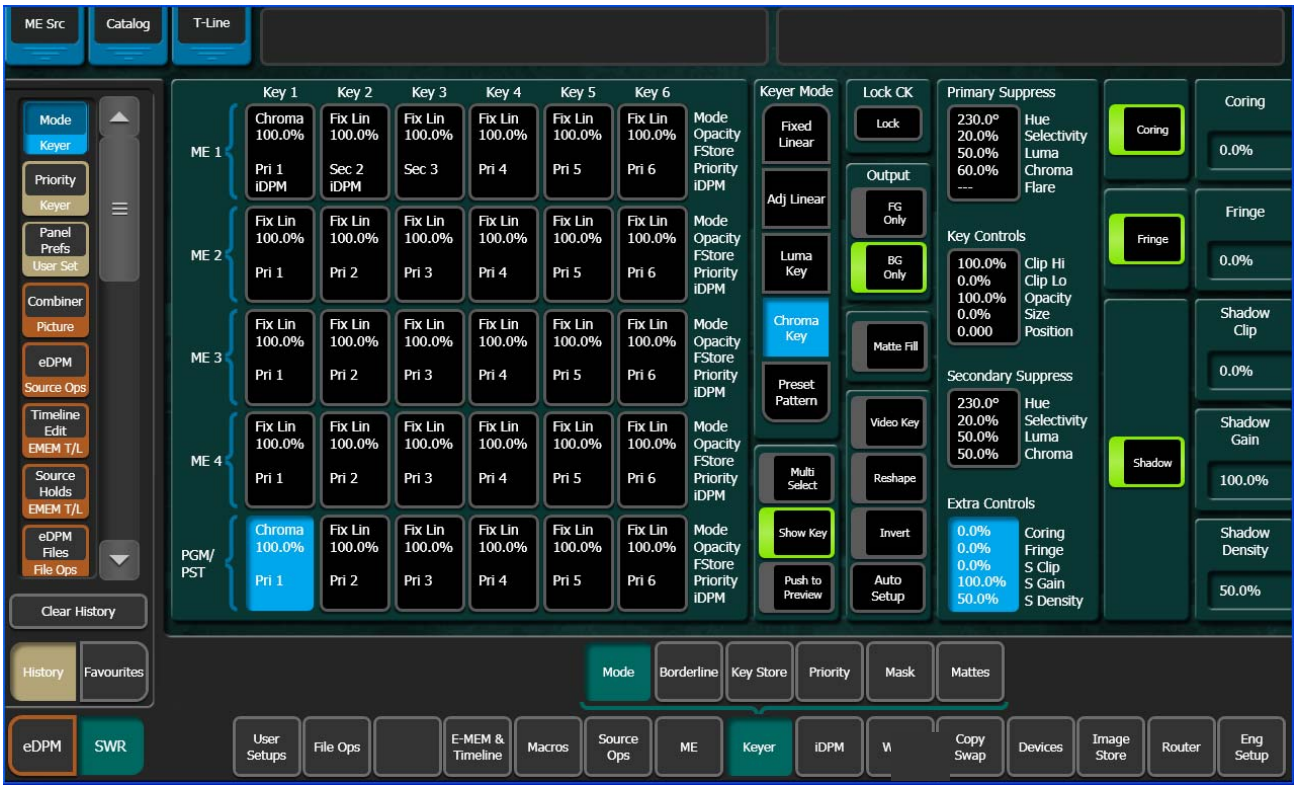
2. Adjust secondary suppression **Hue** and **Selectivity** so that the translucent area is affected, but opaque areas of the foreground are not. The final hue will lie somewhere between the backing color (primary suppression hue) and the uncorrupted foreground color.
   - When making this adjustment, it is helpful to turn the secondary **Chroma Suppression** to maximum, and the secondary **Suppression Angle** to produce an unnatural color in the affected area. This makes the changes to secondary suppression more obvious.
   - Selectivity should be kept as wide as possible. You should only narrow selectivity (increase its value) if you cannot avoid changing opaque areas of the foreground.

3. Adjust the secondary **Angle** so that changing secondary **Chroma** suppression moves the color in the desired direction. You are trying to match the color of the translucent areas to an opaque (uncorrupted) area of the foreground subject.
4. Decrease secondary **Chroma** suppression for the best match between corrupted (translucent) and uncorrupted (opaque) areas. Interaction between secondary suppression Angle and Chroma suppression may require repeating these adjustments.
5. Increase secondary **Luma** suppression to balance lightness of the translucent and opaque areas.
6. Repeat secondary suppression Angle, Chroma suppression and Luma suppression for best results.

Extra Chroma Key Controls

Additional chroma key controls are available by touching the stage 4 **Extra** data pad (Figure 192). Coring, fringe, and shadow controls can be individually activated by touching the labeled buttons.

Figure 192. Extra Controls



Coring replaces any pixels in the luminance signal after primary suppression that are below the adjustable threshold with black. This eliminates noise

resulting from incomplete suppression. While coring can improve some keys, it can easily be over done. Coring thresholds much above black will affect dark grays that are actually part of the foreground subject, making the chroma key composite look unnatural.

Fringe is used to restore color to the gray portions of the foreground color resulting from secondary suppression adjustments. This control is only active when secondary suppression is on.

Shdw provides controls of shadows that fall on the backing. **Shadow Clip** and **Shadow Gain** allow selecting the range of the luminance portion of the foreground that produces a shadow. **Shadow Density** is an opacity control for the shadow and adjusts how much shadow is added to the background.

Pattern Mix

The Kayenne system can combine the complex wipe pattern generators (**Wipe 1** and **Wipe 2**), to create a wide variety of customized wipes.

To Create a Pattern Mix on Wipe 1:

1. Double press the **Wipe 1** button in the Transition Module. This selects **Wipe 1** as the next transition type, and also opens the Wipes menu with Wipe 1 delegated for control.
2. Select the Wipe 1 pattern to be used by touching the **Ptn** data pad in the C1 Generator pane, and then selecting one of the displayed patterns.
3. Select the Wipe 2 pattern by touching the delegation button in the W2 column, and then select a displayed pattern different from Wipe 1.
4. Touch the **Mix** data pad located to the right of Ptn data pad. Additional control buttons will appear at the bottom of the menu.
5. Delegate that ME for preview in the System Bar.
6. Press the **Trans PVW** button in the Transition Module, and move the lever arm part way. This will display the Wipe 1 pattern on preview.
7. Touch the delegation button in the W1 column to delegate the menu to control the Wipe 1 pattern generator.
8. Touch the **Pattern Mix** button so its indicator illuminates. The preview monitor will now show the combined Mix 1 and Mix 2 pattern.
9. You can select the type of pattern mix with the Mix type buttons (**Mix**, **NAM +**, **NAM –**). The NAM buttons are used for And or Or pattern mixing.
10. You can also adjust the amount each wipe pattern contributes to the mix with the **Ratio** control. At 50%, each pattern contributes equally. At 25%, the other pattern contributes only 25% to the final pattern.

Copy/Swap

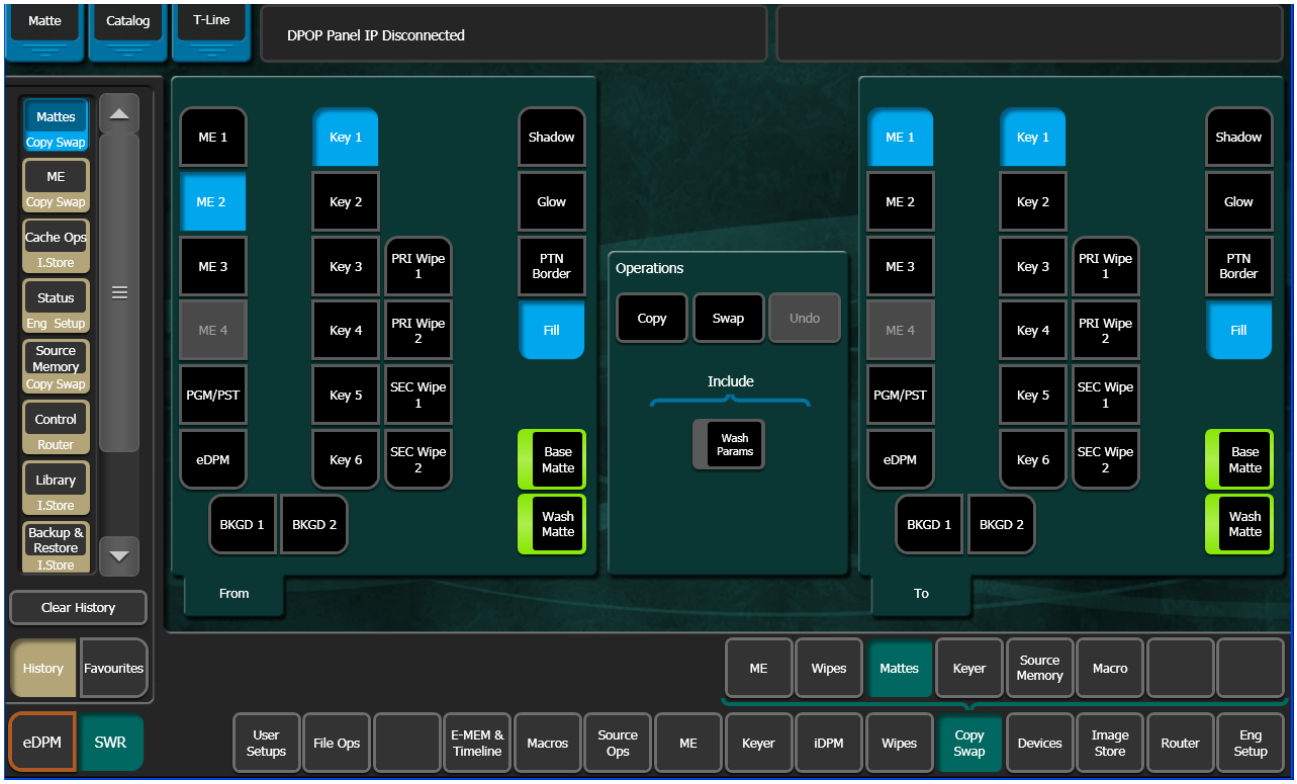
Copy and Swap functions are available for MEs, Keyers, and e-DPM Channels. With Copy you can use the settings of one location at a different location in the system. This can be useful if, for example, an effect has been set up on ME 1 but it needs to be placed on-air using ME 2. You can quickly copy the ME 1 settings to ME 2 and place it on-air, freeing ME 1 for another purpose. Swap can be useful for multiple users, for example one TD prefers to use ME 2 for an effect where another TD prefers ME 3. MEs can be swapped, and swapped back for each preference. When an ME copy or swap is performed, all the ME settings are transferred. This includes the current source selections and all keyer settings.

Copy Swap Menus

The Copy Swap menus are used for copying setups from one part of the system to another. For example, if a chroma key was set up on ME 1, but the operator needs the key while ME 1 is in use, he can copy the keyer's setup to ME 2 and place the chroma key on air there.

The set of menus for Copy and Swap use a common layout. The Copy Swap Mattes menu, shown in Figure 193, typifies the layout shared by the others. Choose a source in the From pane, choose a destination in the To pane, and an action in the Operations pane. After performing a Copy or Swap, one level of Undo is available until another button on the menu is touched.

Figure 193. Copy Swap Menu



Copy Swap ME Menu

The Copy Swap, ME menu is used to copy an entire setup from one ME to another (Figure 194).

Figure 194. Copy Swap ME Menu

Copy Swap Wipes Menu

Wipe parameters can be copied from one wipe to another. This can be done on the same ME (or eDPM) or from one ME (or eDPM) to another.

Transition or complex wipes can be copied to Transition Wipes and Keyer Wipes can be copied to keyer wipes directly. Transition Wipes can be copied to Keyer wipes and vice versa.

Mattes can be included or excluded when copying wipes.

The Copy Swap, Wipes menu is used to copy wipe settings from one location to another (Figure 195).

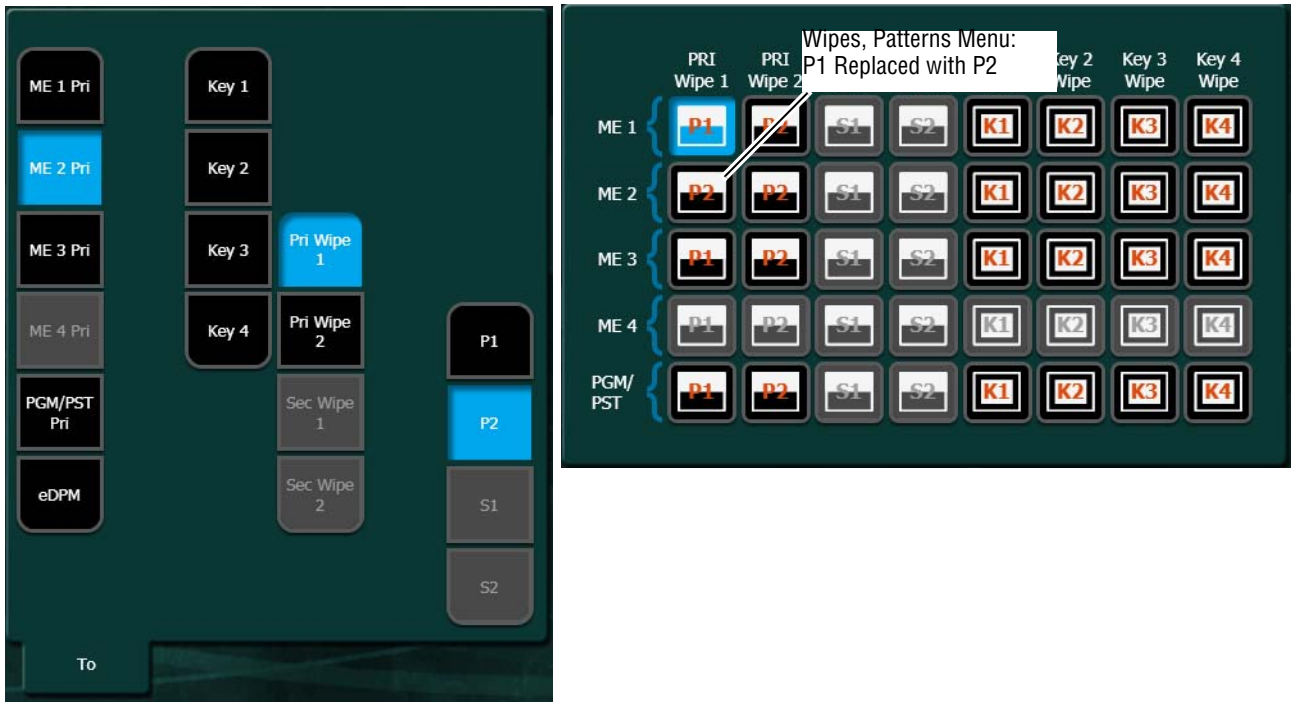
Figure 195. Copy Swap Wipes Menu

Wipe Generator Buttons in the To Pane

When one of the **P1**, **P2**, **S1** or **S2** Wipe Generator buttons is selected in the To pane (Figure 196), and **Copy** is touched, the Primary Wipe or Keyer Wipe selected in the To pane will have that complex generator copied to it. For example, if ME 2, Pri Wipe 1 is selected in the To pane, and **P2** is touched,

when **Copy** is touched P2 replaces the ME 2, Primary Wipe 1-P1 wipe generator as seen in the Wipes, Patterns menu (Figure 196).

Figure 196. Copy Primary Generator



Copying Transition and Keyer Wipes Directly

Copying Transition Wipes

To copy a Transition wipe to a Transition wipe:

1. Touch the ME and Primary (**Pri Wipe 1** or **Pri Wipe 2**) or Secondary (**Sec Wipe 1** or **Sec Wipe 2**) wipe button in the From panel.
2. Turn on or off the **Mattes** button: On highlights green.
3. Touch an ME and Primary Wipe button in the To pane.
4. Touch the **Copy** button.

To copy a Key wipe to a Key wipe

1. Touch the ME and Key Wipe (**Key 1** - **Key 4**) button in the From panel.
2. Turn on or off the **Mattes** button: On highlights green.
3. Touch an ME and Key Wipe button in the To pane, and if desired, choose a **Preset Patt**, **Inhibit Mask**, or **Force Mask** button to copy parameters from/to.
4. Touch the **Copy** button.

Copying Between Transition and Key Wipes

If the keyer (to) is using a complex generator, you can choose which complex wipe will be the destination. The complex wipe generator will be copied and the keyer will be assigned to that generator. The generator is also assigned to the transition wipe (in most cases) and the generator for that transition wipe is also changed. If the Keyer is assigned to a keyer wipe, only a subset of the complex wipe parameters will be assigned.

To copy a Transition Wipe to a Keyer Wipe (and Vice Versa)

1. Touch the ME and Primary (**Pri Wipe 1** or **Pri Wipe 2**) or Secondary (**Sec Wipe 1** or **Sec Wipe 2**) wipe button in the From panel.
2. Turn on or off the **Mattes** button: On highlights green.
3. Touch an ME and Key Wipe (**Key 1** - **Key 4**) button in the To pane, and if desired, choose a **Preset Pattern**, **Inhibit Mask**, or **Force Mask** button to copy parameters from/to.
4. Touch the **Copy** button.

Copying from a Key Wipe to a Transition Wipe works the same, however Keyer wipe values will be copied to the Transition Wipe, not the Wipe Generator.

Copying with eDPM

eDPM Channels can be copied from one to another and between Transition and Key Wipes. eDPM Wipes are simple wipes, similar to the Key Wipes.

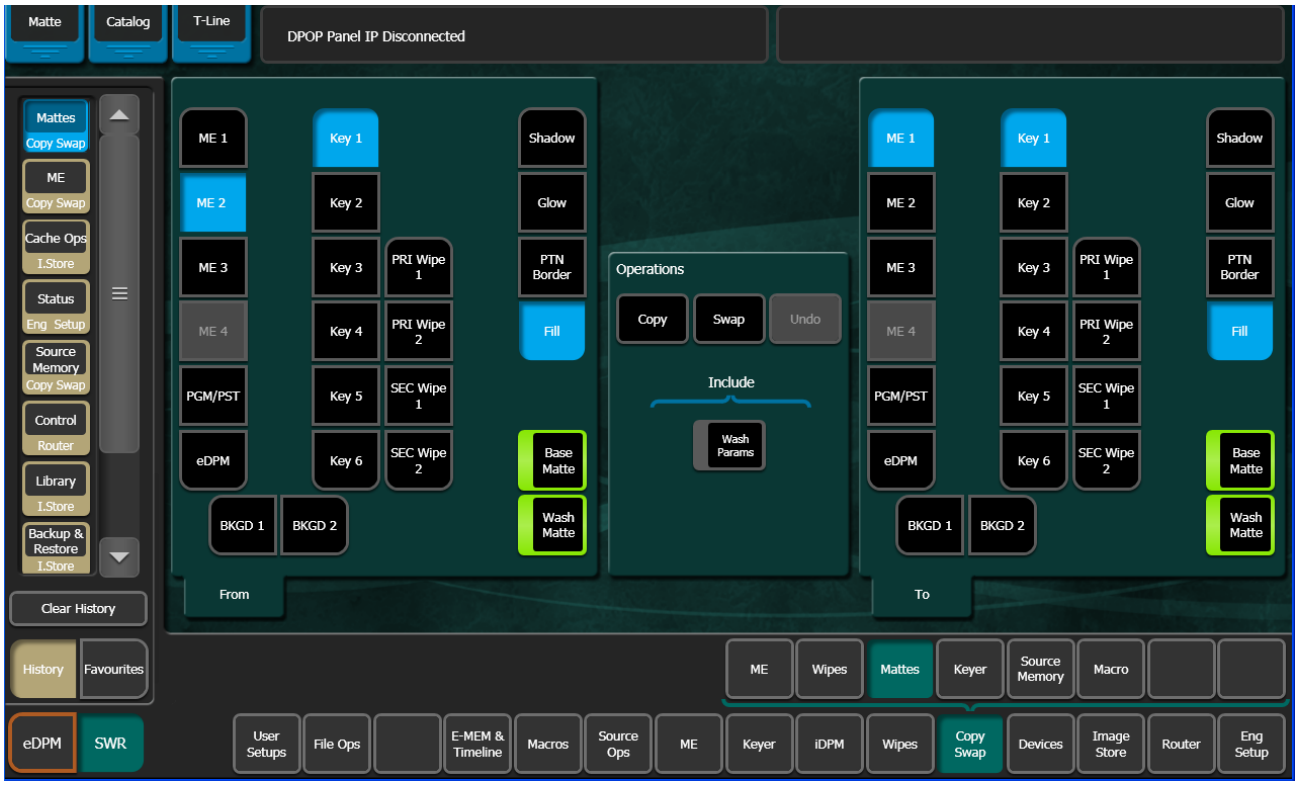
To copy an eDPM Wipe

1. Touch the **eDPM** button in the From or To pane.
2. Touch a channel button (**CH 1** - **CH 4**) with the parameters you wish to copy from or to, and if desired, choose a **Preset Patt**, **Inhibit Mask**, or **Force Mask** button to copy parameters from/to.
3. Touch the **Copy** button.

Copy Swap Mattes Menu

Touch **Copy Swap**, **Mattes** to access the Copy Swap Matte menu (Figure 197).

Figure 197. Copy Swap Mattes Menu

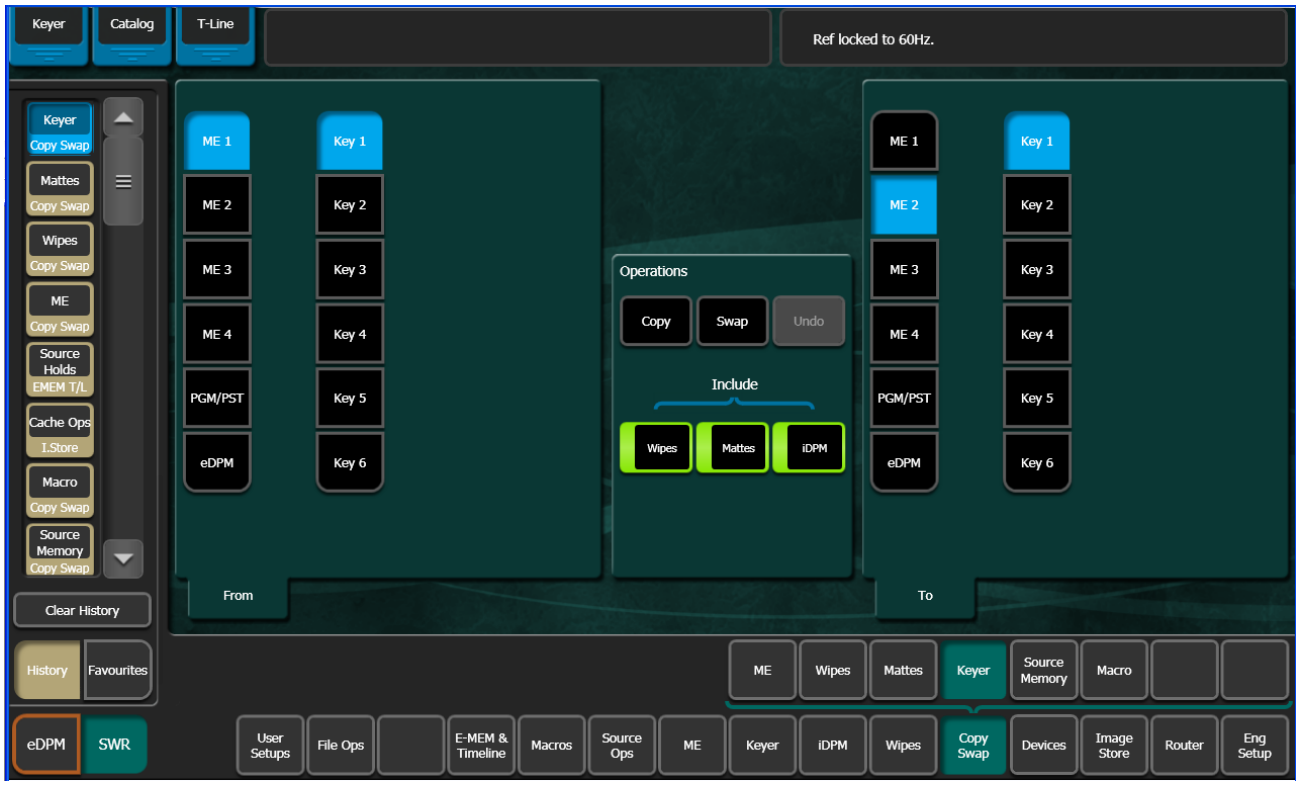


Some combinations of ME level, Key level, and matte generator level do not exist. For example, in Figure 197, the destination matte is ME 1's Trans Wipe. Pst Ptn Border, and Fill are grayed out because they only apply to keyer mattes. Similarly, if Bkgd 1 had been chosen, no further delegation would be needed, so all of the keyer related selections would be grayed out.

Copy Swap Keyer Menu

Touch **Copy Swap**, **Keyer** to access the Copy Swap Keyer menu (Figure 198).

Figure 198. Copy Swap Keyer Menu



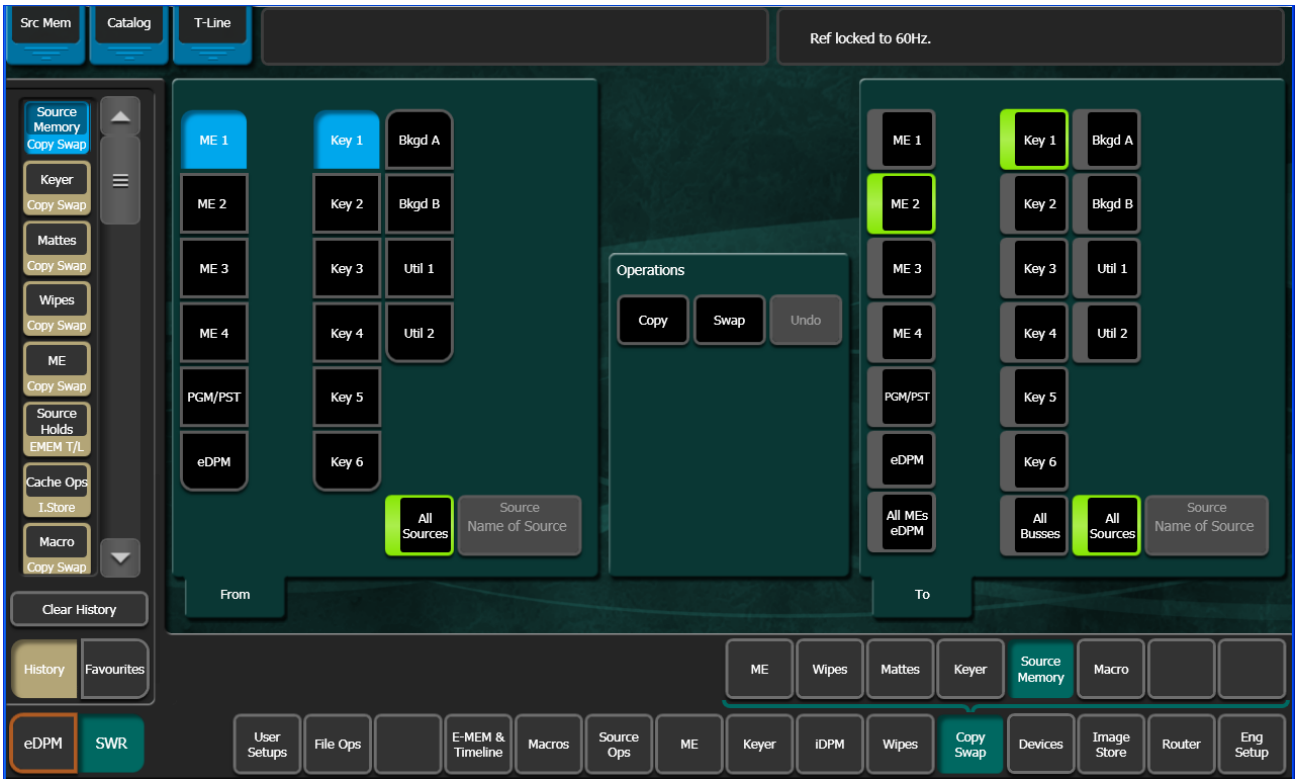
The menu enables the copying and swapping of entire keyers, including the mapping of key cutter and key fill sources. It is a direct copy of what is currently in the chosen From keyer, including key type, key split condition, and all parameters describing the key's behavior.

Wipes, Mattes, and iDPM resources can be included/excluded using the buttons in the *Include* section of the Operations pane (Figure 198).

Copy Swap Source Memory Menu

Touch **Copy Swap**, **Source Memory** to access the Copy Swap Source Memory menu (Figure 199).

Figure 199. Copy Swap Source Memory Menu



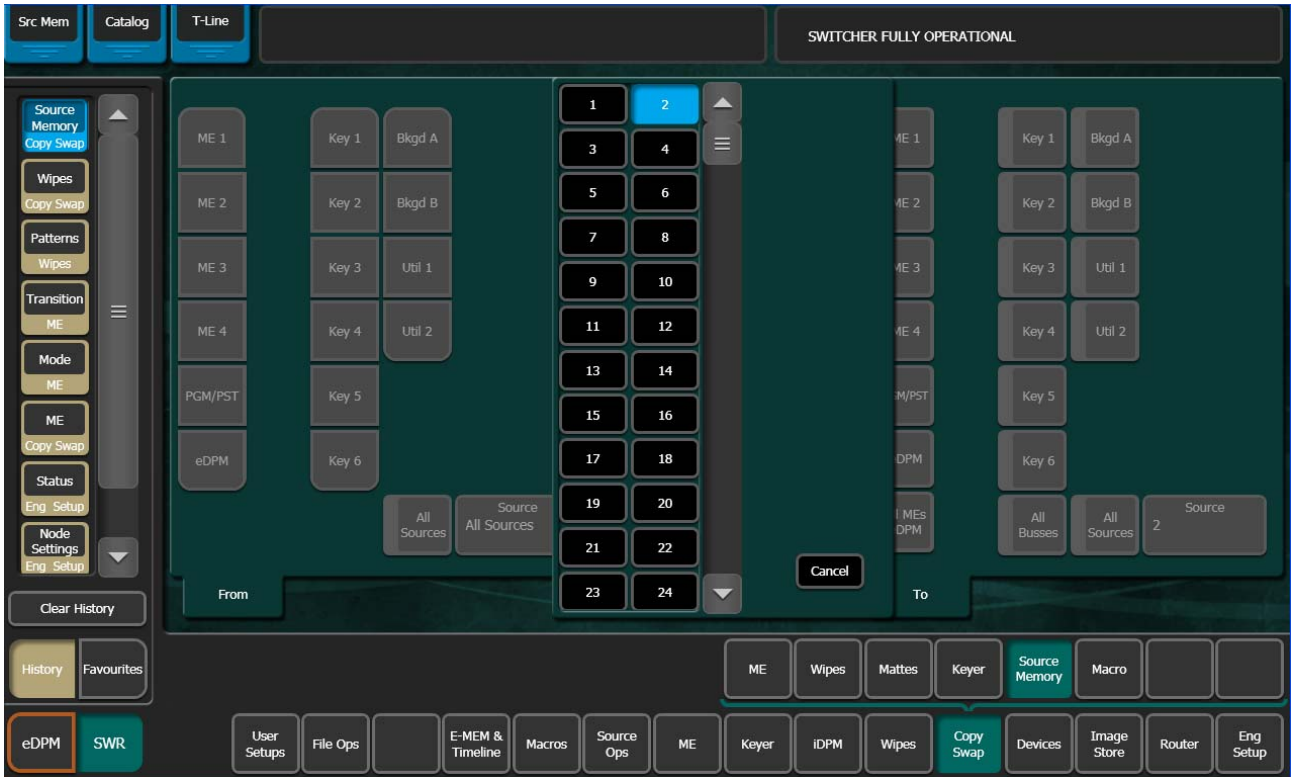
The user delegates the ME/eDPM level, the keyer within the ME/eDPM, and the numbered input source to the keyer. Each source on each keyer has its own source memory, which is a collection of keyer settings specific to that particular intersection (point of use) of the keyer and its input.

The Source is automatically updated to the working buffer's setting for the selected ME/eDPM and keyer.

The user can choose to copy all the sources by touching the **All Sources** button (Figure 199). When selected, the words "All Sources" appear in the Source text box. When **All Sources** is chosen in the From pane, All Sources is automatically put into the To pane. However, if a single source is chosen in the From pane, it is permissible for it to copy into a single source or to All Sources in the To pane. If **All Sources** is chosen in either pane but not both, the **Swap** Action button grays out.

When the **All Sources** button is off, the user can select a single source by touching the Source text box. This pops up the Source Picker menu arranged in numerical order, see Figure 200.

Figure 200. Copy Swap Source Picker Menu



Copying or swapping of keyer parameters applies only to like types of keying.

The key type buttons are simple on/off buttons (not radio buttons), meaning the user may copy/swap any or all of the parameters for multiple key types in a single operation. When the user selects a different ME (or eDPM) or keyer, the key type buttons automatically default to the setting in the working buffer. Since the working buffer will only have a single keying type selected, then the default key type configuration displayed on this menu will always be a single keyer level on. However, the user may turn on additional key types and override the default.

In the To pane there is a **Default** button. If this button is selected, the From key selectors and source selector, gray out, because the source for copying is the set of defaults written in the engineering setup rather than specific bus, keyer, and input source memory. The **Swap** button grays out. The transfer of default parameters go only one direction, from default storage to source memory.

Several defaults can be transferred in a single operation. The To pane's selectors change to on/off LED buttons. The user can choose any combina-

tion of default. The following scenarios might exist allowing the user to copy:

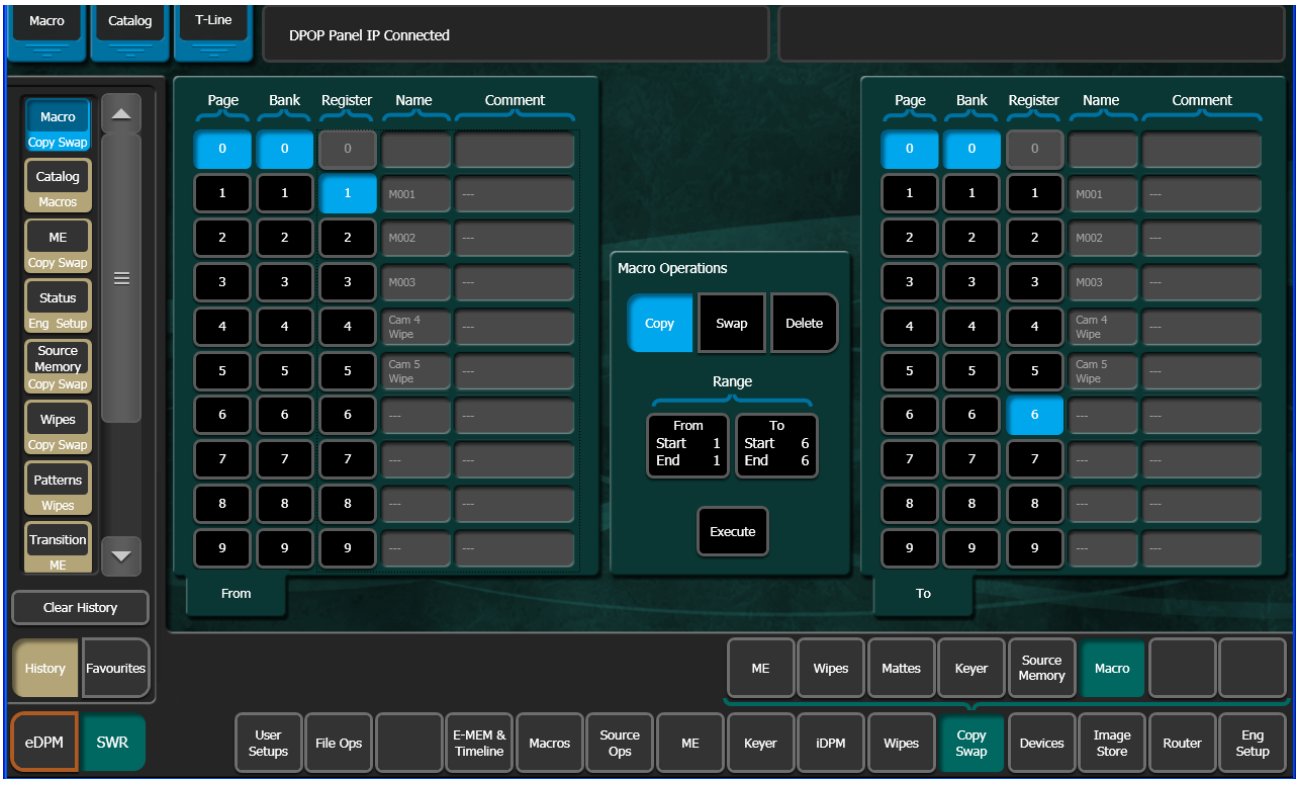
- A specific default source and a specific bus,
- A specific source to all buses,
- All sources on a specific bus,
- All sources on an ME, or
- All sources to all buses on all MEs.

Copy Swap Macro Menu

The Copy Swap Macro menu (Figure 201) is accessed by touching **Copy Swap**, **Macro**.

Note The functionality of this menu is duplicated in the Macros, Macro Ops menu for convenience.

Figure 201. Copy Swap Macro Menu

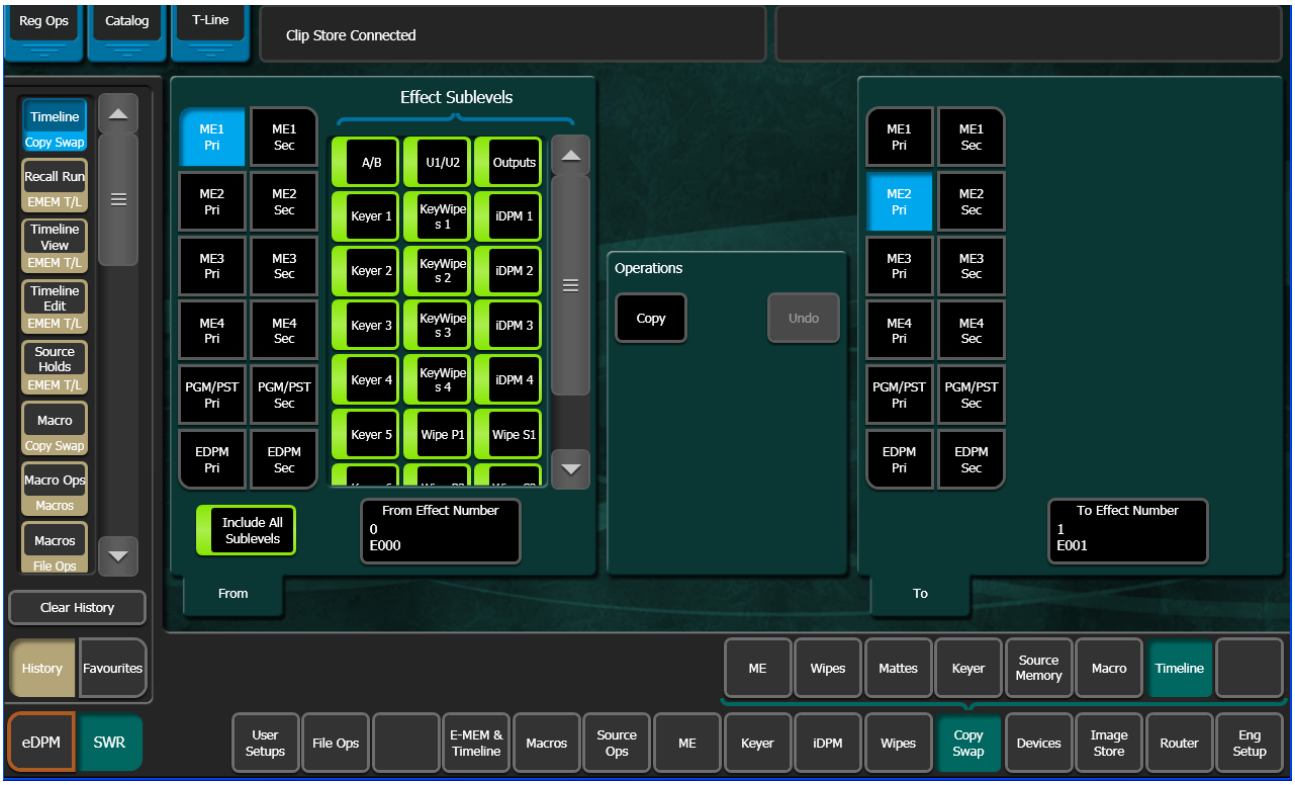


Macro register information can be moved from one register to another with this menu by selecting the registers in the From and To scrolling panes, then touching the **Copy** or **Swap** buttons in the Macro Operations pane (Figure 201). The soft knobs and data pads on the upper right can be used to quickly select specific register numbers in each pane.

Copy Swap Timeline Menu

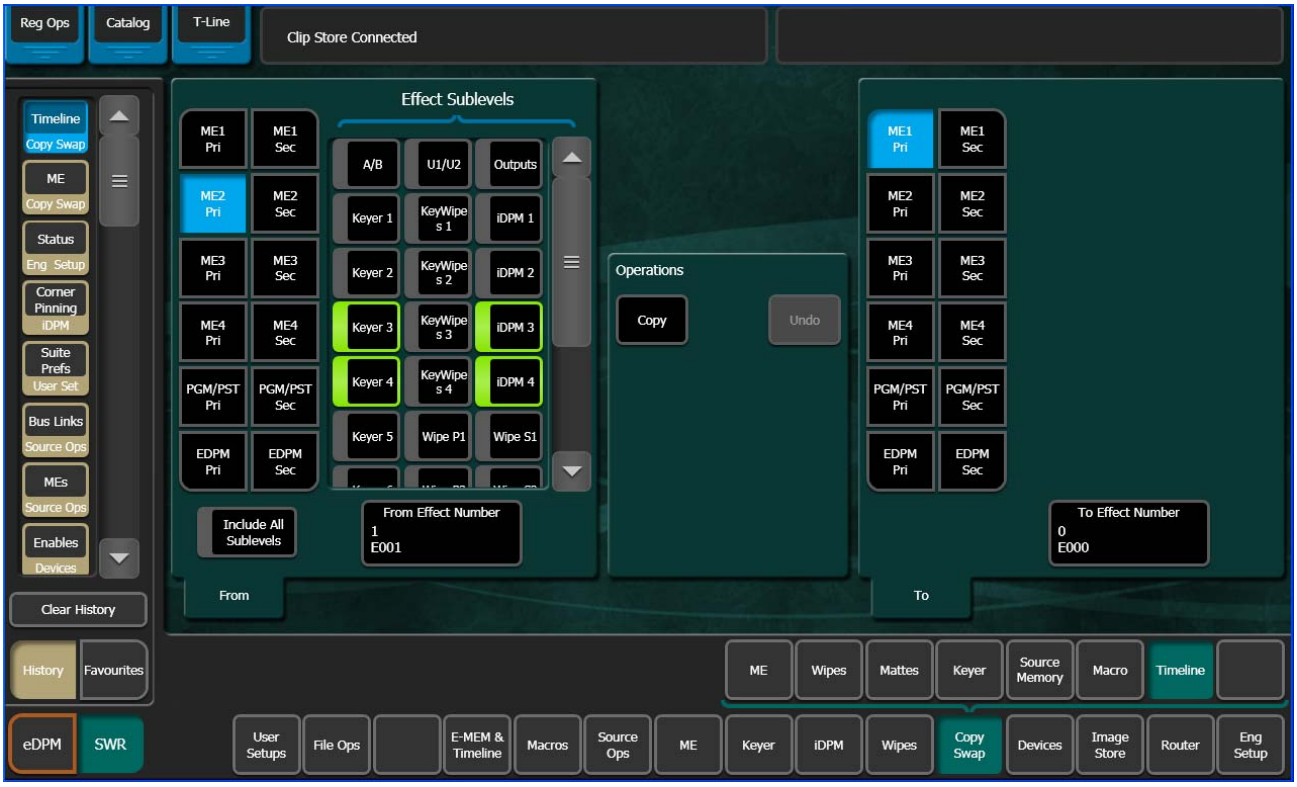
The Copy Swap Timeline menu (Figure 202) is accessed by touching **Copy Swap**, **Timeline**.

Figure 202. Copy Swap Timeline



Complete E-MEM timelines containing multiple keyframes can be copied from one ME to another ME or the eDPM and vice versa. All sub-level information can be included using the **Include All Sublevels** button (Figure 202) or with this button off, sub-levels can be excluded from being copied by touching the sub-level's enable button (Figure 203).

Figure 203. Copy Swap Timeline sub-level Selection



For example, ME2 Pri, Effect Register 1, has two keyers with iDPM parameter settings you want as part of an effect (Figure 203) but you want to use those sub-levels with the parameter settings in Effect Register 0, on ME1 Pri. One way to accomplish this is to copy the Keyer/iDPM sub-level information of Effect ME2 Pri, Effect Register 1, to Register 0, on ME1 Pri:

1. Touch the **From Effect Number** data pad (Figure 203) and enter the effect register number you want to copy ‘from’ in the Enter Source Register pop-up keypad.
2. Touch the **To Effect Number** data pad (Figure 203) and enter the effect register number you want to copy ‘to’ in the Enter Destination Register pop-up keypad.
3. With the **Include All Sublevels** button off, touch the **Keyer 3**, **Keyer 4**, **iDPM 3** and **iDPM 4** sub-level buttons to turn them on (alternatively, you can turn on Include All sub-levels and individually touch each sub-level to disable them).
4. Touch the **Copy** button.
5. Recall the destination register to see the result (touching the Copy button does not trigger a recall).

The result is that only Keyer 3, Keyer 4, iDPM 3, and iDPM 4 are copied to Register 0, on ME1 Pri. All other effect parameter settings are the same.

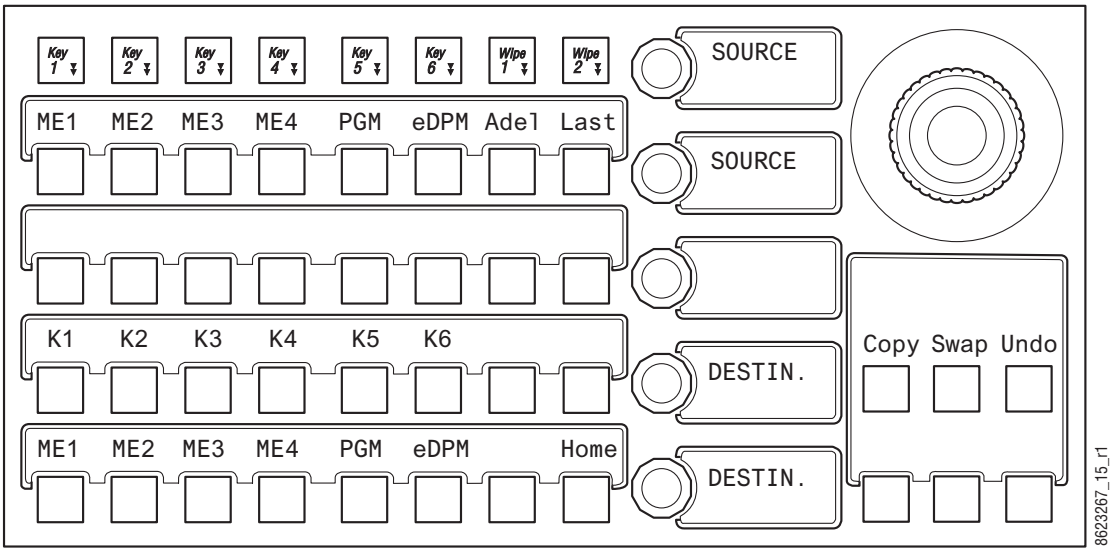
Definable sub-levels can also be part of the copied register.

Copy/Swap with the Multi-Function Module

Use the **Copy** and **Swap** mode buttons in the Multi-Function Module to enter those modes and copy or swap ME, Keyer, and e-DPM settings between MEs (Figure 204).

The **Wipe**, **Matt**, and **DPM** buttons can be turned on and off (default is on) in the MFM. With an ME and keyer selected in either Copy or Swap menu delegations, the buttons will be available therefore you can include/exclude those parameters from the copy/swap operations.

Figure 204. Copy Swap—Multi-Function Module



ME Copy/Swap

In Copy or Swap mode, the ME/Keyer/e-DPM sources are selected from the source buttons in the top two button rows in the MFM and destinations are selected in the bottom two rows (Figure 204).

Note ME Keyers can be copied/swapped with e-DPM channels and vice versa.

To Copy an ME:

1. From the Home mode in the Multi-Function Module, press the **Copy** button.
2. Select the Source ME/Key (Figure 204).
3. Select the Destination ME/Key (Figure 204).
4. Press the **Copy** button (below the joystick).

To Swap MEs:

1. From the Home mode in the Multi-Function Module, press the **Swap** button.
2. Select the Source ME (Figure 204).
3. Select the Destination ME.
4. Press the **Swap** button (below the joystick).

Keyer Copy/Swap

To Copy Keyers:

1. From the Home mode in the Multi-Function Module, press the **Copy** button.
2. Select the Source ME (Figure 204).
3. Select a Source Keyer (**K1-K6**) (Keyers can also be copied to e-DPM Channels and vice versa, see *To Copy e-DPM Channels:*).
4. Select the Destination ME.
5. Select a Destination Keyer (e-DPM Channel).
6. Press the **Copy** button (below the joystick).

To Swap Keys:

1. From the Home mode in the Multi-Function Module, press the **Swap** button.
2. Select the Source ME (Figure 204).
3. Select the Destination ME.
4. Select a Destination Keyer (Keyers can also be swapped with e-DPM Channels and vice versa, see *To Swap e-DPM Channels:*).
5. Press the **Swap** button (below the joystick).

e-DPM Copy Swap

To Copy e-DPM Channels:

e-DPM Channels can also be copied to Keyers and vice versa.

1. From the Home mode in the Multi-Function Module, press the Copy button.

2. Press the Source **eDPM** button (Figure 204), **K1-K4** buttons of the top row are now assigned as e-DPM channels Ch1-Ch4 (the button legends remain **K1-K4**).
3. Select a Source e-DPM channel.
4. Select the Destination **eDPM** button (**K1-K4** destination button LED labels change to **Ch1-Ch4)**.
5. Select a Destination e-DPM channel.
6. Press the **Copy** button (below the joystick).

To Swap e-DPM Channels:

e-DPM Channels can swapped with Keyers and vice versa.

1. From the Home mode in the Multi-Function Module, press the Swap button.
2. Press the Source **eDPM** button (Figure 204), **K1-K4** buttons of the top row are now assigned as e-DPM channels Ch1-Ch4, however the button legends remain **K1-K4**.
3. Select a Source e-DPM channel.
4. Press the Destination **eDPM** button, **K1-K4** destination button LED labels change to **Ch1-Ch4**.
5. Select a Destination e-DPM channel.
6. Press the **Swap** button (below the joystick).

Undo Button

The **Undo** button (below the joystick) reverses a copy or swap operation that has been performed. Only one level of undo is supported. For example, pressing **Undo** a second times does not return the MEs to their previous states before the first Undo was performed.

Bus Linking

Overview

You can create single and multiple bus links, referred to as *Parallel* and *Cascading* links. Also, you can define and associate one of the 15 new definable Source Substitution Tables to a bus (each bus link can be associated with any source table), and save bus links as part of an E-MEM. Bus links are E-MEMable and their enables are Keyframeable.

Note Bus links created and E-MEMs learned using versions earlier than Kayenne 2.0 must be rebuilt after an upgrade.

Bus Link is an E-MEM sub-level in the User Setups, Suite Prefs, E-MEM Prefs menu and therefore all the features and controls of a Kayenne switcher sub-level apply.

Examples

A typical use of Bus Linking is to have the buses of one ME follow the selections on another with a few source substitutions. For example, if there's a special camera only used for the primary customer's feed, a Linked bus used for a secondary customer's feed might select a wide shot whenever that camera was selected on the Controlling bus.

Another example is to prevent feedback when selecting a studio wide shot. Many modern sets include monitors, and these will typically be fed from an aux bus of the switcher with program output selected. When the wide shot camera is selected on PGM-PST A bus, the camera might pick up the monitor wall and generate video feedback. This can be prevented by associating all source selections on PGM-PST A except the wide shot camera to select PGM-PST A on the aux bus. The wide shot camera source is then associated to an alternative graphics source on the aux bus appropriate to the show.

Another possibility is to program the ME 3 A row as an extension of the PGM-PST A bus for shows that need instant access to more than 32 sources without pressing the Shift button. In this case ME 3 A is the Controlling bus and PGM-PST A is the Linked bus. In this scenario, the easiest way to set this up is to link the buses and map the sources one to one, then set the shift preference for ME 3 A to Shifted. An alternative method is to map each source on ME 3 A to a specific alternate source on PGM-PST A. Other ME 3 buses could be linked for additional extended selection. A third alternative is to map all sources on ME 3 A to select ME 3 A on PGM-PST A.

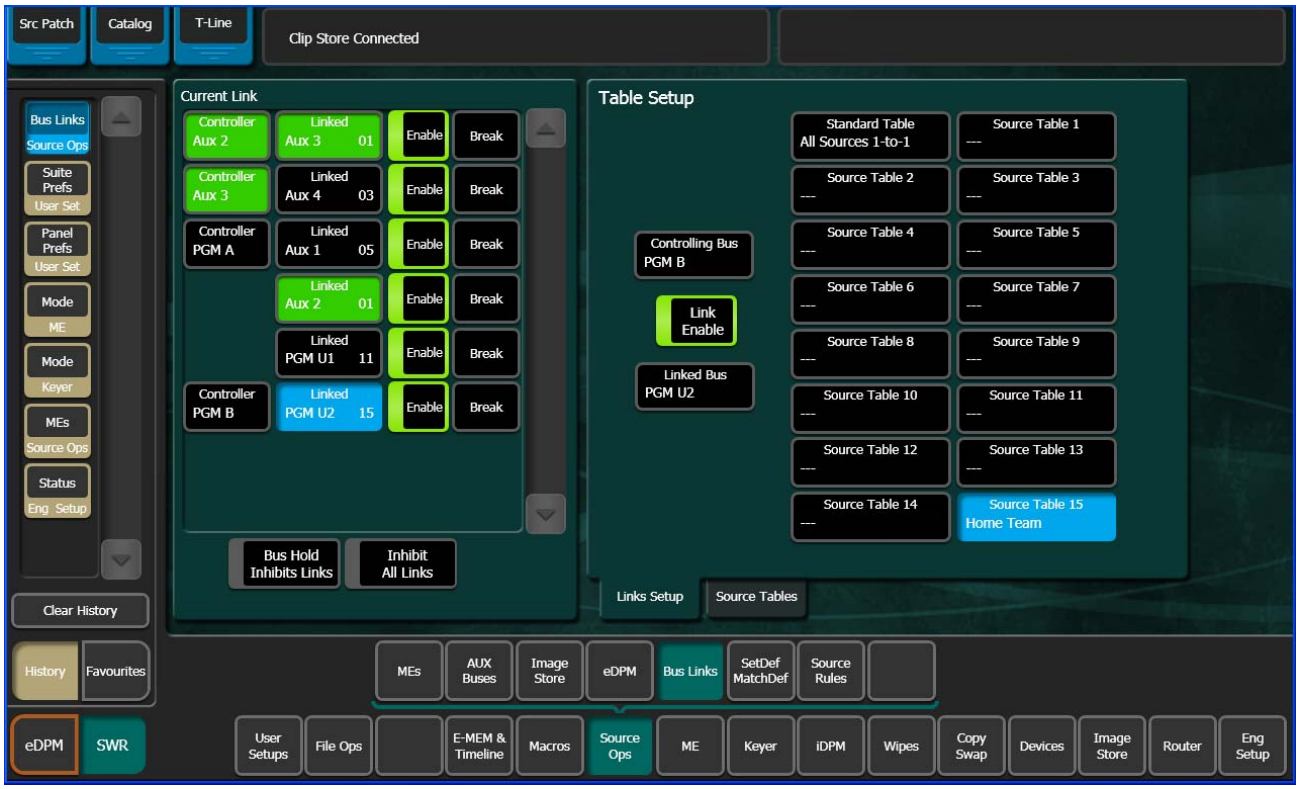
Bus Linking Menu

One-to-one (Single), one-to-many (Parallel), and one-to-one-to-one (Cascading) bus links can exist simultaneously in the Bus Links, Links Setup menu.

The Bus Links menu is divided into two tabs, the Links Setup menu and the Source Tables menu. The Links Setup menu has the Current Link pane (Figure 205, left) and the Table Setup menu (Figure 205, right).

Use the Bus Links menu to link, enable/disable, break, and choose the source table for bus links. (*Standard Table All Sources 1-to-1* is the default Source Table.)

Figure 205. Multiple Bus Links

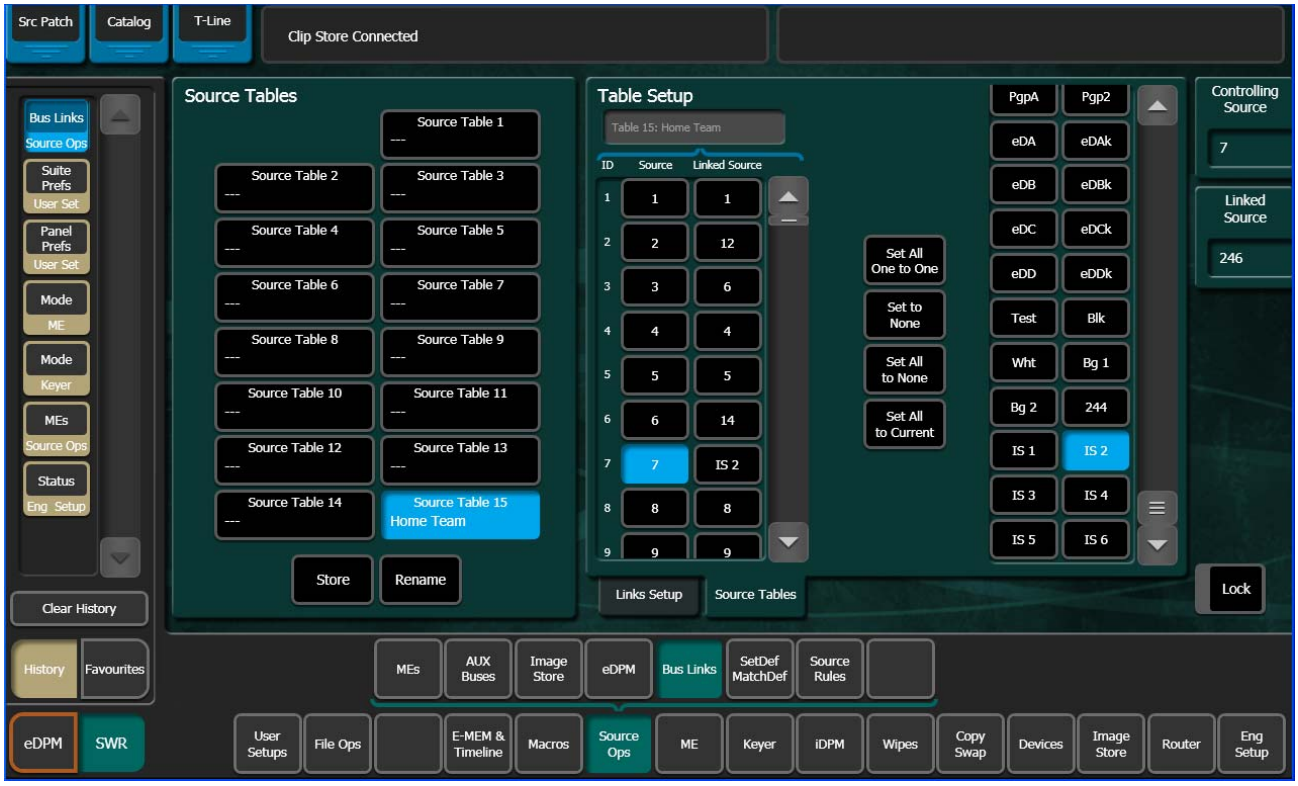


Selected **Controller** bus and **Linked** bus buttons turn blue when selected in the Current Link pane. In the example in Figure 205, the Linked bus button **PGM U2** is the selected button.

The Source Tables menu has the Source Tables pane (Figure 206, left) and the Table Setup pane (Figure 206, right). The Source Tables menu is used to

select source substitutions within source tables and create a named relationship between the source table and the links to which they are assigned.

Figure 206. Source Tables



Source Substitution Tables

There are 15 configurable *Source Tables*. Each can be assigned to one, many, or all bus links once configured in the Source Tables menu (Figure 207).

A source table (or lookup table) can be configured and applied to every bus link. This frees up resources and allows a faster more efficient way of applying the same source substitutions to multiple bus links. Also, you are able to create named relationships between the source table and the bus links to which they are assigned.

The *Standard Table All Sources 1-to-1* Source Table is the default. One of the other 15 configurable Source Tables can be assigned once configured.

Table Setup, Linked Source Buttons

Use the following for Source Table setup:

Set All One to One—Sets all sources one-to-one.

Set to None—Sets selected source's Linked Source to none (blank).

Set All to None—Sets all Linked Sources to none (blank).

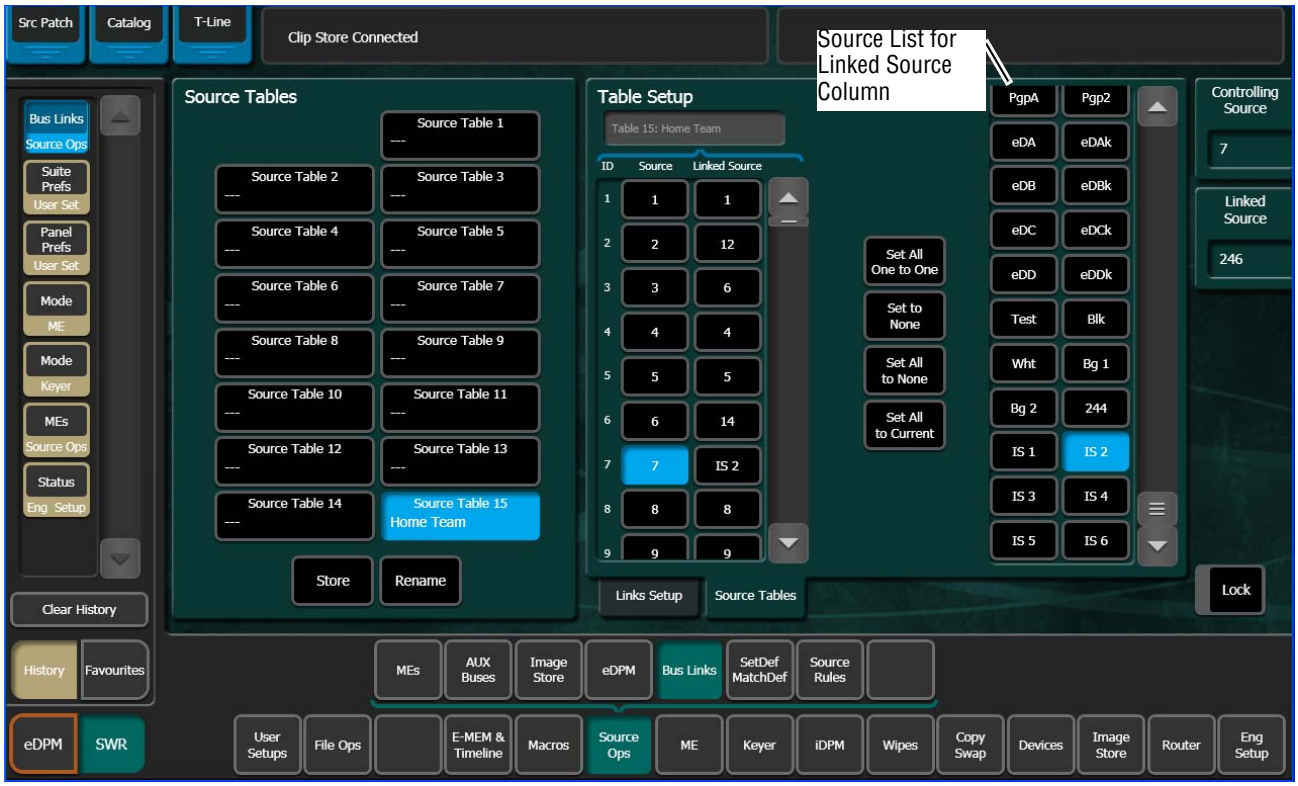
Set All to Current—Sets all Linked Sources to the currently selected Source (including none if defined).

Store button—Allows the current source table to be stored (copied) to another source table.

Configuring Source Tables

In the example in Figure 207, Source Table 15 (Engineering ID) has been configured with source substitutions using the Source Tables menu and given the Source Table Name "Home Team". This Source Table can now be easily identified and assigned to one or many bus links in the Bus Links, Links Setup menu (Figure 205).

Figure 207. Source Tables



To add/rename a source table name:

Give a source table a descriptive Source Table Name or rename a source table by touching the **Rename** button (Figure 205), entering the name into the pop-up keyboard, and touching **Enter**.

To configure a source table with source substitutions:

Configure source substitutions for source tables in the Table Setup pane (Figure 207). Use the Linked Source buttons for faster configuration (see *Table Setup, Linked Source Buttons* *on page 309*).

The default is one-to-one, i.e. Source 1, Linked Source 1, Source 2, Linked Source 2, etc. You can substitute the current Linked Source (Linked Source column) with any source from the scrolling Source List (Figure 207, right):

1. Touch a source table in the Source Tables list (right).
2. Rename the Source Table (recommended).
3. Touch a source in the Linked Source column of the Source/Link Source scrolling list the Table Setup pane.
4. Touch the substitute source in the scrolling Source List (Figure 207, right).

   The Linked Source changes to reflect your selection.
5. Repeat the first two steps for all source substitutions.

   The Source Table will be updated with substitutions and Source Table Name in the Links Setup menu, Source Table list.

Storing (Copying) Source Table Substitutions to another Source table

Source Table configurations from one source table can be stored (copied) to another using the **Store** button.

To store source table configurations to another source table:

1. Touch the source table from the Source Tables scrolling list you wish to store (copy) from, to another source table.
2. Touch the **Store** button.
3. Touch the source table you wish to store the configuration to (destination).

Changing Source Tables for a Bus Link

The Source Table is assigned to the bus link.

To change the source table for the bus link:

Touch the **Linked** bus data pad in the Link Setup menu, Current Link pane, for the bus link you wish to change the Source Table. The Source Tables column becomes available. Touch another source table for the bus link.

Source Table File Operations

Source Tables are part of Kayenne file operations: File Ops, Source Tables menu. You can perform all the same file operations: copy, paste, save, load, etc., as with other File Ops menus. For more about File Operations, see *File Operations on page 153*.

Linking Busses

Linking Busses one-to-one

1. In the Links Setup menu, touch the **Controlling Bus** data pad.
2. Touch the ME/Aux/eDPM menu tab.
3. Touch the desired bus or eDPM input.
4. Touch the **Linked Bus** data pad and repeat Steps 1-3.

   The Link Setup menu displays the newly linked busses in the Current Link pane. The link is enabled and the Standard Source Table is selected as the default (Source Tables are grayed out).

   You can disable or break the link using the **Enable**/**Break** buttons in the Current Link pane (the **Enable** button in the Table Setup pane will also enable/disable the selected link).

Linking Multiple Busses

Multiple bus linking is divided into two categories: *Parallel Links* and *Cascading Links*.

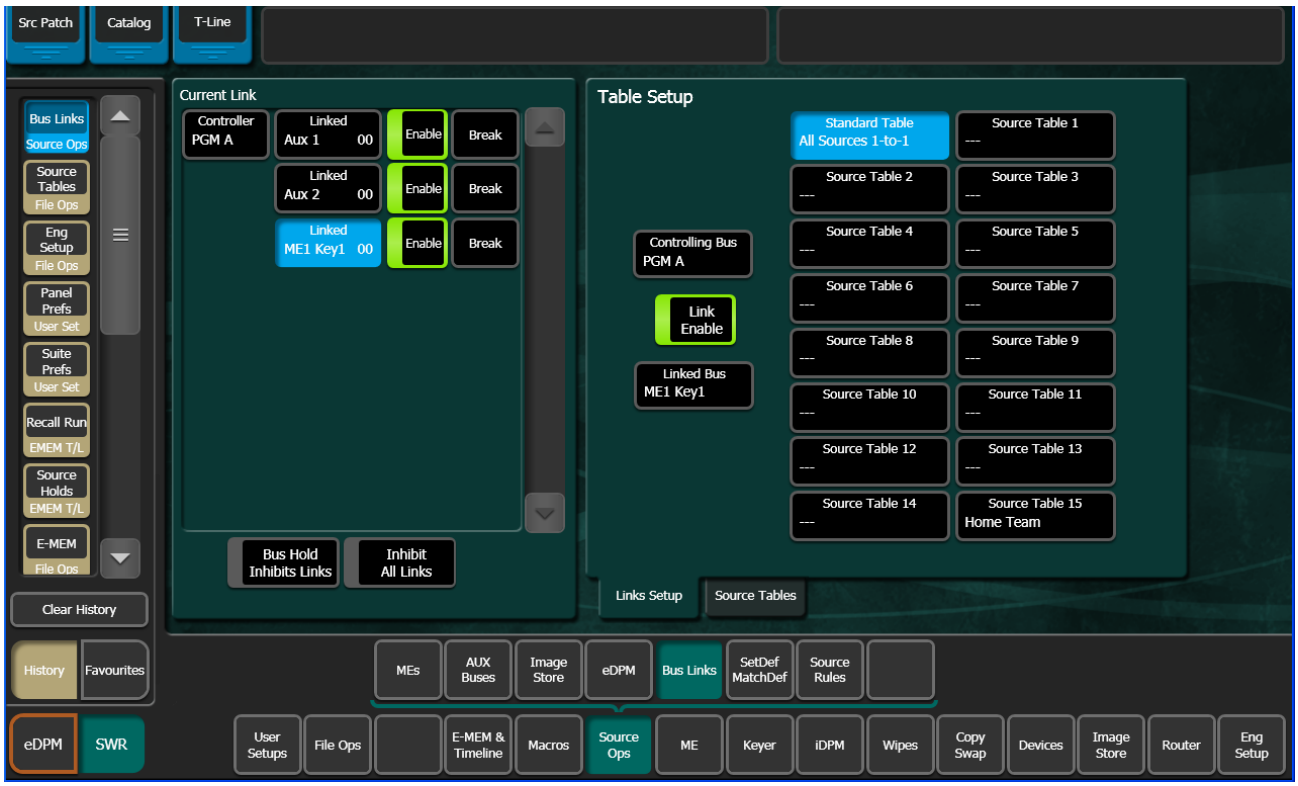
Touching the **Controlling Bus** or **Linked Bus** data pads in the Bus Links, Links Setup menu displays the Bus Picker pop-up menu for each, from which to choose busses for the link (Figure 208).

Figure 208. Bus Picker Pop-up

Parallel Bus Links

Parallel Links allow the controlling bus to control more than one linked bus. In the example in Figure 209, PGM A is the controlling bus and Aux 1, Aux 2, and ME1 Key1, are all linked in parallel to PGM A.

Figure 209. Parallel Links



To create parallel links:

1. Touch the **Controlling Bus** data pad in the Table Setup pane; the Controlling Bus selection menu is displayed.
2. Touch the **ME busses**, **Aux Busses**, or **eDPM Inputs** tab and touch the desired bus. The menu closes and returns to the Bus Links menu. The selected bus is displayed in the **Controlling Bus** data pad (in the example in Figure 209, the selected bus is PGM A).
3. Touch the **Linked Bus** data pad in the Table Setup pane; the Linked Bus selection menu is displayed.
4. Touch the **ME busses**, **Aux Busses**, or **eDPM Inputs** tab and touch the desired bus. The menu closes and returns to the Bus Links menu. The selected bus is displayed in the **Linked Bus** data pad.

5. Touch the **Linked Bus** data pad again and touch the next bus you wish to link to the controlling bus. The Bus Links menu now displays in the Current Link pane, the controlling bus and two linked busses that are linked to the controlling bus (in the example in Figure 209, **Controller PGM A** and **Linked Aux 1** and **LInked Aux 2**).
6. If desired, assign different source tables to the bus links:
   a. Touch a **Linked** Bus data pad in the Current Link pane.
   b. Touch a source table in the Table Setup pane.

Cascading Bus Links

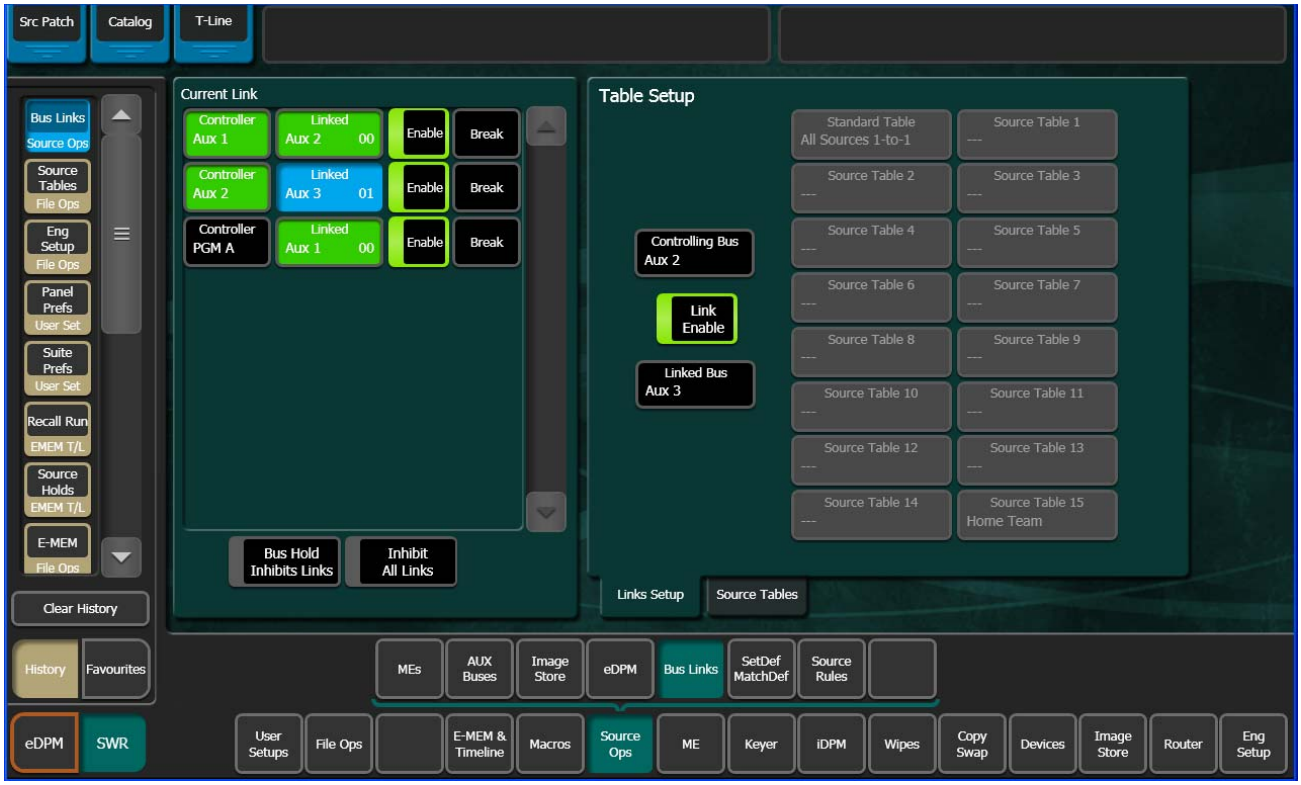
In *Cascading Links*, a controlling bus (A) has a linked bus (B) which in turn acts as the controlling bus for another linked bus (C), and so on. Changing a source on the controlling bus (A) will cause a change on both linked busses (B and C).

In the example in Figure 210, Controller PGM A controls Linked Aux 1, Linked Aux 1 is the controller for Linked Aux 2, and Linked Aux 2 is the controller for Linked Aux 3.

Button Color Definitions—The following applies for Cascading Links in the Current Link pane, as seen in the example in Figure 210:

- **Black**—Controller but not controlled: PGM A Bus is a controller but is not controlled so it is black in color.
- **Green**—Controlled and controls: Aux 1 Bus and Aux 2 Bus although controllers, are also controlled so they are green in color.
- **Blue**—Aux 3 Bus is controlled but is not a controller therefore it is blue.

Figure 210. Cascading Bus Links



To create cascading links:

1. Touch the **Controlling Bus** data pad in the Table Setup pane; the Controlling Bus selection menu is displayed.
2. Touch the **ME busses**, **Aux Busses**, or **eDPM Inputs** tab and touch the desired bus. The menu closes and returns to the Bus Links menu. The selected bus is displayed in the **Controlling Bus** data pad (in the example in Figure 210, the selected bus is PGM A).
3. Touch the **Linked Bus** data pad in the Table Setup pane; the Linked Bus selection menu is displayed.
4. Touch the **ME busses**, **Aux Busses**, or **eDPM Inputs** tab and touch the desired bus. The menu closes and returns to the Bus Links menu. The selected bus is displayed in the **Linked Bus** data pad.
5. Touch the **Controlling Bus** data pad again, in the Table Setup pane; the Controlling Bus selection menu is displayed. Touch the same bus as is currently displayed in the **Linked Bus** data pad (your previous selection).

   The linked bus is now also a controlling bus.

6. Touch the **Linked Bus** data pad again in the Table Setup pane and select another linked bus.

   Repeat this process for each controlling and linked bus you wish to add to the cascading links.

7. If desired, assign different source tables to the bus links:

   a. Touch a **Linked** Bus data pad in the Current Link pane.

   b. Touch a source table in the Table Setup pane.

Note that the **Inhibit All Links** button at the bottom of the Current Links pane must be off for the links to be active.

Bus Linking Restrictions

- The Switched Preview, Primary Preview, and Image Store input buses cannot be configured as Linked buses.
- An Aux bus associated with a DPM cannot be configured as a Controlling bus. However, these buses may be configured as Linked buses.

Link Management

Individual bus links are enabled and disabled with the **Link Enable** button in the Controlling bus pane. When enabled, commands will be sent from the Controlling bus to the Linked bus, provided all links are not inhibited (see below). Link Enable is keyframeable.

Other controls on this menu can be used to manage bus links.

Bus Hold Inhibits Links – This control affects the behavior of the Control Panel **Hold** button for all Linked buses. When **Bus Hold Inhibits Links** is On and the **Hold** button on a Linked bus is also On, that Linked bus will ignore bus link commands and will not change sources when Controlling bus sources change. Note that the **Hold** button retains its existing functionality, keeping that bus from changing sources when an E-MEM register is recalled.

Inhibit All Links – Overrides all **Link Enable** settings to disable all active bus links. This does not change the individual **Link Enable** settings, however. Turning **Disable All Links** off will re-enable any bus links with **Link Enable** on.

Bus Linking Operation

Once the Bus Linking associations have been established and are enabled, selecting a source on a Controlling bus that is associated with a source on a Linked bus will make the Linked bus select its associated source. The following special operating rules apply.

Source Override

Holding down a source select button on a Linked bus prevents that bus from changing its sources when Controlling bus source selections change.

Bus Pair Rules

Kayenne source selection buses can operate in pairs. ME keyer buses operate in video fill/key cut mode. Aux buses can be configured in pairs, either as video fill/key cut or as video/video for external DPMs. When a bus pair is involved in bus linking, the following rules apply:

- Key cut selections on video fill/key cut bus pairs does not affect the key cut source on a linked bus (split key cut selections don’t link).
- The fill/A side of the Controlling bus is always sent to the fill/A side of the Linked bus.
- If the Controlling bus is in video/video mode, the B side selection will be sent to the Linked bus.
- If the Linked bus is in video-video mode, a B side source change from the Controlling bus will change the Linked bus's B side.
- A video only bus behaves as if it is the A side of a bus pair.

Device Control Operations

The Kayenne system can control devices like DDRs, VTRs, character generators, etc., and can also control the Image Store stills and GPIs to any external device. Kayenne device control only supports devices that have been associated with Kayenne sources.

Note External Devices are configured for control in the Ports & Devices, External Devices menu. See the *Kayenne Installation & Service Manual* for more information.

The following provide device control operations from the Kayenne system:

- System Bar,
- Local Aux Module,
- Multi-Function Module,
- Device Control Module Option, and
- The Menu Panel or Kayenne Menu on a PC.

System Bar Device Control

Device control from the System Bar is performed in the Device Control Groups (Two for a 1-ME Kayenne system and six for a 2-ME (2-ME Stripes) and larger), which consists of a 16 character Status Display (displays the current clip) and Play, Cue/Load, Next Clip, and Previous Clip buttons.

Note **Off Air Advance** and **Auto Start** buttons are accessed from the Kayenne menu and the Multi-Function Module (**Devs**, **ADV/APLY**), not on the System Bar. Also, Rewind, Fast Forward, Stop, Jog +/Jog -, Mark In, and Gang Rolls are not supported on the System Bar (but are supported in the Device Control Module).

To associate a device with a Device Control Group, hold down a source select button that has a device attached, then press the PREV and NEXT buttons together (or you can press and hold down the PREV and NEXT buttons and then press a source button).

Device Control Group buttons:

- **Play**—Causes the associated device to play (pressing again causes device to pause).
- **Cue/Load**—Pressing after a PREV or NEXT button press causes a load and cue command to be sent to the device, subsequent presses causes a command to be sent to the device to 'cue' to its in-point.
- **Next Clip**/**Previous Clip**—Causes the previous or next clip name in the frame-maintained clip stack list (per device), to be brought into the Status Display window.

Local Aux Module Device Control

Ganging

The Gang Control function in the Local Aux Module allows a single point of control for multiple devices (Figure 211). The points of control are:

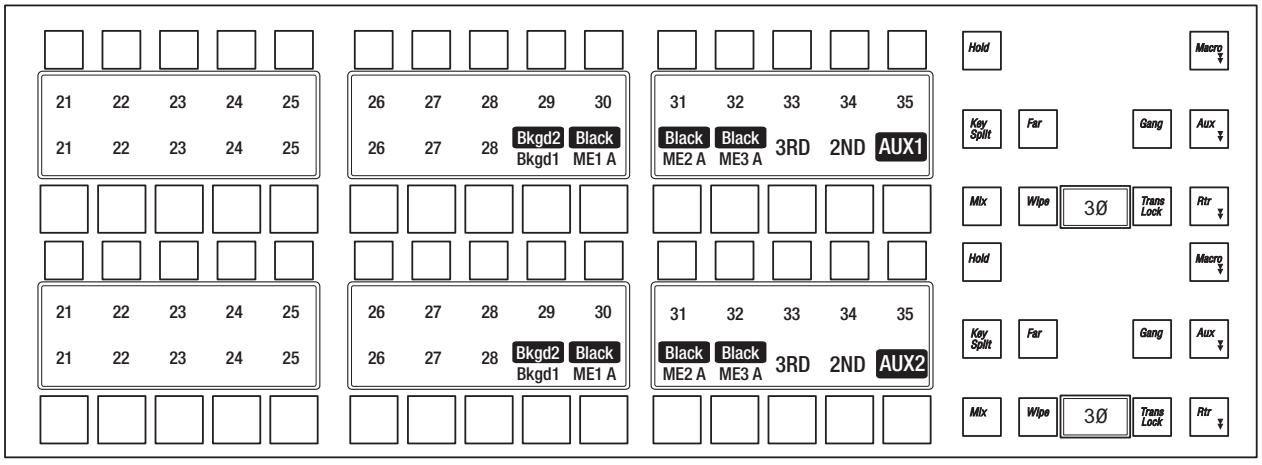
- The right-most Device Control Group on the System Bar, and
- The Device Control Module option.

Note An Aux bus link overrides a set delegate association in the System Bar.

Kayenne systems equipped and configured properly support device control of Profile DDRs and VTRs. The Gang function permits control of multiple external devices with the same set of panel controls. Devices can be ganged so they play together at the same time (original and backup tapes, for example).

Note The Kayenne Gang function does not synchronize multiple devices and there is a possibility devices may not respond to a Play or Stop command at precisely the same time. This may cause a slight offset in playback of multiple clips.

Figure 211. Local Aux Module



To set up a gang for control, perform the following:

1. Press one of the **Gang** buttons on the Local Aux Module (right). GANG is displayed in the top row however the button displays are blank. The bottom row display shows sources mapped to buttons on the Local Aux Module, in the Panel Prefs, Button Mapping menu. Buttons are colored white and are low tally.

2. Press the source select buttons of the devices to be ganged. The source select button for each device will change to green, high tally as they are pressed.

The gang is dynamic so toggling sources on and off adds/removes them from/to the gang.

3. Press the Gang button again to exit the Gang mode. The gang remains.

System Bar

Gangs can be controlled using the right-most Device Control Group on the System Bar. Play, Cue/Load, and Previous and Next commands are all supported (see *System Bar* *on page 104*).

Device Control Module

Panel Gangs (Local Aux Bus gangs) can also be controlled with the optional Device Control Module. Stop, Play, Rew, Fast Fwd, Forward Jog, Reverse Jog, Mark, etc. are operational in Gang mode (see *Device Control Module* *on page 106*). Panel Gangs and the gang on the '**F**' button (of A-F) are the same when the **SDEL** button is selected. Gang device selections made in the Device Control Module affect gang selections in the Local Aux Bus Module and vice versa.

Multi-Function Module Device Control

The Multi-Function Module supports Single and Multiple device control. In Single Device Control mode, you have full VTR control of an Event List right on the Control Panel. In Multiple Device Control mode, you can select and control up to eight devices at a time from the Control Panel, with Stop, Cue, and Play for each (including gangs).

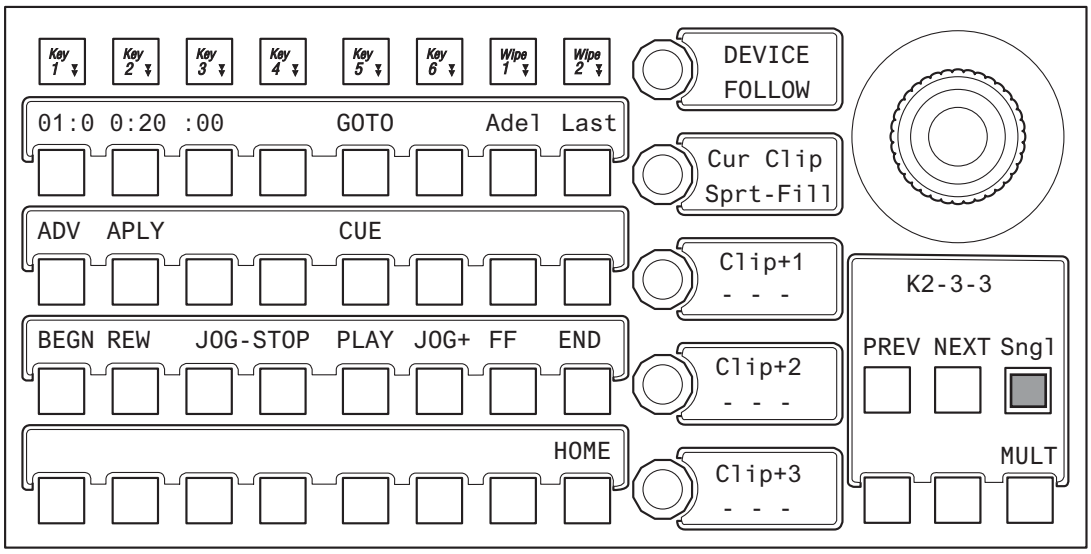
Single Device Control

To place the Multi-Function Module in Single Device Control mode, press the **Devs** button from the HOME position, then press the **Sngl** button located below and right of the joystick (Figure 212) on the Multi-Function Module.

Follow Mode

When in Follow mode, the default, the Multi-Function Module tracks the right-most Device Control group on the System Bar (see *System Bar Device Control* *on page 319*). The current device is shown in the function button status display just below the Joystick, on the right side of the Multi-Function Module. 'Device Follow' is displayed in the LED to the right of the top soft knob (Figure 212).

Figure 212. Multi-Function Module, Single Device Control Mode, Follow Mode

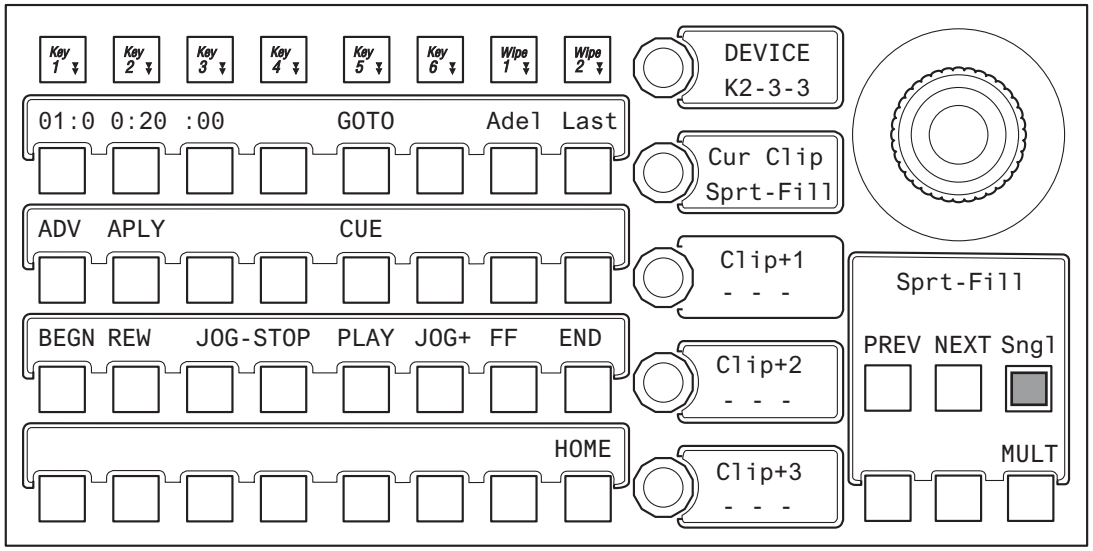


Device Selection

Device Selection is performed by turning the top soft knob. Turning this knob in Device Control mode scrolls through the associated devices (seen in the status display). Turning the soft knob immediately delegates the Multi-Function Module to the newly selected device (Figure 213).

Pushing down the top soft knob returns the Multi-Function Module to the Follow mode.

Figure 213. Multi-Function Module, Single Device Control, Selection Mode



Current Clip

Current clip selection is made by turning the soft knob, second from the top (Figure 213). The current clip in the Event List is shown in the status display LED just right of the soft knob. Pushing down the soft knob loads the selected clip.

Event List Editing

Turning any of the *lower three* soft knobs in Single Device Control mode on the Multi-Function Module changes the clip name in the adjacent LCD and three buttons are added in the main function area; **INS**, **MOD**, and **DEL** (Figure 214).

Note After the INS, MOD, or DEL button is pushed, the editing buttons turn off.

INS button—Causes the new clip name from the clip list, in the Current Folder in the Clip Browser (see *E-MEM Control of External Devices*), to be inserted into the Event List. Clips can be inserted into the Event List in the 1st, 2nd, or 3rd position in the list using the bottom three soft knobs. All other clip names will be pushed down one.

Note Only one of the three bottom soft knobs are active at a time in Device Control mode.

To insert a clip with the **INS** button, perform the following:

1. Turn the soft knob (Clip +1, Clip +2, or Clip +3) and scroll through the current folder on the selected device and select a clip (editing buttons appear in the main function area).
2. Press the **INS** button on the Multi-Function Module. The new clip name will be added to the Event List for selection in the 'Current Clip' LCD, in the position selected in Step 1. Clips below the inserted clip are pushed down in the list.

MOD button—Causes the new clip name to replace the current clip name in the Event List. To modify a clip name with the MOD button, perform the following:

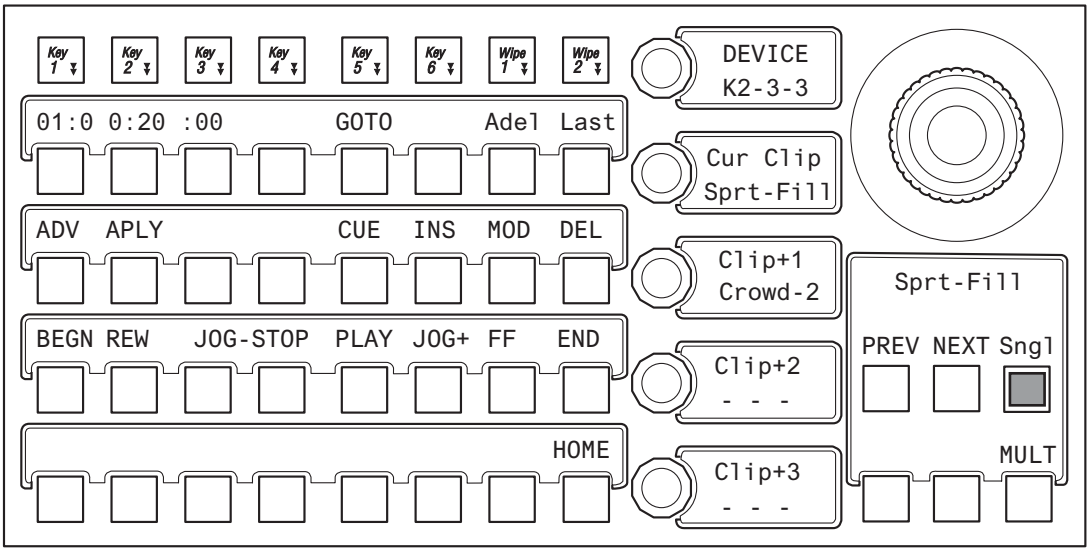
1. Turn the soft knob (Clip +1, Clip +2, or Clip +3) and scroll through the current folder on the selected device and select a clip (editing buttons appear in the main function area).
2. Press the **MOD** button on the Multi-Function Module. The new clip name will appear in the position of the old clip name in the Event List.

DEL button—Causes the current clip to be deleted from the Event List and all remaining clips to move up one. To delete a clip from the Event List, perform the following:

1. Turn the soft knob (Clip +1, Clip +2, or Clip +3) and scroll through the current folder on the selected device and select a clip (editing buttons appear in the main function area).
2. Press the **DEL** button on the Multi-Function Module. The clip name will be deleted from the Event List and will no longer be available for selection in the 'Current Clip' LCD.

Pressing one of the three bottom soft knobs after changing the Event List returns it to the current clip name in that position of the list.

Figure 214. Multi-Function Module, Single Device Control, Clip Stack Editing



Clip Run Control in Single Device Mode

The joystick provides the following clip control:

- Joystick left—Left jog,
- Joystick right—Right jog,
- Joystick up—Fast Forward,
- Joystick down—Rewind, and
- Button on top of the joystick—Mark In.

The motion control buttons in the main function area provide the following:

- BEGN—Places the clip at the beginning,
- END—Places the clip at the end,
- REW—Rewinds the clip,
- JOG+/JOG-—Jog forward, jog backward through the clip,
- PLAY—Play the clip from current position,
- STOP—Stop the clip,
- FF—Fast Forward through the clip,
- ADV—Off Air Advance, and
- APLY—Auto Play

The **PREV** and **NEXT** buttons performing the following:

PREV—Moves up through the Event List in the Current Clip and loads the selected clip,

NEXT—Moves down through the Event List and loads the selected clip.

Multiple Device Control

To place the Multi-Function Module in Multiple Device Control mode, press the **Devs** button from the HOME position, then press the **MULT** button located below and right of the joystick (Figure 214) on the Multi-Function Module (directly below the **Sngl** button).

Devices are configured using the Panel Prefs, Panel User Interactions menu. Eight external devices of the 32 possible can be controlled from the Multi-Function Module in the Multiple Device mode. Each device name is displayed above the assigned button (D1, D2, D3, etc.).

Device control includes the **PLAY**, **CUE**, and **STOP** command buttons, each tally as follows:

- PLAY button high tallies *green* while playing and high tallies *red* when on air.
- STOP button high tallies when stopped, and the
- Cue button high tallies when the current timecode for the device matches Mark In.

Creating a Gang

To create a gang in Multiple Device Control mode, toggle any of the configured device buttons (device name). Device buttons toggle between high tally and low tally. All devices in high tally are part of the gang. Toggling to low tally removes the device from the gang. A gang can be immediately

cancelled by pressing the soft knob (Gang Cancel), second from the top in the Multi-Function Module.

Once a gang is created (more than one device is high tally), buttons **GCUE** (Gang Cue, causes a gang to cue) and **GPLAY** (Gang Play, causes a gang to play) appear below the joystick.

The first soft knob from the top controls the Auto Cancel function which has two states,

Pressing an individual PLAY, CUE, or STOP button causes only the selected device to respond to the command. This is beneficial for example if a director calls for a device to be individually controlled.

GOTO Mode

Pressing the **GOTO TC** button on the Multi-Function Module provides delegation to the Timecode Entry mode, and delegates control over the Timecode display in the upper left of the Main function area (Figure 214).

Entering the first digit causes the display to be set to zero and the first number entered. Additional entries accumulate from right to left.

Plus (**+**) and minus (**-**) buttons are provided on the Multi-Function Module in GOTO mode to perform trim operations.

To enter the timecode:

1. Press the **GOTO** button.
2. Enter the timecode using the examples below.
3. Press the **ENTER** button. The Multi-Function Module returns to Device Control mode.

Examples of Timecode entries

- 22 — 00:00:00:22
- 2 — 00:00:00:02
- 102 — 00:00:01:02

The **CLR** button on the Multi-Function Module empties the buffer and resets timecode display to the current timecode.

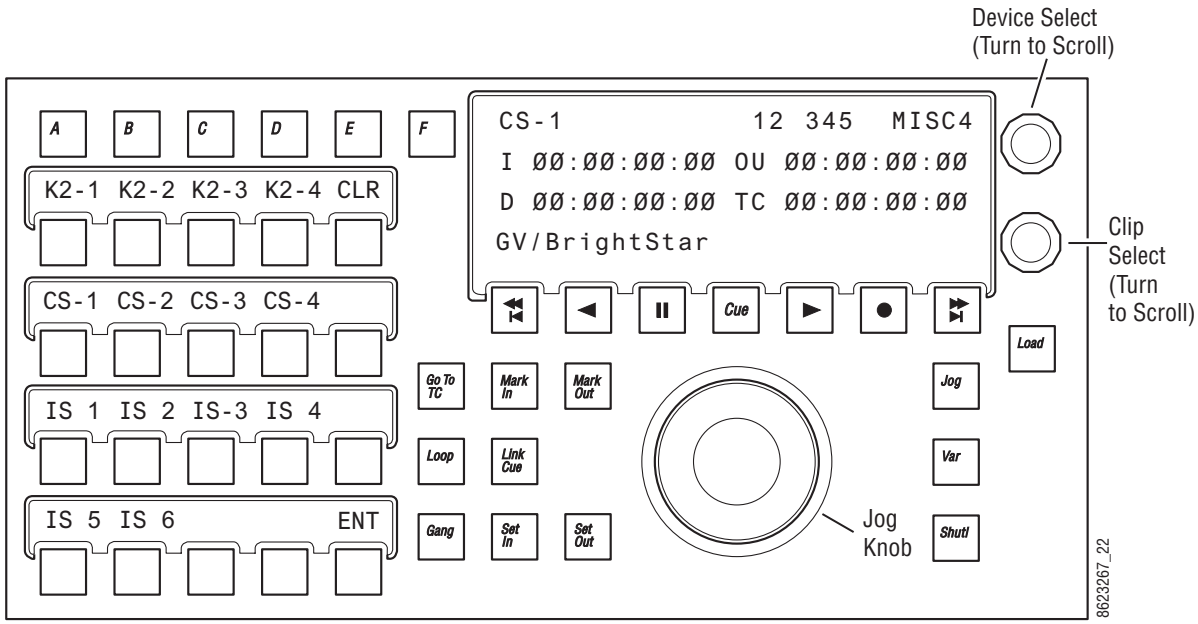
Pressing the **HOME** button returns the Multi-Function Module to the Device Control mode.

Device Control with the Device Control Module

The Kayenne Device Control Module (Figure 215) provides essential device control which can replace auxiliary devices such as DNF and Lance

controllers, PDR Panels for Profile and EVS, and Hard controllers for EVS/Omega/FFW.

Figure 215. Device Selection, Device Control Module



Supported machine control functionality:

- Run Control:
  - Play,
  - Cue,
  - Stop/Pause,
  - Jog +/-,
  - FF, REW,
  - Next clip/Previous clip,
  - Set mark in/out:
    - Cue marks,
    - Loop marks,
- Cue library (Q-MEM with 1000 Q-MEM Registers)
  - Ability to recall large numbers of clips/marks
  - Create virtual clips as mark in/out point within another clip
  - Create assemblies of clips which span channels (for example Video and Key and driving video walls with 4 or 8 channels),
  - Ability to record a clip to a device, cue to mark-in, and add a play command.
  - Cue can be for more than one device
- Variable speed play,
- Multiple Device control:
  - Swap between controlled devices,
- Channel ganging,
- Create recordings, and
- Loops:
  - Stop, and
  - Play.

The Device Control Module can control all configured devices with the following properties:

- Current Mark in/out,
- Current duration,
- Current clip name,
- Current loop flag,
- List of currently ganged devices.

Device Selection

Device selection buttons A-F (Figure 215) can be configured to control devices in the Device Control Module.

1. Select a device by rotating the Device Select knob (Figure 215) to scroll through the devices.
2. Press the **LRN** button.
3. Press one of the device buttons (**A-F**) to assign the current device.

The **F** button only, can be made to track the selection on the right-most of the source control selections on the System Bar, by pressing the **SDEL** (Set Delegate Tracking) button on the Device Control Module. When the **SDEL** button is on, it high tallies blue and the F button low tallies blue.

Any System Bar Device Control Group can be associated with one of the Device Control Selection buttons (A-F), see *System Bar Device Control* *on page 319* for more information.

Gangs

When devices are ganged, motion control commands are applied to all the devices in the gang. Play, Stop, Cue to Mark-In, etc. are performed simultaneously for all devices in the gang. Loading clips, which is not motion control, is not included in a gang. To load more than one device at the same time, use a Q-MEM linked cue (see *Learning Additional Devices* *on page 333*).

Ganging Devices Associated with Lettered Buttons

To gang devices associated with the **A - F** lettered buttons on the DCM, press and hold down the letter buttons and press the **Gang** button (the ganged buttons tally green). For example, hold down **A** and **B** buttons (or any combinations of **A - F** with devices associated) and press the **Gang** button on the DCM. The devices associated with **A** and **B** are ganged. Pressing the **CLR** button during device gang selection clears all devices from the gang.

Ganging Additional Devices

Hold down a single lettered button (**A - F)** and press the **Gang** button (Gang Device Selection appears on the status display). A menu of devices is displayed that you can add (or remove) in association with the lettered button. You can page through and press the device buttons to make your selections. Once you've made your selections as part of the gang, press the **ENT** (or **Gang**) button to gang the devices.

The DCM supports multiple gangs, so there may be a gang associated with the device on the **A** button, and another gang on the device associated with the **B** button, and so on.

When the Gang button is high-tallied green, then there is an active gang associated with the selected letter button. To temporarily disable the gang, press the **Gang** button; it will low tally green, then make an adjustment. Pressing **Gang** again, will re-enable the gang. For example, this can be used where one device is video and the other key. By pressing the **Gang** button you can turn off the gang temporarily, jog the key channel to more precisely align it with the fill, and then re-enable the gang.

Panel Gangs

The "Panel Gang" (Local Aux Bus gang) and the gang on the '**F**' button are the same when the **SDEL** button is selected. Gang selections made from the DCM in this way also affect gang selections made in the Local Aux Bus Module and vice versa.

Q-MEM

Q-MEM can be used to assign a device to a letter button on the DCM (Figure 216), load a named clip on that device and cue to its mark-in point, and optionally play or loop the clip. Multiple devices can also be loaded and cued using the "Link Cue" feature.

Each suite has 1000 cue memory registers (Q-MEMs).

Each cue has:

- Up to 38 devices with associated device state data (device state),
- Up to 6 device associations with device control buttons **A - F**,
- Selection of radio buttons **A - F** (or none) (device selection), and
- One play flag.

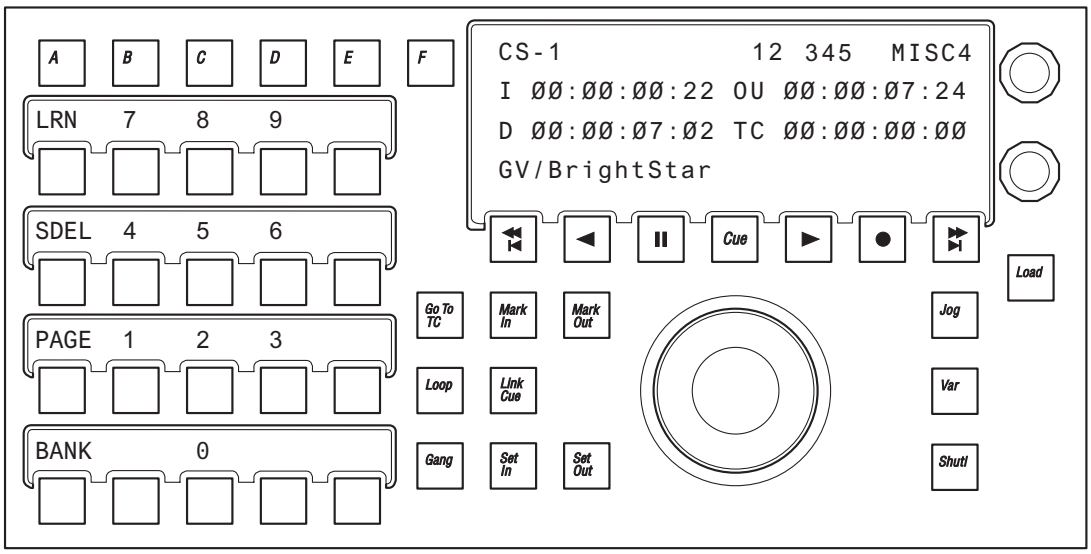
For each device, the following device state data is learned into the cue:

- Clip name,
- Mark-In point for clip,
- Mark-out point (may be empty),
- Loop flag,
- Gang flag, and
- A list of ganged devices.

Recalling a cue register can be used to:

- Associate devices with the lettered buttons only, so you can set up your DCM for manual use,
- Recall and cue devices without affecting the current letter button selections, and
- Both associate the devices with letter buttons and load, cue, and play them.

Figure 216. DCM—Q-MEMs



Learning a Q-MEM Register with a Single Device

To learn a simple cue with one device (see Figure 216):

1. Select a device by pressing a control button, **A - F**.
2. Select a clip on that device using the bottom soft knob and press the **Load** button to load the clip. You can then set the mark-in/mark-out points (**Mark In**/**Mark Out** buttons) and optionally turn on the **Loop** button (tallies blue).
3. Press the **LRN** button.
   a. Optionally, press the **Play** button (flashes green) to add a play command (so when the cue register is recalled, the clip will load *and* play).
4. Press the desired Cue register number button (use the **Page** and **Bank** buttons for the higher numbered registers). The selected Cue register button high tallies red.

Learning a Q-MEM Register with Multiple Devices

Learning Devices with Letter Buttons

Lettered button (**A - F)** links can be learned as part of a Cue register for later recall:

1. Press and hold down the letter buttons for the devices to be linked (for example A, B, and D).

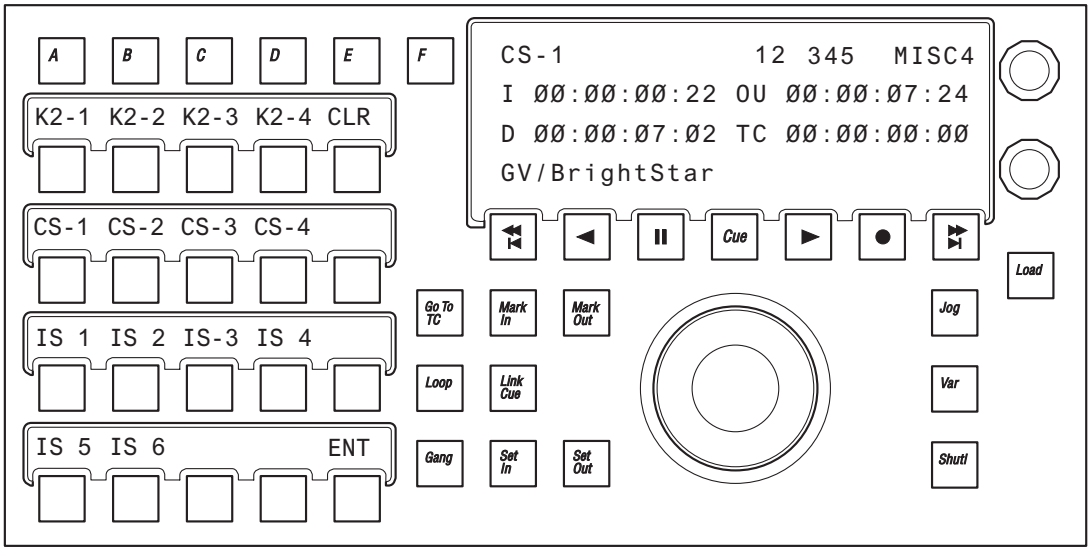
2. Press the **Link Cue** button (high tallies blue).
3. Learn the Q-MEM register.
4. Press the **LRN** button.
   a. Optionally, press the **Play** button (flashes green) to add a play command (so when the cue register is recalled, the clip will load *and* play).
5. Press the Cue Register button to recall the cue.

Note To see the link cue status, press the lettered button then the **Link Cue** button.

Learning Additional Devices

You can link multiple devices in addition to the devices associated with the lettered buttons using the Cue Device Selection menu (Figure 217). Each clip will need to be setup with mark-in/out points etc. prior to creating the link.

Figure 217. DCM—Cue Links



Hold down a lettered button (**A - F)** and press the **Link Cue** button (high tallies blue), the Cue Device Selection menu is displayed (Figure 217). Press the device buttons to add (or remove) devices as part of the cue then press the **ENT** (or **Link Cue**) button. All device buttons added to the cue will tally blue.

Pressing the **CLR** button clears all devices from the cue.

Note Both loop cue status and link status are always learned into the cue; if the **Loop** button is high tally, then a loop is learned and if **Link Cue** button is high tally blue, then the multiple devices are linked into the cue.

When recalled, a clip will load and cue for each device linked into the Q-MEM register. (There is one Play command per register so if learned as part of a Cue register, all devices will play when the register is recalled.)

Learning Only Device Associations into a Register

Cues can be used to associate devices to lettered buttons only, without learning clip and mark information. So on recall, the devices are assigned to the lettered buttons but nothing is done to the current status of the devices. The Cue Device Selection menu is used to configure these associations.

To associate a devices to lettered buttons only:

1. Hold down a lettered button, and press the **Link Cue** button. Both the letter button and the button for the device high tally.
2. Turn on any other letter buttons, but turn off the device buttons. If the letter button is on and the device button is off, then only the device association will be learned into the register.
3. Press **ENT** to end the device selection and then learn a cue.

Only the association of the device to the lettered button is learned.

Learning Clips for Devices without Affecting Letter Button Associations

To learn a cue that recalls only device states for the clip, cue to mark, loop, and play but does not affect the association of the devices with the DCM:

1. Hold down a lettered button, and press the **Link Cue** button. The letter button and the button for the device are both high tally.
2. Add devices to be linked into the register, but turn off any lettered buttons associated with the device.

   Without the letter buttons being learned, a recall of the register will control the specified devices but not affect what is currently happening on the DCM.
3. Press **ENT** to end the device selection and learn a cue.

Cues and Gangs

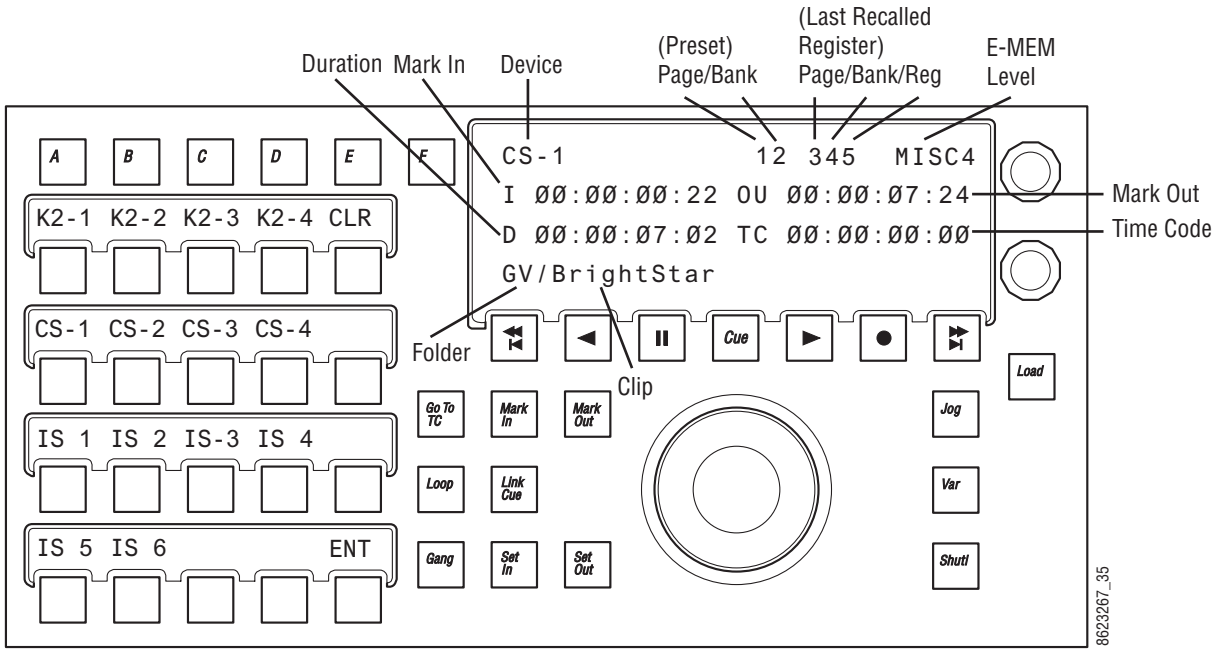
If a device which is learned into a cue is ganged to another device, then that gang association will be learned into the register too. So that when the register is recalled, the devices will be ganged.

Status Display

For a selected device, the display will show (Figure 218):

- Device name,
- Preset or current Page/Bank,
- Last recalled page, bank, and register,
- E-MEM level name,
- Timecode,
- Mark-in/out timecode,
- Calculated duration between mark in and mark out, and
- Clip folder and clip name (folder only displayed if supported by the device, e.g. ClipStore supports folder display but K2 does not).

Figure 218. DCM—Cue Links



E-MEM Control of External Devices

Introduction

E-MEM effects can be used to:

- Load, cue, play, and stop DDR clips, and
- Cue, play, and stop tapes in VTRs.

E-MEM device control is good for recalling the same clips repeatedly, and for integrating clips into specific switcher effects. Manual control is appropriate when different clips are used each time, and when clips are not used in a switcher effect (like rolling a news story and taking it directly to air.)

E-MEM device control operates independently from the manual controls on the Multi-Function or Device Control Module, but both mechanisms can be used together. For example, an E-MEM recall can make a VTR cue up, then the module can be used to roll that tape.

E-MEM External device control utilizes *events*. External device events are different from other parameters in the Kayenne E-MEM system. Rather than defining a value at a keyframe and smoothing the transition between keyframes with interpolation, a device event consists of instructions sent to the external device at the time cursor passes the keyframe during an effect run. This similar to GPI and PBus triggers.

Controlling an external device typically requires spacing the instructions over two or more keyframes. The space between keyframes allows the device to respond to the first set of instructions. For example, a DDR or VTR takes time to load and cue before it can play. The effect must be built so that a play event does not occur until the device is ready, or the command will be executed late or not at all.

The Kayenne system does not play a DDR or VTR in sync along with the timeline as is done with digital effects devices controlled by CPL. Instead, the Kayenne system issues a play command and then lets the device manage its own playback. This means that if the Kayenne effect is lengthened or shortened, the device's playback may not line up with the effect as intended. Device playback does not speed up or slow down if the duration of the effect changes.

Configuration

Kayenne Device Control option software must be installed and configured to permit either manual or E-MEM control of DDRs and VTRs. Sources will also need to be configured as external devices in Eng Setup.

E-MEM control for external devices is by default assigned to the **Misc 16 EXT** Master E-MEM Module enable group button. This can be changed in the **User Setups**, **Suite Prefs**, **E-MEM Prefs** menu.

Operation

E-MEM device control is accomplished by:

- Associating an external device with an E-MEM enable group button (factory default is **Misc 16 EXT**),
- Enabling the E-MEM button for that enable group and, if editing the effect, delegating that enable group for editing,
- To run E-MEM device control effects, ensure the device(s) are Enabled for E-MEM control, using the **Devices**, **Enables** menu. Devices do not need to be enabled in this menu when building an effect, however, and in fact it may be desirable to disable them at that time.
- Specifying what device control events will be added to a keyframe in the effect, using the **Devices**, **Timeline Events** menu,
- Adding the device control keyframe to the effect (**Insert Before/After**, **Modify KF** in the **Timeline Edit** menu, or **Learn** in the **Recall Run** menu),
- Clear events after adding the keyframe, to prevent accidentally adding additional machine control commands to other keyframes,
- Specifying and adding additional device control keyframes if multiple keyframes are desired, clearing all devices each time, and
- Recalling and running the effect.

When the effect register is recalled, the first keyframe can, for example, command the device to load and cue. When the effect runs, the device can be commanded to play when a later keyframe with a play event is encountered on the timeline.

The device may not play if it has not fully cued when the effect is run. It is up to the operator to build the effect to accommodate cue and load time. Also, running effects with external device events backwards will not cause the clip or tape to play backwards. The order of the commands will be reversed and if the clip or tape plays at all it will not be at the anticipated time or direction.

Timecode Entry

Timecode is entered in hours, minutes, seconds, frames format, with optional • (dot) separators. Typing in partial values will enter the smaller value. For example, typing in **5** enters five frames (00:00:00:05). Typing in **5 •** enters five seconds (00:00:05:00). Typing in **5 • 4** enters five seconds and four frames (00:00:05:04). Typing in **5 • 4 • 3 • 2** enters five hours, four minutes, three seconds, and two frames (05:04:03:02).

You can enter timecode values without • (dot) separators. Simply enter the exact value. Leading zeros are ignored. For example, 00:02:00:11 can be entered by typing **2 0 0 1 1**, **0 2 0 0 1 1**, or **0 0 0 2 0 0 1 1**.

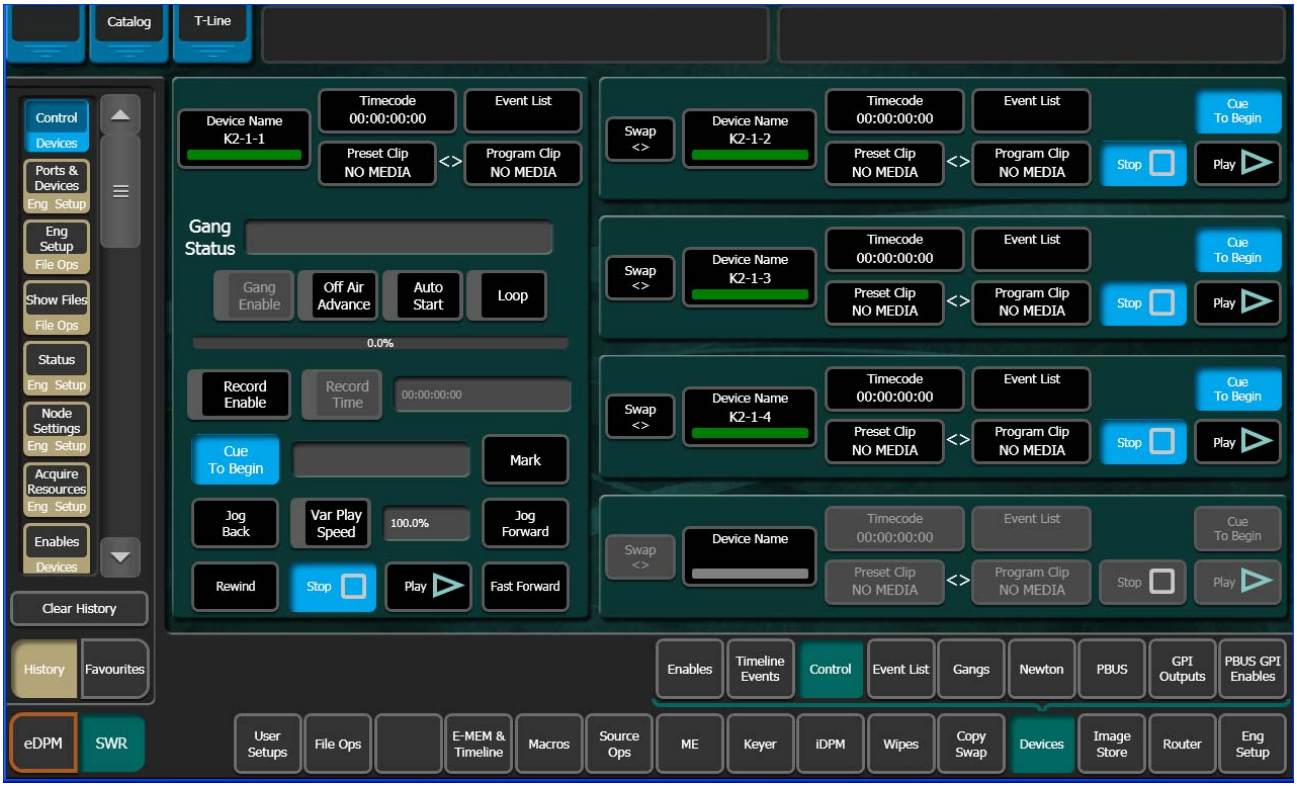
Multiple Events on the Same Keyframe

More than one external device event can be specified to occur in the same keyframe. If more than one event is specified, they are sent to the device in Load, Cue, Play order. For example, you can specify only **Load** which will make the device load to the start of the clip, or you can specify **Load** and **Cue** which will load and cue the device to the entered timecode. Both **Play** and **Stop** cannot be specified on the same keyframe, however. Turning one on automatically turns the other off.

Device Control with the Menu Panel

To control devices with the Menu Panel, touch **Device**, **Control** (Figure 219).

Figure 219. Devices Control Menu



Standard **Cue To Begin**, **Stop** and **Play** controls are available for all devices configured for control. The **Swap** buttons transfer the control of devices between panes.

Additional **Rewind**, **Fast Forward**, **Var Play Speed**, **Mark** and **Jog Forward/Back** controls are available in the larger control pane on the left.

Loading Clips

External devices are controlled using various protocols (BVW, Odetics, AMP). These protocols have different capabilities, and specific models of external devices may support only specific protocols. The exact clip loading procedures, if available, will vary depending on the device model and protocol being employed.

In general, clips are loaded from the Devices Control menu by touching the **Program Clip** data pad in a device control pane, and then selecting the clip from the list displayed.

Clip Directory (AMP Protocol)

On the Devices Control menu, touching a **Preset Clip** or **Program Clip** data pad brings up a menu from which you can select the desired folder and then choose a clip in that folder to load for playback (Figure 220). A similar menu is used with the Clip Browser on the Devices Event List menu, and for loading clips in the Timeline Events menu.

The Kayenne Multi-Function Module and Device Control Module always show the clip list of the last selected folder.

If you change a clip locally on the Profile DDR, that clip name will be updated on the Kayenne Devices menus. If the folder list or clip list are incomplete, re-enabling the device will fetch the entire folder and clip list.

Note Do not create file or folder names that have the pound character (#) along with either the dash (-) or underscore (_) character, and avoid blank spaces (for example, use “DeadEnd” not “Dead End”. This can inhibit clip access.

Note A maximum of 20 folders is recommended along with a maximum of 20 clips per folder.

Figure 220. Folder and Clip Selection Menu

Timeline Event Information and Work Buffer Values

The **Device Summaries** and **Current Device** data pads update to show the current state of the work buffer. This indicates two things. First, it shows what events exist on each keyframe as it is encountered during effect run or time cursor navigation. Second, it shows what events will be added to the timeline if a new keyframe is inserted or one is modified. This is consistent with other work buffer parameters, but requires some discipline when working with events. For other parameters, inserting keyframes without changing values will result in no change between keyframes. But for events, this same practice will result in reissuing the event at each keyframe. It is a good practice to use the **Clear All Events** or **Clear Delegated Device Events** button after inserting or modifying a keyframe containing external device events. This prevents those same events from being duplicated when the next keyframe is inserted.

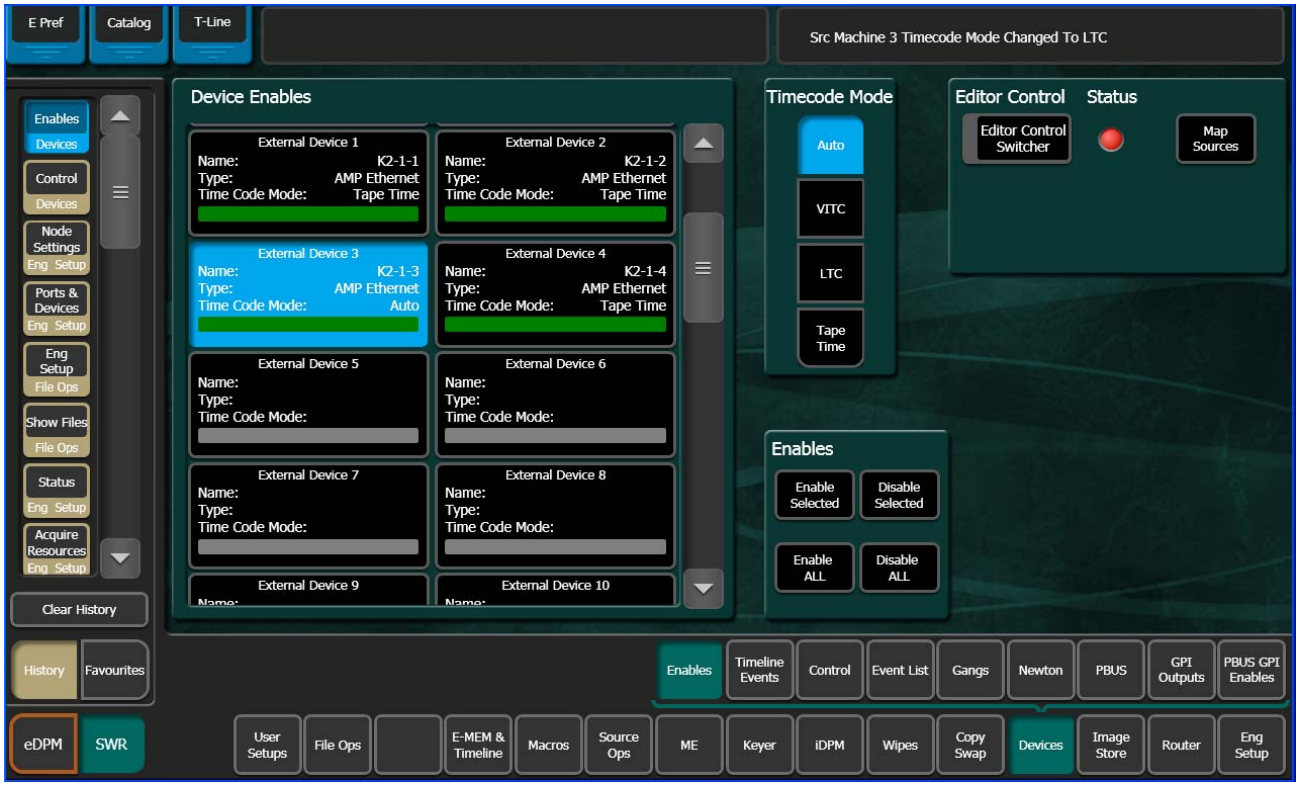
Examples

Preparation for Control

1. Turn on the **EXT** enable group button (or whichever button your machine control device has been associated with) and press the **Emem Edit** button in the Master E-MEM Module.

2. Go to the Devices, Enables menu, touch the device to enable in the Device Enables pane (left), and touch the **Enable Selected** button (or enable all using the **Enable All** button) in the Enables pane (Figure 221).

Figure 221. External Device Enables Menu



3. Go to the Timeline Events menu Figure 222), touch the **Clear All Events** button. This ensures only that device's events will be specified in the keyframe.

To Load, Cue, Play, and Stop a Clip:

1. Follow the *Preparation for Control* procedure above.

2. Go to the Timeline Events menu and touch the button of the desired device to delegate the menu to that device (Figure 222).

Figure 222. Timeline Events Menu, Device Delegated

3. Touch the **Load** button on the right.

4. Touch the **Cue** button to enter the timecode:

   - If you want to play the clip from its starting point, it will automatically cue to this location when loaded.
   - If you do not want to play the clip from its starting point, either cue the device to the desired location using the Multi-Function Module (Devs menu) or Device Control Module, or enter the timecode value manually.

5. Set up the Control Panel to the desired state, making sure the DDR source is *not* selected on the PGM PST A bus.

6. Learn this state to an E-MEM register as the first keyframe of the effect.

7. Go to a point later in your effect giving sufficient time for the clip to load and cue. For example, go to three seconds by pressing **GoTM**, **3**, **•**, **ENT**.

8. Touch the **Clear Events** button in the Events pane to deselect the old commands. This helps prevents accidental multiple load and cue commands in the same effect.

9. Touch the **Play** button on the Timeline Events menu.
10. Set up your control panel to the desired state, including selecting the DDR on the PGM-PST A bus.
11. Press **<Insert** or **>Insert** to add the keyframe information to the E-MEM register.
12. Go to a point later in your effect giving sufficient time for the desired material in the clip to play. For example, for a 20 second clip that started at three seconds, press **GoTM**, **23**, **•**, **ENT**.
13. Touch the **Clear Events** button in the Events pane to deselect the old commands.
14. Touch the **Stop** button.
15. Set up your control panel to the desired state, including selecting an alternate source on the PGM-PST A bus.
16. Press **<Insert** or **>Insert** to add the keyframe information to the E-MEM register.
17. Touch the **Clear Events** button in the Events pane to deselect the commands.
18. Recall and run the register. The clip will load and cue, be taken on-air, play automatically, be taken off-air and then stop.

To Play a Video and Key Pair of Sources in Sync

1. Follow the *Preparation for Control* procedure on page 340.
2. Besides **EXT** (or whichever button your machine control device has been associated with), make sure **PGM PST** level is also enabled on the Master E-MEM Module.
3. In the Timeline Events menu, delegate the device to be used for the video signal, and select **Load** and **Cue** events for it. Do not add these events to a keyframe yet.
4. Delegate the device to be used for the key signal, and select **Load** and **Cue** events for it.
5. Set up the Control Panel so PGM PST **Key 1** is not on-air and the DDR source is not selected on the PGM PST A bus.
6. Add this to the first keyframe of the effect by pressing **<Insert** or **>Insert**.
7. Go to a later point in your effect giving sufficient time for the clips to load and cue. For example, press **GoTM**, **3**, **•**, **Enter**.
8. Select PGM PST **Key 1** in the Next Transition area so it will mix on, and setup a split key with the two DDR channels.

9. Touch the **Clear Events** button in the Events pane to deselect the old commands.
10. Delegate the device playing the video and select a **Play** event for it.
11. Delegate the device playing the key and select a **Play** event for it.
12. Add these events to the same keyframe of the effect by pressing **<Insert** or **>Insert**.
13. Touch the **Clear Events** button on the Timeline Events menu to un-select the commands.
14. Put the PGM PST A bus in *Hold* to prevent the effect from changing its source.
15. Recall and run the effect. Both DDR channels will roll in sync and the system will mix the key on air at the instant they play.

To Load a Clip and Play On Air Later with Auto Start:

1. Follow the *Preparation for Control* procedure on page 340.
2. In the Timeline Events menu, touch the button of the desired device to delegate the menu to that device.
3. Touch the **Load** button on the right. If the correct clip is not displayed, touch the data pad and select the clip from the list.
4. Set up the Control Panel to the desired state, making sure the DDR source is *not* selected on the PGM PST A bus. DDRs cannot cue and buffer instantaneously, so should not be placed on-air immediately when the effect is recalled.
5. Learn this state to an E-MEM register.
6. Touch the **Clear Events** button on the right to un-select the Load command. This helps prevent accidentally creating unwanted load and cue commands when editing effects later.
7. Make sure the Multi-Function Module is delegated to the appropriate device, then press **Devs**, **Sngl**, **APLY** (**APLY** (Auto Play**)** is **Auto Start** equivalent in menu). Each device has its own auto start flag. Note that this is not a keyframeable E-MEM control, and so it must be selected manually for use.
8. Recall the register. The clip will load.
9. After allowing sufficient time for the clip to load and buffer (which varies with different DDR models), take the DDR on-air. The clip will play automatically.

Because a Stop command was not entered, the clip will continue to play till it reaches its end, or is stopped with the Multi-Function Module or by some other means.

Building an Event List

The event list editor is designed for speed and does not follow traditional editing operations. For example, a normal insert operation would have the operator select the insert point in the event list, select the clip to be inserted in the browser, and then press **Insert Before** or **Insert After**. Instead, the Event List editor makes insert and replace operations a mode and modifies what happens when a clip in the browser is touched. This allows an event list to be built by turning on Insert After, then touching clips in the order they should appear in the event list. An insert operation is reduced from two button presses to only one.

1. Touch **Devices**, **Event List** to go to the Devices, Event List menu.
2. Touch the **Insert** button so its indicator is illuminated.
3. Scroll the Clip Browser and touch the first clip for the list. It will be added to the Event List in the right pane, and the **Insert** button legend will change to **Insert After**.
4. Continue to select clips in the desired order with the **Insert After** button on to build the rest of the Event List.
5. If you need to re-arrange the order of the clips in the Event List, use the list editing buttons (**Move Up**, **Move Down**, etc.). Remember to first select the clip in the Event List where you wish the re-arrangement to occur before you use these buttons.
6. When the Event List is complete, it can be used for your production without saving it. The list will only reside in RAM, however, and so will be lost if the Kayenne system is reset.
7. To save the Event List for reuse in the future, touch **Save List**, navigate to the destination folder (creating a new one if desired), enter a name for the list, and then touch **Save**.

Ganging Devices

External devices can be ganged and controlled either in the Menu Panel or the Control Panel (in the Multi-Function Module or Device Control Module, see *Multi-Function Module* *on page 96* and *Device Control Module* *on page 106*).

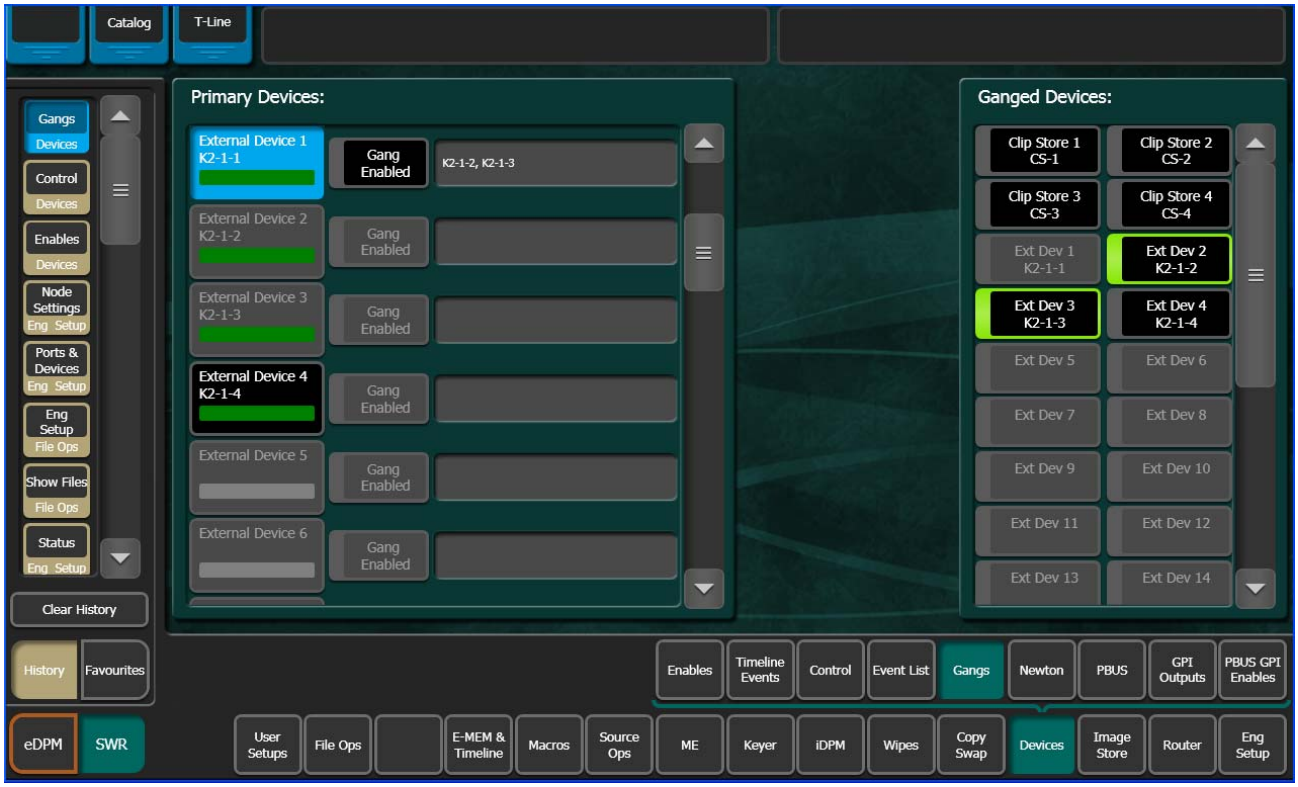
Kayenne supports two types of ganging:

- Server Ganging—Channel Ganging on AMP servers, supports up to 32 channels for improved video key synchronization (Ethernet and Serial Port protocols are supported), and
- Switcher Side Ganging—Gangs multiple non-AMP channel machine control channels together.

Ganging is used to synchronize external devices (channels) for motion control (Play, Stop, Rewind, etc.). The AMP server performs synchronized motion control from all channels in a gang.

The Device, Gangs menu is accessed by touching **Devices**, **Gangs** (Figure 223).

Figure 223. External Device Gangs Menu



The Devices, Gangs menu has two panes with scrolling lists, each listing the devices setup for Kayenne system control. A primary device is selected in the Primary Devices pane on the left, and the devices to be ganged to that primary device are selected in the Ganged Devices pane on the right.

Each device in the left pane has a button labeled with the name of the device, and a text field that lists the devices currently associated with that primary device. Selecting a device button in the left plane illuminates that button, and delegates the right scrolling list to allow selecting and de-selecting ganged devices for that primary device. The **Gang Enabled** button in this pane activates or deactivates the gangs that have been established between the devices.

With a primary device selected in the left pane, the remaining devices available for ganging are displayed as active buttons in the right pane. Devices not available for ganging are grayed out and inactive. Touching one of the active buttons in the right pane illuminates its indicator, and that device's name is added to the text field of gangs for the primary device. Touching

an illuminated button disassociates the gang and removes that device's name from the text field.

Event List Automation

When combined with **Auto Start** and **Off Air Advance**, an event list provides a nearly automatic way to play out clips during a scripted show like a news cast. Once the event list is created and loaded into a DDR channel, taking the channel to air will play the current clip and taking the channel off air will cue up the next one.

When building event lists for fast paced shows, there may be no time to cue up the next clip on the same channel after the current one has run. In this case, splitting the rundown between event lists for two playout channels may be desirable. This may create management issues if the rundown order changes close to air. An alternative way to handle the situation is to load the same event list into two channels and use one as the primary playout channel and the second as a backup that can be cued to the next clip when back to back events with zero cue time occur

Event List News Rundown Suggestions

News programs often have last minute rundown changes. The Event List menu allows rapid manipulation of an event list while on-air.

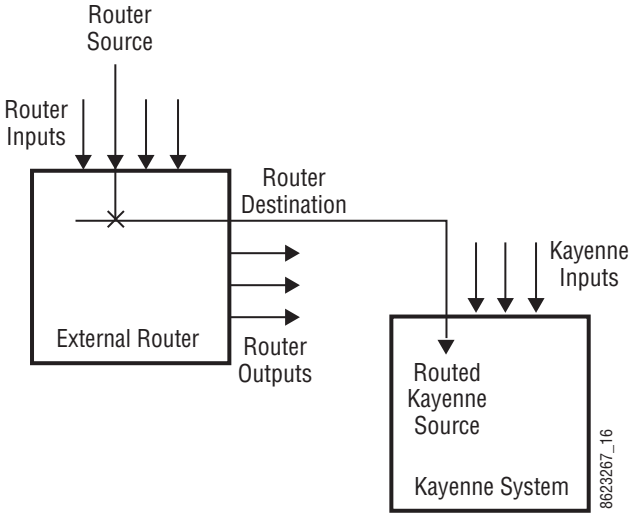
- Event List clips can be played in random order. With **Auto Load** on, touching a clip in the Event List immediately loads that clip for playback. When that clip finishes, the next one in the list loads normally.
- Clips in an event list can be reordered quickly. The **Move Up** and **Move Down** buttons allow a story to be selected and moved to a new location in the list. For example, if the next two stories need to be exchanged in playout order, selecting the next story loads it so it can be played immediately, then while that story is playing pressing **Move Up** reorders the list so the skipped story will be loaded next.
- Dumping a story can be done with **Delete**, however it is usually better to move abandoned stories to the end of the list just in case.
- Adding a story is simply an Insert operation.
- When an Event List is loaded, the Multi-Function Module will scroll through the Event List and load only from there. The last entry in the readout is UNLOAD LIST which unloads the Event List.

Router Interface Operation

Introduction

The Kayenne system can interface with an external routing system. A routing system connects a *router source* (router input) to a *router destination* (router output). Changing the router source sends a different signal to the destination (called a *take*). A router destination can in turn be connected to a Kayenne input and be configured as a *routed Kayenne source* (called *switcher source* in this discussion and in the Kayenne menus). The router acts as a pre-selector for the switcher source, and so increases the number of inputs available to a button on a Kayenne system bus (Figure 224).

Figure 224. Router Source, Router Destination, and Routed Kayenne Source



Router signal switching is non-deterministic, as compared to source selections performed on a production switcher. For this reason, it is better to choose the desired router source in advance, then switch it on-air using switcher controls, rather than select a different router source while it is on-air.

An external router can be configured into *levels*, to allow the switching of multiple signals simultaneously. For example, video signals can be organized on one level, and key signals on another. By specifying both levels when giving a router take command, both the video and key signals of a source will be routed to their destinations.

Note Kayenne system router take commands are only applied to all router levels.The external routing system's destinations must be configured with all router levels selected.

Router control panels can also *protect* router destinations from being changed by other control panels. A protected router destination cannot be changed by a different control panel, but may be changed by the panel that set the protection. Protections help prevent inappropriate router source changes. The Kayenne system can be considered a type of router control panel, and so the Kayenne system can protect router destinations. Kayenne system router protect commands are applied to all router levels.

The names of router sources appear on the Kayenne system source name displays. These names originate from the router system, and their text cannot be changed from the Kayenne system. If a routed Kayenne source has no connection to the router, an **X** appears in place of the router source name. If the router connection exists, but no source has yet been selected for that destination (which can occur during bootup), **No Src** appears.

Features

- Interfaces to the Grass Valley SMS 7000 routing system.
- Kayenne system configuration of routed Kayenne sources.
- Names of router sources are shown on Kayenne panel source name displays.
- Router source selection control via the Control Panel, and Menu Panel.
- Protection types (None, Protect, Protect All, and On Air).
- R-MEM control.

Router Interface Operation

Note Router interface operation becomes available after the Kayenne system and the external router have been properly configured. See the *Kayenne Installation & Service Manual* for additional information.

Controls

The Source Select Modules in any Stripe and the Local Aux Module can be placed in an alternative Router Assign mode for changing router sources used by switcher sources. The **Rtr** button on the Source Select Modules/Local Aux Module place that module in Router Delegate mode. All Bus selection capabilities are disabled, replaced with router interface functions. The Router light pipe also illuminates to show the current mode. Pressing **Rtr** a second time exits Router Delegate mode.

There can be different router destinations on each of the shift levels (2nd, 3rd, and 4th, see *Source Select Module* *on page 98*).

The **Prev Page** and **Next Page** buttons navigate through a list of available router sources. Pressing each button advances to the previous or next group of sources. Up to 32 router sources (24 on 2-ME systems) are available at a time. The names of the new router sources available for selection are shown on the middle source name displays.

The bus ID display above each upper bus button shows the router source name for the first router source in the group. Pressing one of these buttons directly presents that group of router sources for selection on the lower source select bus.

Operation

Router source selection is a two step process. You first select the switcher source you wish to change, and then select the new router source for that destination. Router source selection may first involve accessing a page of sources, as there may be more than 64 (48 on 2ME systems) router sources available. Prompting in the lower left area of the panel indicates which step should be performed next.

1. Press the **Rtr** button on the Local Aux Module to enter Router Assign Mode. The source name displays will change to show only the routed Kayenne sources, with their current router source name. All other buttons and displays go dark.
2. Choose a switcher source by pressing its source select button. The shift level buttons can be used to access additional switcher sources. After selection, the source name displays will change to show the names of the available router sources.
3. Select a router source for the chosen switcher source by pressing the source select button displaying the name of the desired source. If there are more router sources available, you can use the **Prev Page** and **Next Page** buttons to choose different groups of router sources to select from.
4. When finished, press the **Rtr** button on the Local Aux Module to return it to normal operation.

Control Panel Router Interface Operation

Controls

The Control Panel's Source Select Modules can also be placed in an alternative Router Assign mode for changing router sources used by switcher sources.

The **Router** button on the Control Panel (Source Select Modules) is pressed to place the Control Panel in Router Assign mode. When pressed all normal panel operation is disabled, replaced with Router assign functions.

The source select buttons are used to choose the switcher source to change, and then the desired router source is selected (same as the Local Aux Module). Up to 32 router sources can be displayed at a time (per Shift Level).

The last two buttons on the right of each bus provide **PREV** and **NEXT Page** functions, allowing additional groups of router sources to be displayed on each bus of the Control Panel.

Direct router group selection is not available on the Control Panel.

Operation

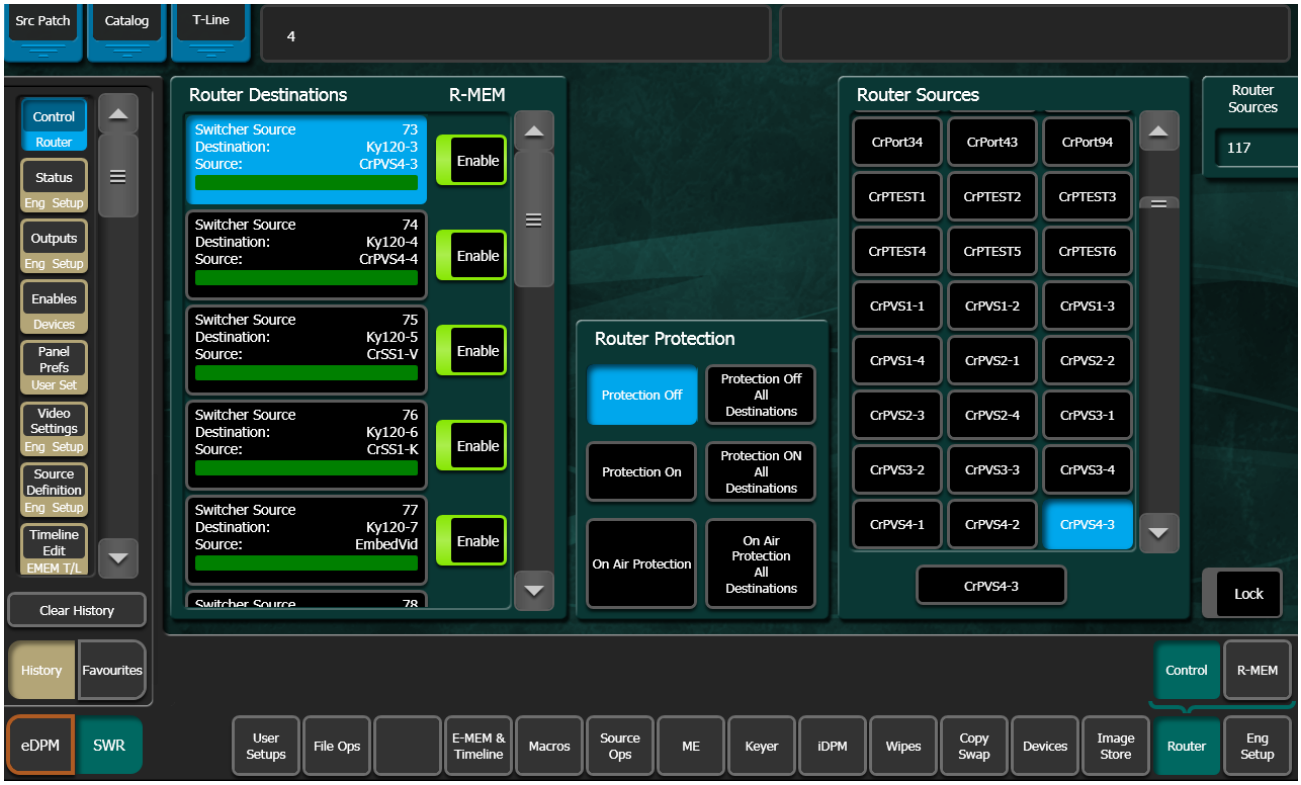
The router source selection process on the Control Panel is essentially the same as the Local Aux Module.

1. Press the **Rtr** button on the Local Aux Module to enter Router Assign Mode.
2. Press a source selection button to choose the desired switcher source, using the Shift Level buttons if necessary.
3. Press the router source button for the chosen switcher source, using the **PREV** and **NEXT** buttons if necessary.
4. After selecting a routed source, the system returns to Step 2 and you can select another switcher source to change.

Menu Panel Router Interface Operation

The Router Control menu provides a way to directly change router sources from the Menu Panel. The Router Select menu is reached by pressing the **R-MEM** Menu Panel button, then touching the **Router Control** category selection button (Figure 225).

Figure 225. Router Control Menu



The Router Destination pane on the left is a scrolling list of switcher sources (only sources configured as routed Kayenne sources appear). Each button displays the Switcher Source ID number, Destination, and Source. The currently selected switcher source on the list is colored light blue.

The Router Sources pane on the right is a scrolling list of all the available router sources. Communication with an external routing system is required before router sources will appear on this list. The router source button of the currently selected switcher source is automatically selected.

To Change the Router Source of a Switcher Source:

1. Touch the desired switcher source button in the left pane. Its current router source will appear selected in the right pane.
2. Touch a different router source button in the right pane, scrolling the menu if necessary. The source change will be immediately enacted.

Router Source Keypad Selection

The Router Source data pad at the top of the right pane provides access to router sources by name. Touching this data pad opens an alphanumeric keypad, into which you can enter the name of the desired router source. The Router Source list will then scroll to and select that router source,

changing that source's output signal. If an exact match is not found for the name entered, no change will occur.

Protection

The Router Protection pane (middle) provides protection controls. These controls are used to send commands to the external router to protect or unprotect the router destination associated with the selected switcher source. The button for the current setting of the selected switcher source will be highlighted. The following protections are available:

- **Protection Off**– Source can be changed at any time by any control panel,
- **Protection Off All Destinations**– Same as Protection Off but for all destinations.
- **Protection On**– Source cannot be changed by another control panel, but may be changed from the Kayenne system,
- **Protection On All Destinations**– Same as Protection On but for all destinations.
- **On Air Protection**– The source cannot be changed by another control panel when it is on-air, but may be changed manually from the Kayenne system. The source will also not be changed by an R-MEM recall, and
- **On Air Protection All Destinations**– Same as On Air Protection but for all destinations.

External router system panels can place protections on router destinations. The first panel placing a protection controls that destination. The Kayenne system will not be able to change router sources feeding router destinations protected from another panel, and vice versa.

Router Control of Aux Busses

The Kayenne can be configured to allow Encore and Prelude control systems, including standalone Prelude Control Panels, to control Aux bus source selections.

All switcher Aux buses can be configured to appear on the Router Control System. Aux buses that are not enabled for router control are seen as being 'protected' by the switcher to the Router Control System. In other words, an Aux bus' current status (source selection) is displayed but it cannot be controlled by the Router Control System.

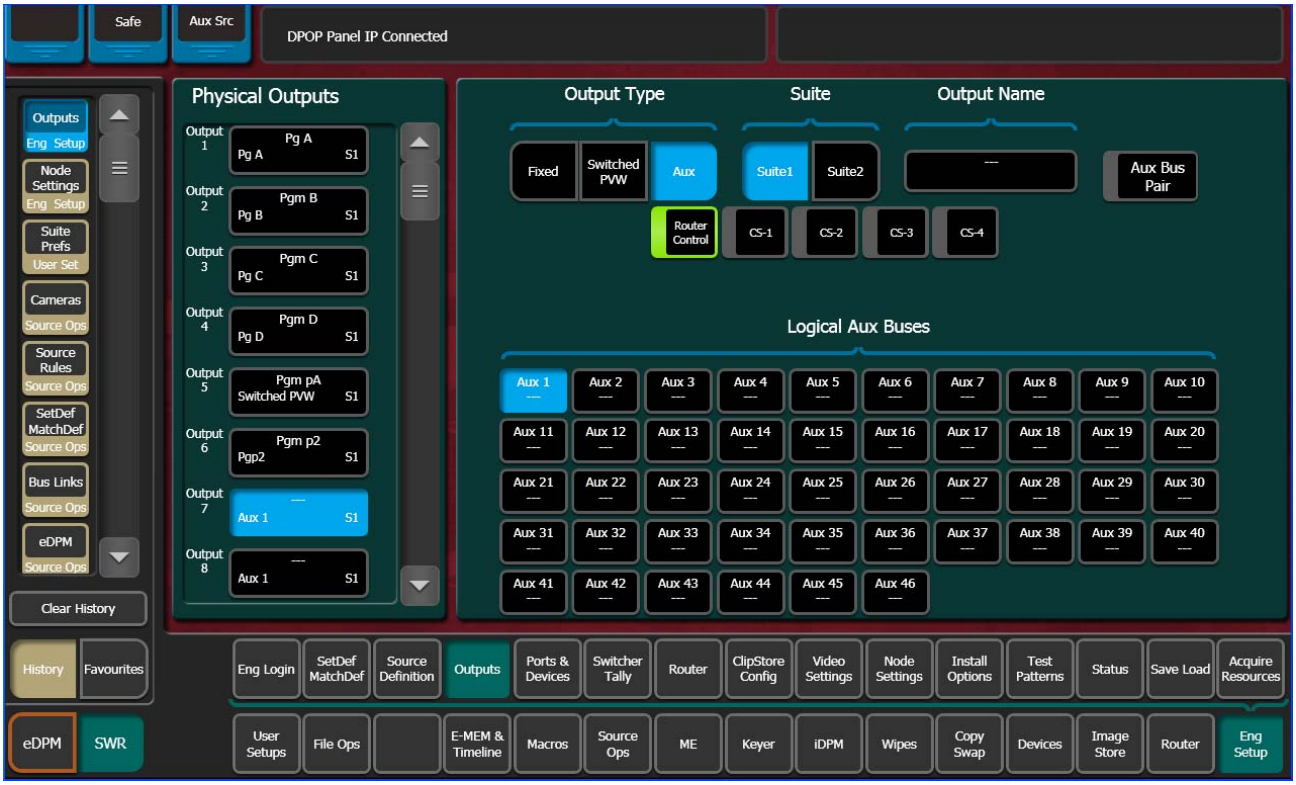
If an Aux bus is enabled for router control, then the source can be changed by a configured Router Control Panel.

Note Prelude Control Systems are limited to selecting the first 128 switcher sources.

Operation

Aux busses are enabled for control in the Eng Setup, Outputs menu (Figure 226).

Figure 226. Eng Setup, Outputs Menu, Router Control of Aux Busses



Enable the Aux Busses for router control (Figure 226):

1. Touch the Aux button in the Output Type.
2. Touch a Aux 1-46 data pad in the Logical Aux Bus pane to designate it for router control.
3. Touch the Router Control selector button (highlights green when selected).

Repeat Steps 1-3 for each Aux Bus you wish to control by router.

The router must have the switcher sources defined and the 46 Aux Busses defined as destinations, with four levels each (see the documentation that came with your router):

Level 1: Suite 1 Video,

Level 2: Suite 1 Key,

Level 3: Suite 2 Video, and

Level 4: Suite 2 Key.

Once configured, you can switch Kayenne sources on Aux Busses from the external router.

Note A Prelude router can communicate directly with the Kayenne switcher.

R-MEM

Introduction

R-MEM stands for router memory. With R-MEM you can use the Kayenne system to store groups of external router source selections for use later. One or all switcher sources can be selected for control, and the router source selections for all the selected switcher sources can be recalled and enacted quickly.

R-MEM operation is similar to E-MEM, in that information is learned into a register for later recall. Each R-MEM register holds a router source name for one or more switcher sources. R-MEM allows selectively enabling router destinations for control, and has Auto Recall, both similar to E-MEMs selection of enable groups.

R-MEM can be assigned to an E-MEM enable group, if desired, to provide E-MEM control of R-MEM functions (see *E-MEM Control of R-MEM on page 359*).

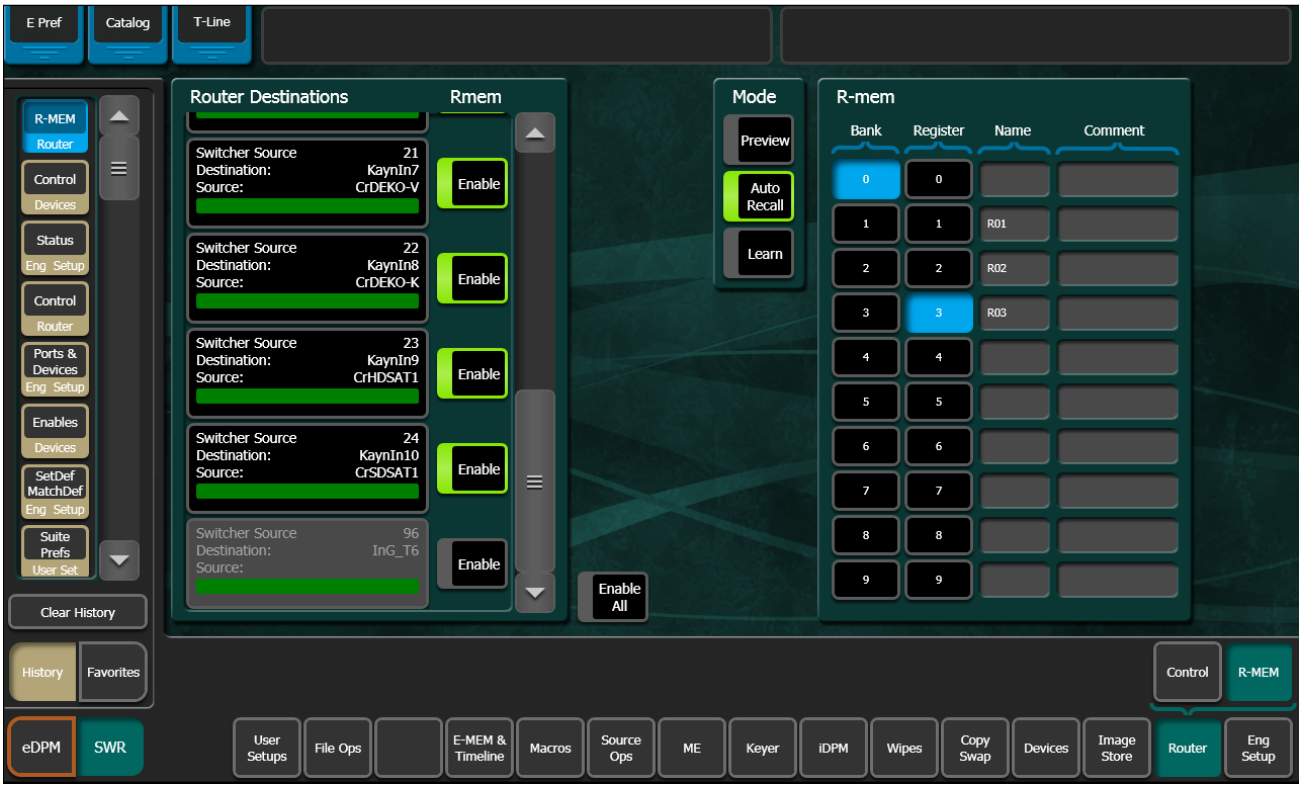
Features

- 100 R-MEM registers.
- Select 1 or more switcher sources for R-MEM control.
- Instantaneous Learn and Recall.
- Save To and Load From Disk.
- Auto Recall.
- Preview of R-MEM register source and destination names.
- E-MEM control of R-MEM, if desired.

R-MEM Menu Operation

R-MEM registers are learned, recalled, and previewed from the R-MEM menu. The R-MEM menu is accessed by pressing the **Router** Menu Panel button, then touching the **R-MEM** category selection button (Figure 227).

Figure 227. R-MEM Menu



The R-MEM menu has a Router Destinations pane on the left showing the switcher sources, router sources and destinations, and protection status. Switcher sources configured as routed Kayenne sources also appear in the left pane. There is a Mode pane in the center and an R-mem pane on the right listing the R-MEM registers available (the full register number is displayed on each register button).

R-MEM Auto Recall

The R-MEM **Auto Recall** mode acts similar to the E-MEM Auto Recall. An R-MEM Auto Recall automatically changes only the switcher sources that were enabled when the register was learned.

Preview

When **Preview** mode is turned on, recalling a register will only display the R-MEM settings stored in that register. No switcher sources will change.

This allows you to see what switcher sources will be affected by a register recall, and what the router sources and destinations will be after the recall.

When **Preview** is turned off, the left pane returns to displaying the current status, including any previously set enables.

To Learn an R-MEM Register:

1. Enable the switcher sources to be affected by R-MEM in the left pane. Selected switcher source buttons are green on the left. Only the selected sources will be saved to the R-MEM. You can use the **Enable All** button to select all or none of the switcher sources (toggle).
2. If you want the register to use Auto Recall, touch the **Auto Recall** button so its indicator illuminates.
3. Touch the **Learn** button in the Mode pane.
4. Touch the numbered Bank and Register buttons in the right pane to save the information to the selected register. Touch the bank button first if you are saving to a different bank. If the desired bank is already selected, you can touch just the Register button.

To Recall an R-MEM Register

1. Make sure the Preview mode button is not selected.
2. Turn the **Auto Recall** button on or off to control how the register is recalled.
3. Touch the Bank and Register buttons for the desired register. Touch the bank button first if you are recalling from a different bank, or just touch the Register button if in the same bank.
   a. If the **Auto Recall** button is on, the sources selected when the register was saved (with **Auto Recall** on) will be changed to the R-MEM values of that register. If **Auto Recall** was not on when the register was saved, the currently selected switcher sources will be changed.
   b. If the **Auto Recall** button is off, the sources currently selected in the Switcher source pane will be updated with the R-MEM values of that register.

Note A switcher source that is currently on-air with an **On Air** protection status cannot be changed by an R-MEM recall. Either place the source off-air or select a different protection status to change the switcher source selection.

E-MEM Control of R-MEM

Introduction

R-MEM can be assigned to an E-MEM Enable group, to permit E-MEM control of R-MEM settings. R-MEM information is learned to the R-MEM level of an E-MEM register, allowing the selection of specified router sources when that E-MEM register is recalled. One R-MEM setting is supported per effect (R-MEM is not keyframeable).

Because R-MEM is a level of E-MEM, there is a one-to-one correspondence between E-MEM and R-MEM registers. For example, settings in R-MEM register 10 only apply to E-MEM register 10. This is similar to the relationship between an individual ME E-MEM and the Master E-MEM system. R-MEM information is added to an E-MEM register using the Learn operation or the Learn Mod operation.

R-MEM Disk Storage

While R-MEM is organized operationally as a level of an E-MEM register, R-MEM data is saved to disk separately, as R-MEM registers. This allows added flexibility. For example, the same E-MEM effect can use different router source selections or enables, depending on which R-MEM register has been loaded from disk.

R-MEM Enable Control and Auto Recall

R-MEM also provides an additional level of control. R-MEM has its own set of enables that control which Kayenne sources (router destinations) are affected by a recall operation. This aspect of R-MEM is like the enable groups used for Master E-MEM. The **Auto Recall** button on the R-MEM menu controls R-MEM recalls similar to the control the **Auto Recall** button on the Control Panel Master E-MEM Module exerts over E-MEM recalls. These are separate functions affecting different control elements, however.

An example of using this is to control which router sources will be changed without having to learn a new E-MEM register for each variation. Suppose you learn an R-MEM specifying router sources for several switcher sources, create an E-MEM effect using those sources, and learn that E-MEM with the R-MEM Enable button selected. Recalling that E-MEM with the Master E-MEM **Auto Recall** button on, will also recall that R-MEM. If the R-MEM **Auto Recall** button is also on, the enabled switcher sources will select the specified router sources. If the R-MEM **Auto Recall** button is off, only the switcher sources enabled on the R-MEM menu will be affected by the recall. Disabling all the switcher sources on the menu makes the E-MEM recall use the currently selected router sources, with no changes.

E-MEM Prefs Assignment

By default R-MEM is not assigned to any E-MEM Enable group button. You use the E-MEM Prefs menu (accessed via **User Setups**/**Suite Prefs** /**E-MEM Prefs**), to make an assignment. Touch the R-MEM data pad, then select the desired Enable button.

Once this assignment has been made, recalling an E-MEM register on the Master E-MEM Module will recall that same number R-MEM register. Learning an E-MEM register on the Master E-MEM Module will also learn the same R-MEM register.

CAUTION Make sure the R-MEM enable group you choose is only enabled when you actually need to use it during effect recalls. Confusing source selection button changes can occur otherwise. Using E-MEM Auto Recall can help control when groups are enabled.

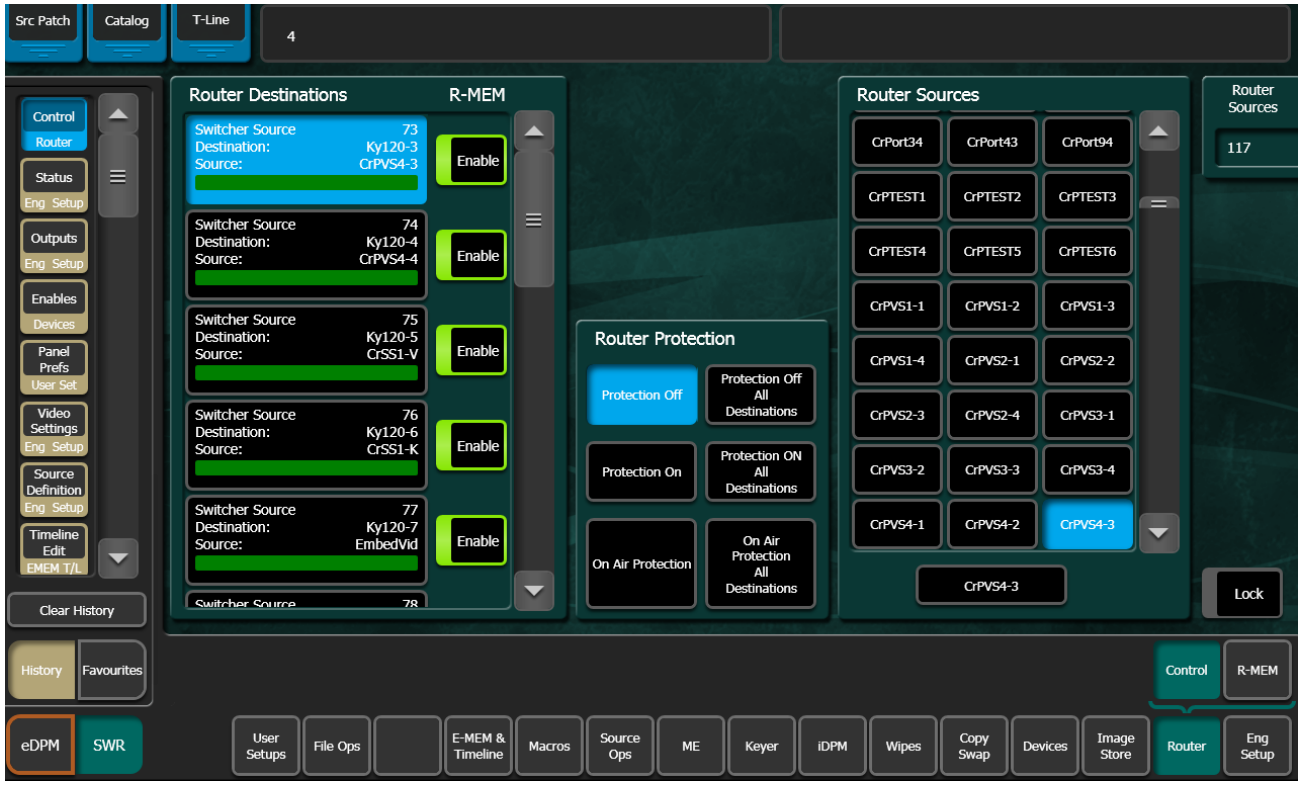
Learning R-MEMs on the Control Panel

When R-MEM has been assigned to an E-MEM Enable button, learns can be performed from the Control Panel as well as the R-MEM menu.

Note The Learn operation you will use erases any existing information in all the enabled levels of the current E-MEM register.

1. On the Master E-MEM Module, select the Enable button to which R-MEM has been assigned. This enables R-MEM for the current effect register.
2. Setup the desired R-MEM state.
   a. Go to the R-MEM Router Select menu (accessed via **Router, Control)** and select the router source to be used with each switcher source.
   b. Go to the R-MEM menu (touch the **R-MEM** category selection button) and enable the desired switcher sources. Select **Auto Recall** if you want the ability to recall R-MEM settings for only the selected switcher sources.

Figure 228. Control Menu



3. Press the **LRN** button on the Control Panel Master E-MEM Module, then press the Page, Bank, and Register keypad number of the desired register. This will save the current R-MEM setting in the menu to the header area of that E-MEM effect register and the first keyframe of the new effect will be created. The corresponding R-MEM register in the menu will also be updated.

Changing R-MEM on an Existing E-MEM Register

1. On the Master E-MEM Module, recall the E-MEM register you wish to change.
2. On the Master E-MEM Module, select the Enable button to which R-MEM has been assigned.
3. Setup the desired R-MEM state.
   a. Go to the R-MEM Router, Control menu (accessed via **Router**, **Control**) and select the router source to be used with each switcher source.
   b. Go to the R-MEM menu (touch the **R-MEM** category selection button) and enable the desired switcher sources. Select **Auto Recall** if you want the ability to recall R-MEM settings for only the selected switcher sources.

4. On the Master E-MEM Module, press **Learn**. The R-MEM setting in the menu will be updated to the header area of that E-MEM effect register. Keyframes existing in the effect will remain unchanged. The corresponding R-MEM register in the menu will also be updated.

Loading R-MEM Registers

Like E-MEM registers, loading an R-MEM register from disk does not affect the current work buffer. If an effect is loaded in the work buffer and that register number containing different settings is loaded from disk, the register will need to be recalled before any changes in state occur.

Empty R-MEM Keyframes

If the R-MEM enable button is on when keyframes on other levels are inserted into the effect, R-MEM keyframes containing effectively no data will also be added to the effect and appear on the Timeline menu. These keyframes are only system artifacts and do not influence the running of the effect.

ME Split Mode Operation

Introduction

Split Mode allows the operator to divide a Kayenne system ME into two partitions (Primary and Secondary) by enabling Split Mode on that ME. Each Split Mode ME partition can be assigned resources (keyers and wipe generators) of that ME. Each partition can be setup and controlled from the Control Panel using the **Pri** and **Sec** delegation buttons, and each partition has its own E-MEM sub-level, permitting precise independent control of ME partition effects. A powerful aspect of Split Mode is control of the partitioning resides in the E-MEM system itself. It is possible to create ME partitions when needed with an effect recall, and then quickly return the MEs to full functionality with another effect recall. The Split Mode feature also provides Preview outputs for each partition

Putting MEs in Split Mode essentially gives the operator more MEs (up to eight on a 4-ME Kayenne system), each with less functionality. This can be useful for some styles of production. In fast paced programs an operator may dedicate an ME to a simple task for the duration of the show and never change it. Split Mode provides a way to use some resources of an ME for these set-and-forget requirements, and allow the operator to use the remaining resources of the ME for other purposes.

Note E-MEM control of the Primary and Secondary ME outputs and Layered parameters (on the ME Mode menu) have been placed in the ME/eDPM Part sub-level. This is a logical organization of ME output/layered control for E-MEM recall and will prevent ME Secondary output recall issues that may have occurred with earlier releases.

An example of using Split Mode in this manner is a shot clock at a sporting event. The shot clock composite requires only one or two keys plus a background and uses a fixed camera that doesn't move. During pre-production ME 1 can be split and the Secondary partition can be set up with the shot clock composite. When the shot clock is needed during the show, that partition of the ME is taken on-air. The Control Panel ME 1 controls can be delegated to the Primary partition and be used for other effects, which can be set up, recalled, and run independently from the Secondary partition used for the shot clock (see page 369 for setup information for this scenario).

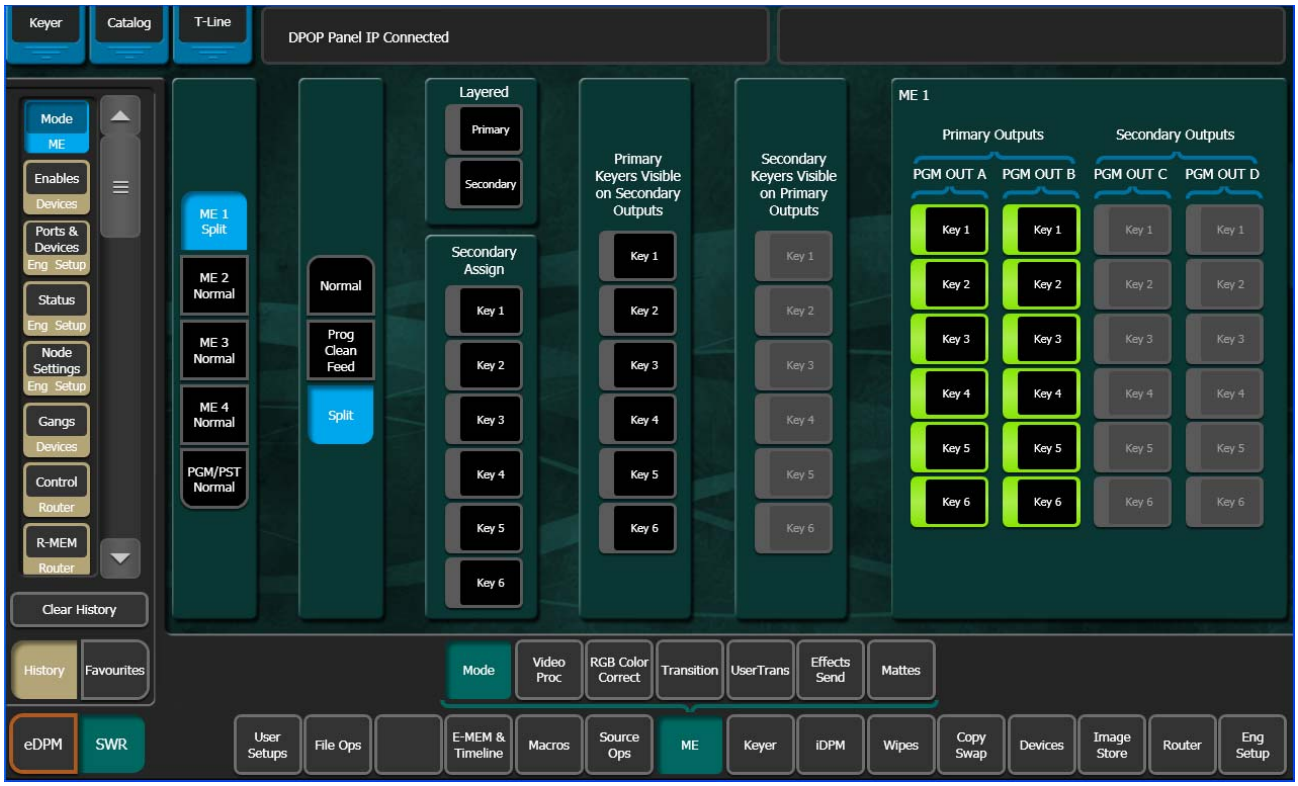
Split Mode can also be used for other purposes. For example, complex composites could be built on the Secondary partition of an ME by assigning all six keyers to that partition. The Primary partition of that ME is then used only for background transitions between the A and B buses.

Splitting an ME with Split Mode is useful when independent control of each partition is desired, so E-MEM recalls and transitions only affect part of the ME. If you want an alternate output from the same ME but wish to have the effects and transitions track on both outputs, Programmable Clean Feed mode is probably the better choice.

ME Split Mode

The ME Mode menu is used to activate Split Mode on an ME and assign resources to the partitions. Touch **ME**, **Mode** to access the menu, then select the desired ME and touch **Split** to partition that ME (Figure 229).

Figure 229. ME Mode Menu, Split ME Selected



In **Split** operating mode, the ME is divided into Primary and Secondary partitions. The Primary partition has the Pgm A and Pgm B outputs that use the Background A and B buses, and the Secondary output has the Pgm C and D outputs that use the Utility buses. The Pgm Out columns on the menu are re-arranged when Split mode is selected to show the A and B Primary outputs on the left and the C and D Secondary outputs on the right.

The Secondary Assign pane is used to assign Keyers to the Secondary partition. Assignments made here affect what elements are learned and recalled by the E-MEM levels (see *Split MEs and E-MEM Control* *on page 367*). Touching an item so its yellow indicator illuminates assigns it to the Secondary partition. The buttons for these items are then activated on the Secondary partition outputs. Unselected items remain assigned to the Primary partition. Note that keyers can be activated or deactivated (green button indicators on or off) on the individual outputs if desired, the same as in Programmable Clean Feed mode.

Control Panel Controls

Control Panel ME Partition Delegation

When an ME has been split, the **Pri** and **Sec** delegation buttons on that ME are activated.

Pri and Sec Delegation Buttons

The **Pri** and **Sec** buttons delegate the source selection buses, Transition Module, and Local E-MEM Module of that ME to the selected partition. Pressing one of the **Pri** and **Sec** buttons deselects the other. At least one partition is always selected on a split ME.

Delegating Both Partitions

Holding down one of the **Pri** and **Sec** buttons and pressing the other delegates both partitions. When the panel is delegated to both partitions, the E-MEM and Transition Modules control both partitions simultaneously. Also, the button tally indicators in the Transition Module and the transition pattern shape displayed in the ME Status display reports information for only the Primary partition.

Source Selection

When an ME is split and its Control Panel controls are delegated to only the Secondary partition, the alternate buses for that ME are reversed. Keyer 3 and Keyer 4 sources are selected on the keyer buses and Util 1 and Util 2 sources are selected on the background buses by default. Holding down the delegation buttons allows source selection on the other Keyer 1, Keyer 2, Bkgd A and Bkgd B buses. This works well for the typical situation where an ME is split into equal partitions, with Keyer 1 and 2 assigned to the Primary partition and Keyer 3 and 4 assigned to the Secondary partition.

If both partitions are delegated, source selection behaves the same as when only the Primary partition has been delegated.

ME Partition Preview

Preview outputs are available for both partitions of a Split ME. The ___ **MxpA** output of each bank is used for the Primary partition preview, and the ___ **Mxp2** output is used for the Secondary partition preview. These preview signals can be mapped to output connectors with the Output Assignments menu, accessed by touching **Eng Setup**, **Outputs**.

You can preview ME partitions on switched preview using the System Bar. Hold down the **Sec PVW** button while making the selection to view the Secondary partition preview of an ME.

Transition Module

When the Control Panel controls of a split ME are delegated to only one partition, the ME's main transition system controls only that partition. Moving the Transition Lever Arm or pressing the **Auto Tran** or **Cut** buttons will affect only the delegated partition. Only elements assigned to that partition may be selected for the next transition. Keyers associated with the other partition may not be selected and therefore can not be included in the transition.

When a split ME has been delegated to both partitions, all the controls become functional and simultaneous transitions in both partitions will occur for what ever elements are selected.

As an exception to the independence of the two partitions, the six **Key Cut** and **Key Mix** buttons can always be used regardless of partitioning and panel delegation. If a keyer is associated with the secondary partition, the **SEC** indicator above the keyer's cut and mix buttons illuminates to inform the operator that the keyers are not assigned to the primary partition.

Possible Out of Sync Transition Lever Arm

If a split ME is delegated to a different partition when a transition is in progress, an out of sync condition of the transition lever arm will probably result. This situation is similar to recalling an E-MEM register that splits the screen with a transition wipe. The Transition Lever Arm will need to be re-synced (by moving the lever arm to a limit) before it can be used to finish the transition or start a new one.

Local E-MEM Module

When the ME bank of a split ME is delegated to one partition, that ME's Local E-MEM Module will control only that partition's E-MEM registers. Learning, recalling, and running effects will only occur on the currently selected partition.

When the ME bank is delegated to both partitions, effect recalls and runs are initiated in both partitions and are controlled simultaneously.

Master E-MEM Module

The Master E-MEM Module allows for enabling the ME levels. If the ME is un-split then all ME control except for ME Mode is with the ME Primary level and the ME Secondary level is disabled. When the ME is split then the control for the Secondary is with the ME Sec level.

The ME Mode is controlled by the ME Partition sub-level. ME Mode includes ME Split Mode, the assignments of the Keyers, Layered Mode and configuration of the ME PGM outputs.

The Partition Level by default has the ME partition sub-level for each of the MEs. The ME partition sub-level can be assigned to other levels. It's recommended that if having an ME level control its own partitioning is desired, then the Primary ME level should be used. If the ME partition sub-level is assigned to an ME Secondary level, there is a potential for that level to be disabled and the partition sub-level with it.

Split Local E-MEM Module Register Save to Disk

When effect registers are saved to disk, all the levels of that effect are saved, including information for both partitions of a split ME.

ME Copy

The Copy/Swap function in the Multi-Function Module can be used to copy ME settings from one location to another. ME Copy and Swap operates on the entire ME regardless of mode or secondary assignments. For example, if a source ME is split and the destination ME is not, after a copy both MEs will be split. Swaps behave in a similar manner, with the split setting and resource assignments being swapped between the MEs.

Split MEs and E-MEM Control

When an ME is split, the Primary and Secondary partitions each have their own essentially separate E-MEM system. How each of these partitions are controlled by E-MEM operations depends on the E-MEM Prefs settings for that ME.

Partition Boundary

The ME mode (Normal, Prog CF, and Layered Mode when in Split mode), output, and any secondary assignment information is stored as partition boundary information in the E-MEM system itself. This makes it possible to change an ME's mode with an E-MEM recall. This partition boundary information is maintained as a separate component to permit isolation between Primary and Secondary partitions. See *Partition Boundary Control on page 368*.

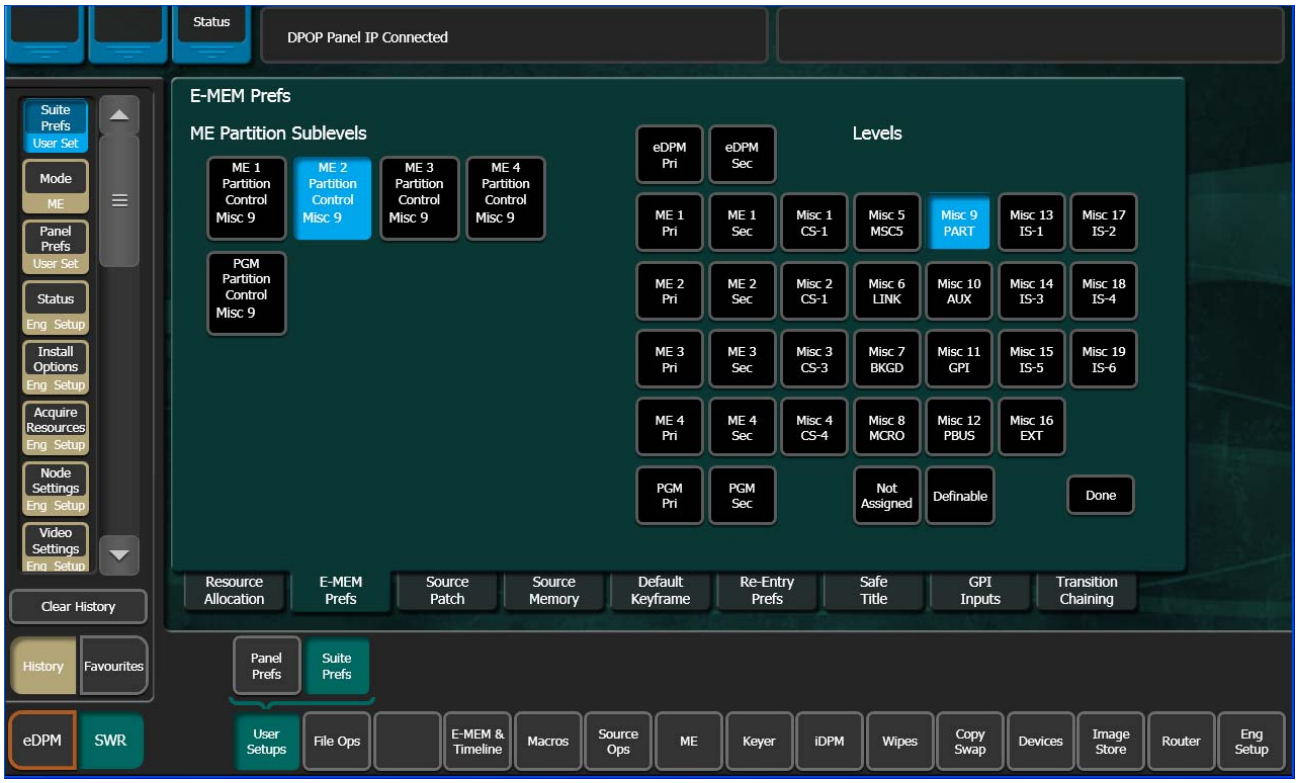
Split ME E-MEM Level Assignments

When an ME is split, essentially two separate E-MEM systems are created. The primary partition is always associated with its own E-MEM level. The secondary partition is part of the PART Level and becomes enabled when the ME is placed into Split Mode. These settings affect how each split ME's Local E-MEM Module and how the Master E-MEM Module is used to enact E-MEM control of the MEs.

ME Partitions Menu

The ME Partitions menu is accessed by touching **User Setups**, **Suite Prefs**, **E-MEM Prefs**, **ME Partitions** (Figure 230).

Figure 230. ME Partitions Menu



The ME and Pgm Pst data pads display the current partition control parameters for that element. On a new Kayenne system the default settings assigns the partition boundary to the partition level (PART).

Partition Boundary Control

The partition control information can be assigned to an E-MEM level, or not be assigned (Not Assigned). Which level the partition control is associated with controls the amount of isolation between Primary and Secondary partition E-MEM behavior.

- For the Kayenne default, the partition boundary is assigned to a different E-MEM level entirely and complete independence of the split ME partitions results. This setting can be used to map all ME partition boundaries to the same separate level. This level can be used to preset the partitioning of the entire switcher, and then Primary and Secondary E-MEM operations would not change the switcher settings.
- If the partition boundary is assigned to the Secondary partition, recalls by the Secondary partition splits that ME. This setting would work with the shot clock example cited in the introduction, especially if the shot clock is used frequently and the remaining resources of that ME are sufficient. Note that there is a chicken and egg aspect to this mapping. The ME cannot be split from the Control Panel by recalling a Secondary partition unless the ME is already split. You will need to go to the ME Mode menu and manually turn on Split mode to activate Secondary partition recalls from the Control Panel. You will also need to manually turn Split mode off from the menu to restore all the resources to the Primary partition.
- If the partition boundary is assigned to the Primary partition E-MEM level, every E-MEM recall of the Primary partition of a split ME imposes the ME mode and the secondary resource assignments. E-MEM recalls of the Secondary partition will not change the current mode or alter any resource assignments. This mapping is useful in cases where split ME mode is used occasionally during a show, but the ME is normally used unsplit. Primary partition E-MEM recalls will split the ME when desired and restores it when all resources are needed by the Primary partition. Note that all the effects built on the Primary partition will need to include consistent partition boundary information. If any change is made later in ME partitioning, all the Primary partition effects will need to be edited.
- If the partition boundary is unassigned (none), E-MEM recalls will not affect the current ME settings. Changes can only be done manually in the ME Mode menu.

A Primary partition is always associated with an ME's main E-MEM level and has a dedicated button in the Master E-MEM Module (**ME 1**, **ME 2**, **ME 3**, **Pgm Pst**). A Secondary partition has its own level, enabled in Split Mode. There are also dedicated buttons in the Master E-MEM Module (**ME 1 Sec**, **ME 2 Sec**, etc.) which are enabled when the ME is in Split Mode.

- If a Secondary partition is unassigned (none), E-MEM control is only available on that ME's individual Local E-MEM Module when it has been delegated to a Secondary partition. The Master E-MEM Module will have no control of that MEs Secondary partition.
- If a Secondary partition is enabled, then E-MEM control of that Secondary partition will be available from the Master E-MEM Module. Control continues to be available from that ME's individual Local E-MEM Module when it is delegated to its Secondary partition.

- If a Secondary partition is attached to its Primary partition level, E-MEM control of the two partitions will be linked together. Specifically, Master E-MEM operations for that level will always affect both partitions. When the individual ME is delegated, E-MEM operations will affect both partitions. However, when the individual ME Secondary is delegated, E-MEM operation will only affect that Secondary partition.

Split Layered Mode

Video Compositing, or Layered Mode, is a feature that allows the operator to composite up to six keys together to create a single video/key pair. These two signals to be routed in parallel to provide a much cleaner key than would normally be possible. This key pair can be re-entered into the switcher on another keyer to create more key layers on a different ME. This compositing of keys can be done on either or both of the primary and secondary outputs.

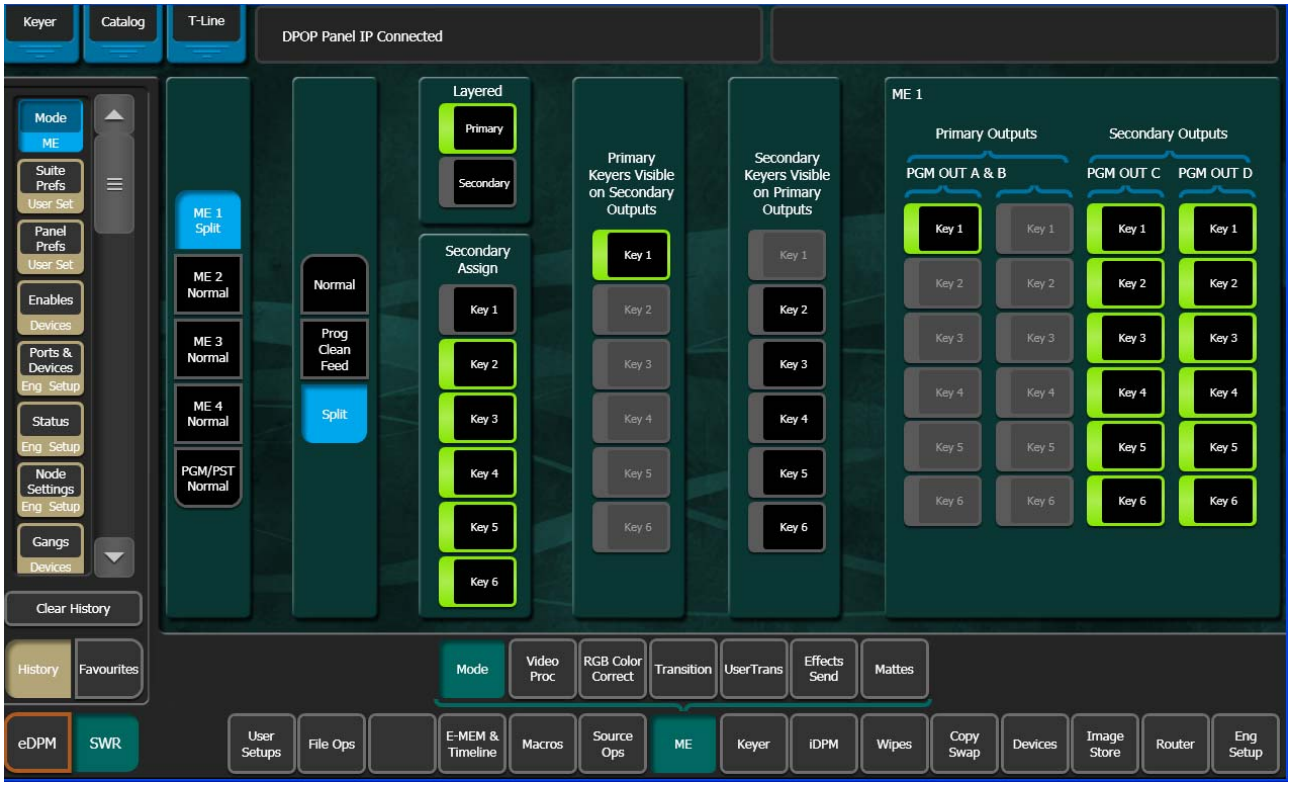
Split Layered mode can be particularly useful. For instance, you can split ME 1 and assign keyer 1 to the primary side and keyers 2, 3, 4, 5, and 6 to the secondary side. On Pgm-Pst keyer 6, you can select ME 1 secondary as the source for the keyer. You now have the six keys on Pgm-Pst, (ME 4 – Key 1, 2, 3, 4, 5, and 6) and ME 1 – Key 2, 3, 4, 5, and 6 show up on ME 4 Keyer 4.)

Layering is enabled on an ME-by-ME basis in the ME Mode menu. When enabled for the primary output, the A output has black selected as the background source and the B output acts as the key cut signal for the keyers selected for the primary output. Similarly, for the secondary output the C output has black selected as the background source and the D output acts as the key cut signal for the keyers selected. Priority of the layers is set using normal keyer priority controls.

Split Layered Mode Menu Controls

The Layered panes are enabled only when the **Split** button is selected in the Mode pane (Figure 231). Selecting **Split**, then selecting the **Primary** button sets the Primary partition to Layered mode. Likewise, selecting the **Secondary** button sets the Secondary partition to Layered mode.

Figure 231. ME Mode, Split Layered



Control Panel Controls in Split Layered Mode

The **Pri** and **Sec** Control Panel buttons (on the Multi-Function Module in iDPM mode) behave the same as they do in Split mode, with the exception that background bus selections are not used for the partition that is in Layered mode. The keyer source selections are allowed in Layered mode for the keyers that are assigned to the primary or the secondary partition delegated.

A/B bus selections do not feed backgrounds for a primary partition that is in Layered mode.

U1/U2 bus selections do not feed backgrounds for a secondary partition that is in Layered mode, but they can be used for key masks, video in borders, wipe pattern source, etc.

Macros

Introduction

Macros provide a mechanism to record a series of actions and then play them back by pressing a single button. Macro steps specify commands sent to the Video Processor Frame, rather than simple button presses. Macros are fundamentally different from E-MEMs. E-MEMs store the complete state of a portion of the switcher (level and sublevel) into keyframes. For example, an E-MEM keyframe for ME 1 captures all the source selections, keyer settings, transition type, wipe patterns, etc. for all the buses of ME 1 at the time that keyframe was added to the E-MEM register. A macro, on the other hand, affects only the specific elements involved in the recording of that macro. For example, a macro can be recorded that sets up only the Preset bus with a particular source and selects a specific wipe pattern and transition rate. You can recall an E-MEM to put the ME in a known state, and when you want to prepare that specific transition to just that source, simply play the macro. In this example, different macros can be recorded with different sources to allow rapid and reliable variations on the E-MEM effect that was originally recalled.

A macro can contain several steps. Macros are executed as quickly as possible in the order the steps are recorded. It is also possible to insert delays in a macro sequence during recording to accommodate external devices or allow for completion of internal system events.

Macros add enormous power and flexibility to the Kayenne system. Simple tasks can be recorded into a macro quickly and easily for rapid and reliable playback. Complex series of actions can also be programmed into a macro, but careful planning is required to ensure the macro accomplishes its intended actions for all the conditions under which it may be played back.

Note Macro attachments are saved and loaded with Panel Prefs. One set of attachments exists for each control surface. Be sure the Panel Prefs you load are compatible with the Macro registers you are currently using, to avoid accidentally running incorrect attached Macros.

Macro Recording

Macros are recorded into macro registers. The Kayenne system has 999 macro registers. The number of steps in any specific macro or the total number of macro steps across all macros is limited only by the amount of available memory in the Video Processor Frame.

The number of macros per configuration is determined by the size and number of Stripes in the Kayenne system. The following is used to determine the total number:

- Stripes (1-4),
- Key row number (1-2),
- Shift level number (1-4), and
- Source button number (1-32).

For example:

4-ME with 35 button rows:

- 2 key rows
- 4 shift levels
- 32 source buttons for macros

=999 macros (maximum supported) or,

2ME with 25 source button rows:

- 2-ME
- 2 key rows
- 4 shift levels
- 22 source buttons for macros

=352 macros

Macro registers can be saved to disk and reloaded, making the total number of pre-made macros available to a Kayenne system unlimited.

Macros apply to the point of use active during the macro recording. For example, recording a macro that turns on Matte Fill on ME 1 Keyer 1 will affect ME 1 Keyer 1 when it is played back, regardless of what keyer the Control Panel happens to be delegated to when the macro is played.

Macros record triggers, not the result of a trigger. For example, a macro containing a Key Mix transition, when run, will trigger the key transition from its current state to the other state. If the keyer is on, it will mix off, and if off, it will mix on.

Macro Playback

Macros can be played back from the currently delegated Macro row of source select buttons on the Control Panel and the Macros menu. Macros can also be attached to other panel buttons for playback.

The number of macros available for immediate playback on the Macro row varies, depending on the number of buttons available, as shown in table Table 10.

Table 10. Total Macro Registers

ME Stripes	Key Rows	Shift Levels	Source Buttons	Total Macro Registers
4-ME 35 Button	2	4	32	999*
4-ME 25 Button	2	4	22	704
2-ME 35 Button	2	4	32	512
2-ME 25 Button	2	4	22	352

*Maximum supported

Macros can also be incorporated into E-MEMs and be executed when that E-MEM runs.

Macro Attachments

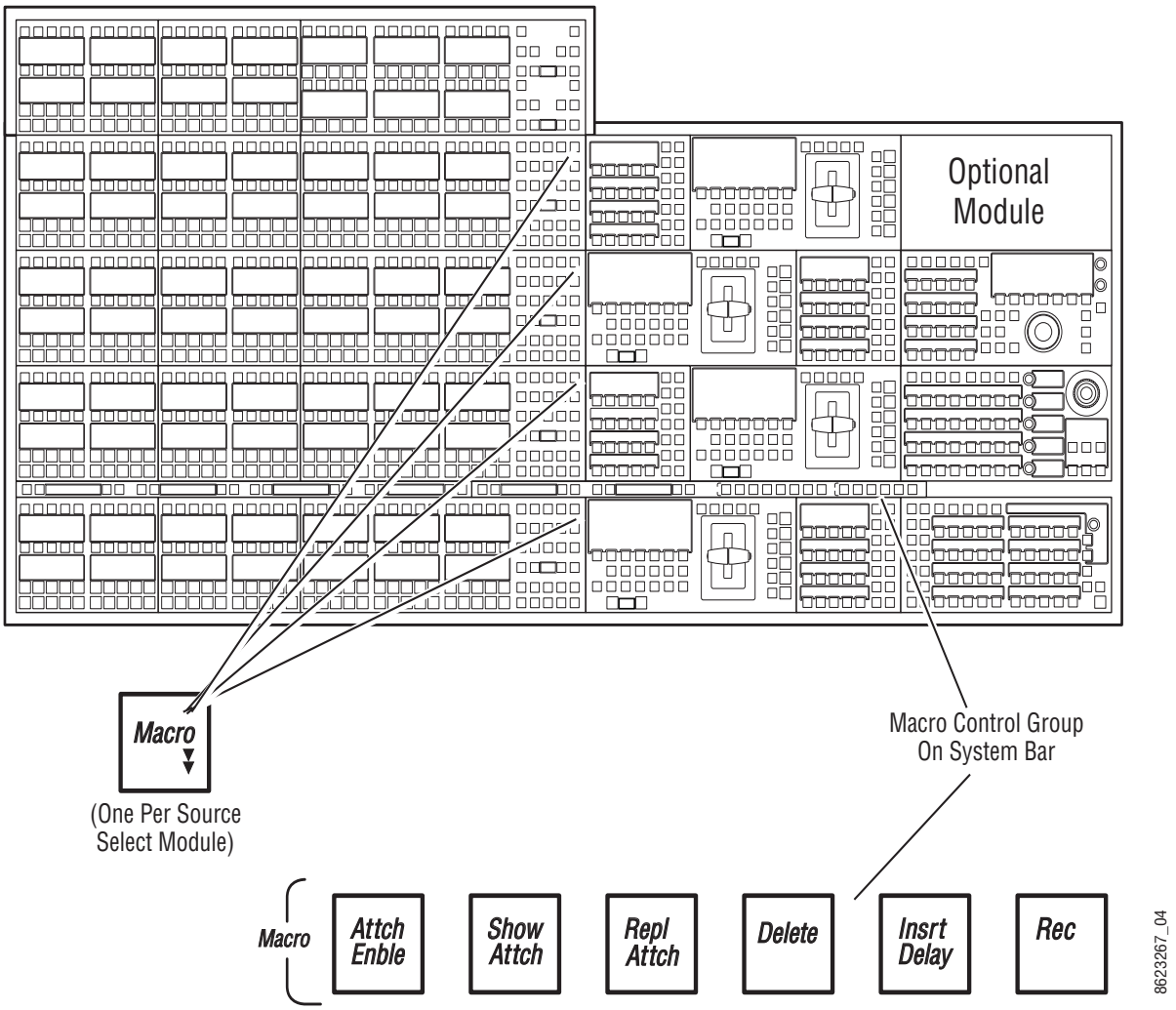
Macros can be attached to other Control Panel buttons. Attached macros can either augment the button's normal function or replace it. A Pre Attach macro executes when the button is pressed, followed by the button's normal action. A Post Attach macro executes after the button's normal action. A Replace Attach macro substitutes the macro for the button's normal action. Any combination of Pre, Post, or Replace Attach macros can be associated with the same button. This makes it possible to have a single button press, play three separate macros though this is not a typical scenario.

Note Macro attachments to buttons without colors, do not appear to flash when Pre-/Post-Attached macros are attached. To verify that a macro is or is not attached, see the Macros, Attach menu.

Macro Control Button Group

The Macro Control Button group on the System Bar has six buttons. These controls are located above the PGM PST stripe, at the far right of the System Bar, as shown in (Figure 232).

Figure 232. Macro Buttons



Macro Button Function Summary

The **Macro** button on the Control Panel, (one per Source Select Module), see Figure 232), delegates keyer source select button Rows 1 and 2 for macro operations and reports that macro mode is active (MCR appears in the bus display). To delegate one bus row for macro operations, press and hold down the **Macro** button, then press a bus delegation button for the row to be delegated. MCRO appears in the bus display reporting that the row is

active for macro operations. Macro names, when displayed, will also appear on the bus row(s).

The **Rec** button activates or terminates macro Record mode. In this mode, you select the macro register into which you wish to record, using the delegated keyer row, perform the desired actions, and then finish the recording by either pressing the **Rec** button again or pressing the newly recorded macro register button.

During a macro recording, time delays can be inserted into macros. The **Insert Delay** button activates macro Insert Delay mode. In this mode the macro delegated ME's source name displays show time durations which can be selected by pressing the corresponding keyer buttons.

The **Delete** button activates macro Delete mode. When delete mode is on, pressing a macro button deletes the macro associated with that button.

When macro mode is on, pressing the **Repl Attach** button activates attach mode. You then select the macro register of the desired pre-defined macro and press the button to which you wish to attach that macro.

The **Show Attach** button activates a mode that low tally blinks Control Panel buttons that have macros attached.

The **Attach Enable** button enables and disables all macro button attachments globally. When on, pressing Control Panel buttons with macros attached will run those macros. When off, macros can only be played back by activating macro mode and pressing the macro register buttons, or with the Macro menu.

Macro Menus

The Macro menus provide access to many, but not all, Kayenne system macro functions. The Macro menus are useful to access and use Macro registers not available on the Control Panel (registers 25 or 33 through 50).

Using Macros

Accessing Shifted Macros

There are four levels of macros with the Kayenne system, Shift Level 1-4. Shift Level 1 is the default when the **Macro** button is pressed on the Control Panel, Shift Level 2 and Shift Level 3 are selected with the 2nd and 3rd macro buttons in the Macro bus display, Shift Level 4 is accessed by selecting both the 2nd and 3rd macro buttons on an ME bus row.

Shifted macros can also be defined and accessed from the Menu Panel, by selecting Macros, Catalog.

Recording a Macro with the Control Panel

1. Turn on Macro record mode by pressing the **Rec** button.
2. Press the macro row button of the desired macro register. Use the **Shift** button to access shifted macro registers.
3. Perform the steps you wish recorded into the macro, in the order they are to be performed, using the Control Panel and/or the menus.
4. Complete the recording by pressing the **Rec** button, or pressing the keyer row macro button.

Recording a Macro with the Menu Panel

Access the Macros menu be touching **Macros**.

Figure 233. Macros Catalog Menu

1. Go to the Macro Catalog menu (press **Macro**, **Catalog**).
2. Touch the Macro Register number button of the register you wish to record into, in the scrolling list.
3. Touch the **Record** button.
4. Perform the steps you wish recorded into the macro, in the order they are to be performed, using the Control Panel and/or the menus.

5. Touch the **Stop** button to end the macro recording.

You can name the macro either before you record it, or after by touching the name data pad for that macro register to bring up a keypad.

Panel Name

The "Panel Name" column is provided in the Macro Catalog menu's, Macro List pane (refer to Figure 233), for entering a Panel Name (four characters maximum). Kayenne displays that name in place of the Macro Register Number in the Local E-MEM Module (when the Macro menu is delegated by pressing the **Macro** button on the module).

Inserting a Delay

While recording a macro, press the **Insert Delay** button then press the keyer source select button of the desired delay time. The **2nd Shift** button (3rd and 4th are undefined for this function) splits the time interval selection between fields (upper key row) and seconds (lower key row). Multiple selections can be made to insert longer delays in both fields and seconds.

Playing Back a Macro Register

1. Turn on Macro mode with the **Macro** button. If not already on, you may also want to press the **Show Attach** button to display the macro names on the source name displays.
2. Select the macro to be played
   - On the Control Panel, press the keyer button of the desired macro register. The **Shift** button accesses shifted macros (2nd, 3rd, and 4th).
   - On the Macro menu, touch the macro register button of the desired macro register, then touch the **Play** button.

Attaching a Macro to a Panel Button Using the Control Panel

Pre-Attach a Macro

1. Delegate the bus rows to Macro by pressing the **Macro** button (see Figure 232 on page 375).
2. Press and hold down the macro button to be attached.
3. Press the keyer row button to which the macro will be attached (if **Show Attach** is on, the panel button will flash until **Show Attach** is turned off).

Post-Attach a Macro

1. Delegate the bus rows to Macro by pressing the **Macro** button (see Figure 232 on page 375).
2. Press and hold down the keyer row button to which the macro is to be attached.
3. Press the macro button to be attached (if **Show Attach** is on, the newly defined macro button will flash until **Show Attach** is turned off).

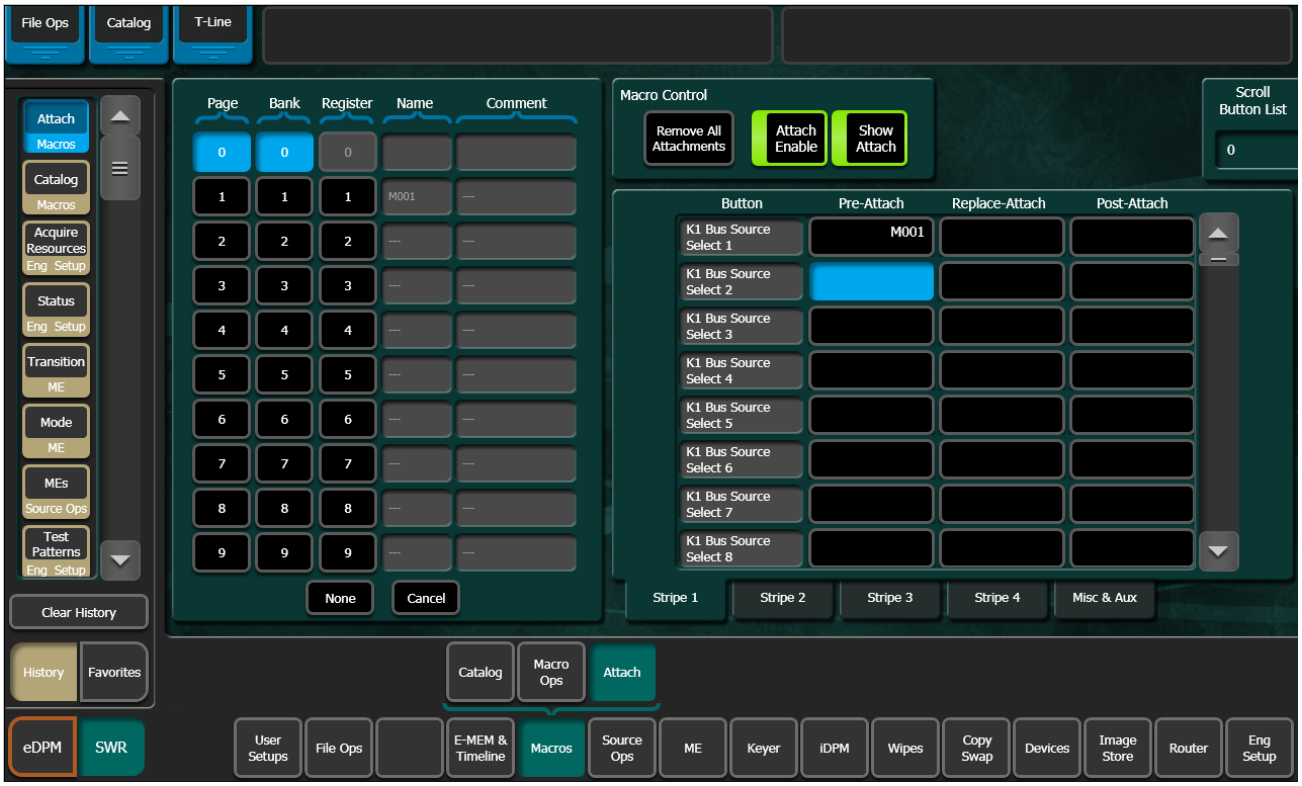
Note Macros attach to physical buttons, not to the delegated target of that button. This means, for example, if you attach a macro to the Chroma Key button, pressing that button runs the macro regardless of which keyer the Transition Module has been delegated to control.

To attach multiple macros to the same button, select another attach mode, then select the macro register of the additional macro, then touch the button to which you wish to attach it. Up to three macros (one of each type) can be attached to the same button.

Attaching a Macro Using the Menu

1. Go to the Macros Attach menu (touch **Macros**, **Attach**) (Figure 234.

Figure 234. Macros Attach Menu



2. Select the button you wish to attach a macro to. You can either touch the physical panel button while **Show Attach** mode is active, which will scroll to and blink that button on the Macros Attach menu, or you can use the menu to select the panel section and then scroll the Macro Attachments list to display the desired button.
3. Touch the **Pre**, **Replace**, or **Post** parameter touch button (upper right).
4. Touch the menu button for the macro register to be attached.
5. If desired, name the macro by touching the Name data pad and entering the name in the pop-up keyboard. Press **Enter**.

Playing an Attached Macro

1. Turn on the attachment playback feature by pressing the **Attach Enable** button so it is illuminated. You may also want to press the **Show Attach** button so that panel buttons with macros attached can be identified (they blink low tally).
2. Press the panel button that has the macro attached.

Removing a Macro Attachment

1. Press the **Delete** button on the System Bar.
1. Press the **Show Attach** button so that panel buttons with macros attached blink low tally.
2. Without selecting a macro register, press the blinking button that has the attachment you wish to remove. The blinking button will turn off.
3. Press **Show Attach** to turn off the mode.

To remove all macros, go to the Macros Attach menu and select **Remove All Macros** button (warning will appear to confirm remove all).

Appending to a Macro with the Control Panel

1. Turn on Macro append mode by double pressing the **Rec** button.
2. Press the macro register button on the delegated keyer row of an existing macro to which you wish to append additional steps.
3. Perform the additional steps using the Control Panel and/or the menus.
4. Complete the append by pressing the blinking **Rec** button, or pressing the blinking keyer row macro register button.

Appending to a Macro in the Menu

1. Go to the Macros Catalog menu (press **Macro**, **Catalog**).
2. Touch the Macro Register number button of the register you wish to record additional steps into.
3. Touch the **Append** button.
4. Perform the additional steps, using the Control Panel and/or the menus.
5. Touch the **Stop** button to end the macro append.

Appending a Macro to Another Macro in the Menu

1. Go to the Macro Catalog menu (press **Macros**, **Catalog**).
2. Touch the Macro Register number button of the register to which you wish to add the contents of another macro.
3. Touch the **Macro #** data pad in the Append Existing Macro pane.
4. Select the macro you wish to append to the target macro in the pop-up, and select the **Do Append** button (or select the **Cancel** button if you wish to cancel the operation).

Note The contents of the indicated macro will be appended to the originally selected macro. Only the current contents of the macro is appended to another macro. Deleting or changing the source macro will not change the behavior of the macro that has received its contents through an append.

Saving Macro Registers

1. Go to the File Ops, Macro menu.
2. Press the Save button in the File Operations pane.
3. Navigate to the folder (System Storage or Remote Storage tab) into which you wish to save the Macro files (left pane). You can create a new folder if you wish.
4. Select **All**, **Enter Reg(s)**, or the **Select Reg(s)** buttons (enter or select a range for the latter two).
5. Touch the **Save** button.

Note Only the macro registers themselves are saved with this procedure, not any macro attachments.

Loading Macro Registers

Macro registers are loaded similarly, by selecting the macro register file or a folder of macros touching the **Load** button in the File Ops, Macros menu.

Note Only the macro registers themselves are loaded with this procedure, not any macro attachments.

Using a Macro for Multiple Copies or Swaps

When copying or swapping several settings in turn (copying an ME to several other MEs, for example) time may be required for one command to complete before the next command can be serviced. If you create a macro that performs multiple copy or swap operations, add a short delay after each operation to ensure each completes successfully. For example, to copy ME 1 to ME 2 and then copy ME 1 to ME 3 with a macro, include a short delay after the ME 1 to ME 2 copy.

Macros and E-MEMs

Macros and E-MEMs can interact in two fundamentally different ways. A Macro can be created that recalls one or more E-MEMs, or an E-MEM can be programmed to execute one or more Macros. With care, operating both control mechanisms together can be extremely powerful. However, improper use can create infinite loops or other undesirable behavior. It is especially important that your Kayenne system be loaded with the correct E-MEMs and Macros and is operating in the correct mode, or unpredictable system behavior will result from the mismatched E-MEMs and macros.

E-MEM Recalls in a Macro

The state of the **Effects Dis** and **SEQ** buttons are sent as part of each E-MEM recall command. When recording E-MEM recalls to a Macro, make sure these states are correct when you build the Macro. For example, if you want the E-MEM effect to automatically run as a Sequence, make sure that button is on when the E-MEM recall is recorded into the Macro.

Certain E-MEM commands that directly affect the work buffer require special field-rate processing. This ensures all necessary processing occurs once per field and is in sync with all the other changes occurring in that same field. Delays are needed for multiple time cursor changes (**Next KF**, **Prev KF**, **Begin**, **End**, **Go To KF**, **Go To Time**, and **Rewind**). If you wish to use two or more of these commands adjacent to each other in a macro, a delay of at least one frame between them is required for consistent system behavior.

See *Macros in an E-MEM* on page 203 for related information.

Macro Editor

Macro Editor is a powerful part of the Kayenne. The Macro Editor can communicate with the Kayenne Frame or the Kayenne Frame Simulator. Configuring the menu to communicate with the Frame Simulator allows you to use the Macro Editor to edit/create macros offline on a PC.

CAUTION External Macro Editor programs from versions of Kayenne software earlier than V3.0 are not supported and therefore should be removed.

Offline Macro Editing with the Frame Simulator

You can use the Frame Simulator included with the Kayenne software to edit and create macros offline and save them to a USB Memory Stick or other storage device making them portable for use in future shows.

Also in this release, as part of the Frame Simulator interface, you can configure the line rate. The line rate will affect all transition, timeline, and macro pause durations.

Configuring the Frame Simulator

The Kayenne Frame Simulator will be installed automatically in the Grass Valley directory, during the software installation (see the V3.0 or later *Kayenne Release Notes*) for a standalone PC. In order to run the Frame Simulator properly, the line rate will have to be configured once (as it affects all transition, timeline, and macro pause durations) and the main.exe file will need to be running simultaneously with the Menu on PC.

Using a correctly configured Frame Simulator and Show file, you will be assured that macros will properly reference sources and source names, as well as the expected durations for the required line and frame rate.

To configure, operate, and understand more about the Frame Simulator, open and follow the instructions in the Readme.txt file in the Frame Simulator directory (default):

C:\Program Files\Grass Valley\Kayenne\Kayenne Systems_V3.x.x\Frame Simulator.

To configure the Frame Simulator, open a DOS command window and cd to the directory containing the Frame Simulator. At the prompt, type:

```
main.exe -config
```

Select the desired line rate. Once set, the frame will use the configured line rate until changed.

Configuring the Kayenne Menu

Enter the Frame simulator IP Address:

1. In the Kayenne menu, touch **Eng Setup**, **Node Settings**, **Frame Suite Nodes & ID**.
2. Touch the **Frame IP Address** data pad.
3. Enter **127.0.0.1** as the Frame IP address in the Frame IP numeric keypad and press **Enter**.

Note The Node Name "LocalHost" with the IP 127.0.0.1 for Suite1 Surface A has been auto-entered into the Eng Setup, Node Settings, Control Surfaces menu.

At this time, you may want to load a real Show file if the macros you will be editing/creating affect sources or other variables.

Macros can now be edited, created, and saved offline from a PC.

Macro Catalog Menu

The "Panel Name" column has been added to the Macro Catalog menu's Macro List pane (Figure 235). Entering a Panel Name (four characters maximum) displays that name in place of the Macro Register Number in the Local E-MEM Module (when the Macro menu is delegated by pressing the **Macro** button on the module).

Figure 235. Macros, Catalog Menu

To enter a four-character name, touch the **Panel Name** data pad next to the desired macro register, enter the name in the pop-up keyboard, and touch **Enter**.

Note If there is no Panel Name entered, the Macro menu in the Local E-MEM Module will display the macro register number; it does not display the OLED name.

Macro Edit Menus

The Macro Edit/Create button pane with the **Edit** button has been added to the Macros, Catalog menu (refer to Figure 235).

Touching the **Edit** button displays the Macro Line Edit menu (Figure 236).

Figure 236. Macro Line Edit Menu

A macro line is made up of the following columns:

- **Line**—Order of execution in the macro
- **Action**—Type of action: SetAbs (set value) or Event (trigger)
- **Location**—Switcher area affected
- **Component**—Switcher component involved
- **Value**—Component value set by the macro

Macro Editing

With Macro Editor, you do not have to re-create complex macros that you want to use for other parts of the switcher. You can copy a macro from one register to another and then edit the macro lines to fit your needs.

There are two levels of macro editing: editing or organizing macro lines and editing a macro line itself. When reorganizing macro lines, you use the macro editing buttons which allow you delete, move, insert lines, etc. whereas with line editing, you can edit the individual lines; location, values, etc. for each.

Line Editing

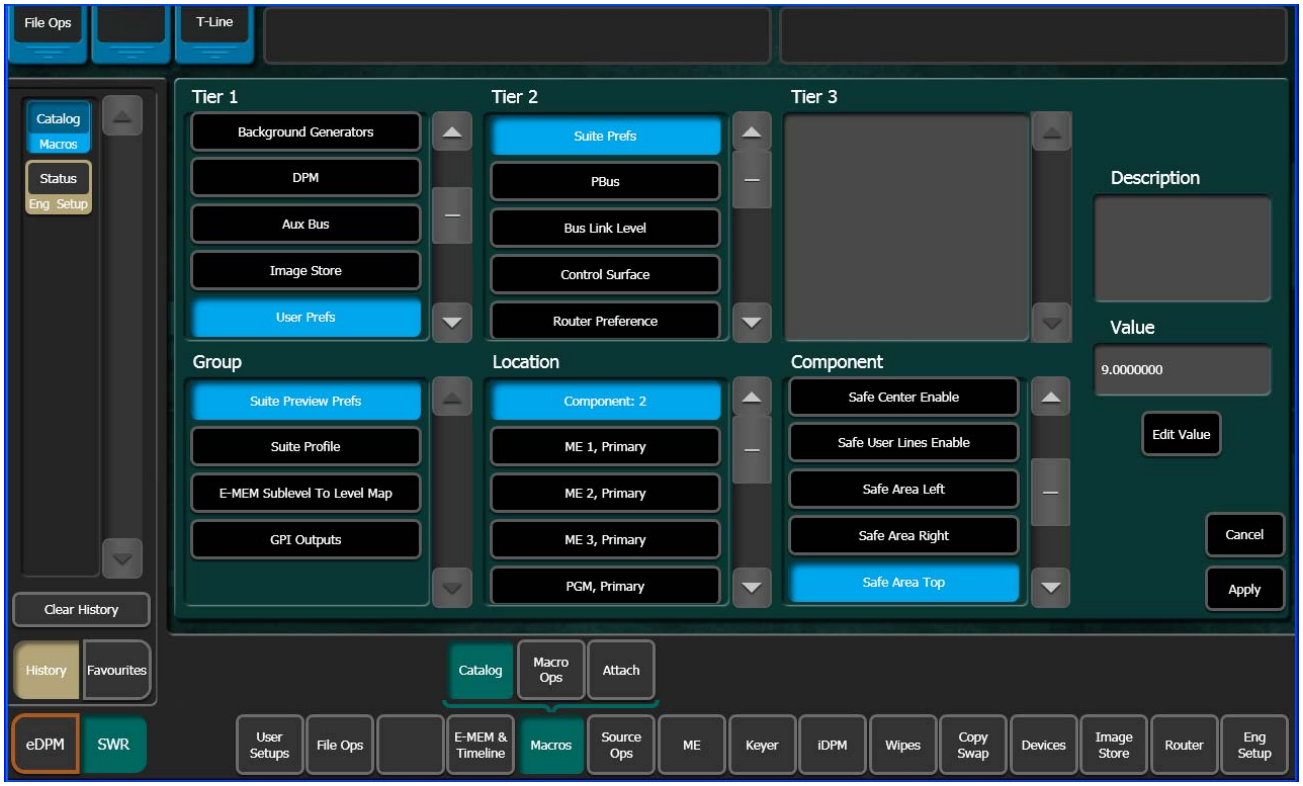
You can edit a macro line by touching the line you wish to edit in the Macro Line Editing menu (Figure 236) and then touching the **Line Edit** button.

The Macro Editor displays a component level, hierarchical view of the selected macro line. In this view you can select a different Tier, Group, Location, and/or Component, and then set a new value for the Component (Figure 237) and apply and save the changes.

The parts of the switcher are organized hierarchically into tiers. Each selected tier has a number of groups. Each group contains a set of components which share the same set of locations. So when editing it is essential to select a group which contains the locations and components you wish the macro to act on.

Note Touching the **Edit Line** button does not open the Component Edit menu for *all* lines, for example with an Insert Delay line, the Enter Delay dialog is displayed when the **Edit Line** button is touched.

Figure 237. Component Edit Value Menu



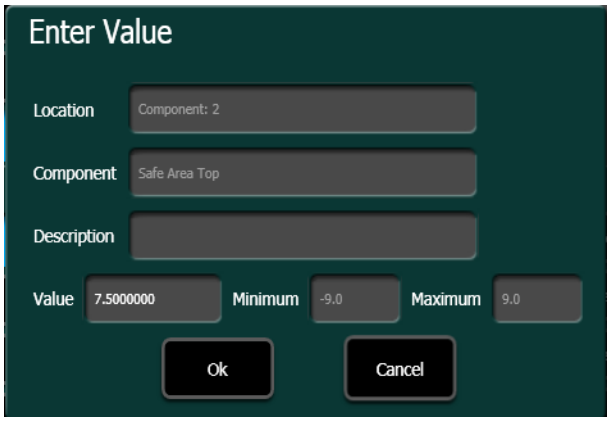
If you wanted to use a macro built for ME 1 on ME 2, you could copy the macro register and go through each line and simply change ME 1, Primary to ME 2, Primary. The macro will now perform identically but for ME 2.

Editing Values

Changing component values is a very useful feature of line editing. For example you could change the value for the "Safe Area Top" component of Line 23 shown in Figure 237:

1. Touch the **Edit Value** button, the Enter Value dialog is displayed.

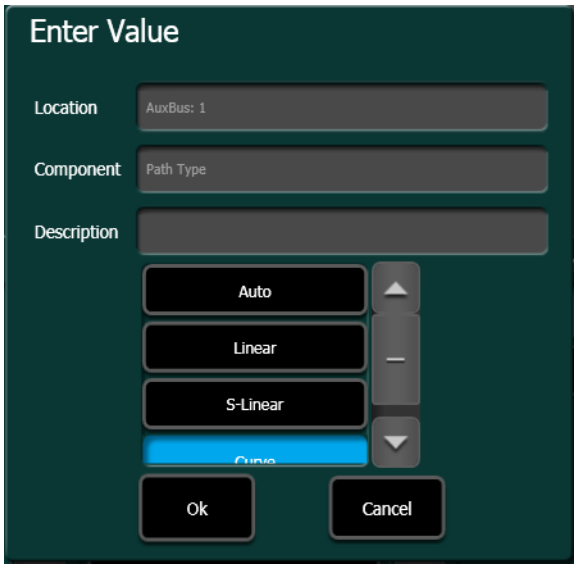
Figure 238. Edit Component Value Menu, Enter Value Dialog Example



2. Touch the **Value** data pad, enter the new value in the pop-up numeric keypad, and touch **Enter**.

   Some components allow you to choose from a list of values (Figure 239).

Figure 239. Edit Component Value Menu, Enter Value from List Dialog Example



   The dialog closes and the new value is displayed in the Component Value Menu's **Edit Value** data pad.

Note It is very important to use a real show file data set, for instance if you were choosing from a list of sources.

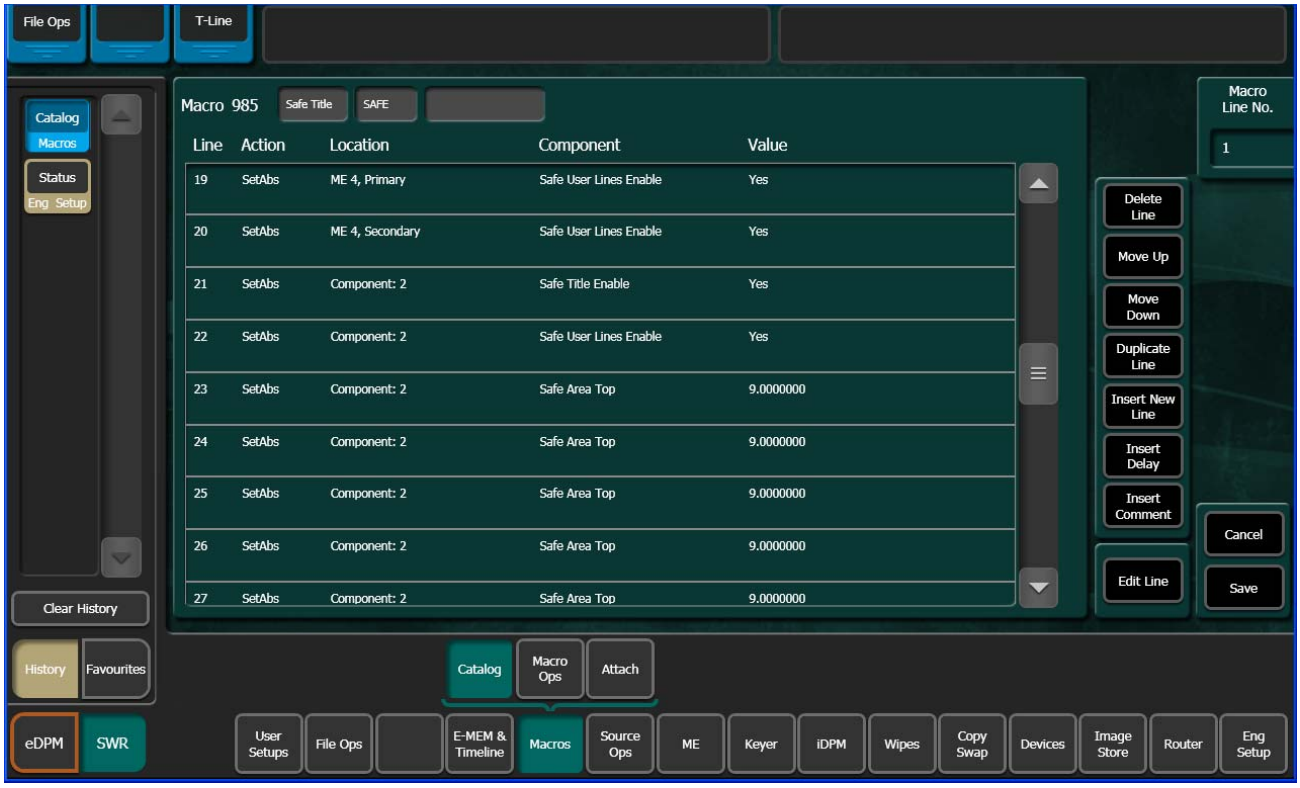
3. Touch the **Apply** button.
4. Touch the **Save** button to save your changes.

   The Macro Line Edit menu is updated to reflect the value change for Line 23.

Macro Editing/Organizing Using Buttons

The Macro Editing buttons are in the Macro Line Edit menu (Figure 240).

Figure 240. Macro Line Edit Menu



Using the Macro Edit buttons, you can edit or reorganize the macro lines:

Delete Line—Deletes the selected line

Move Up/Down—Moves the selected line up/down

Duplicate Line—Duplicates the selected line

Insert New Line—Inserts a new line after the selected line (opens the Component Edit Value menu)

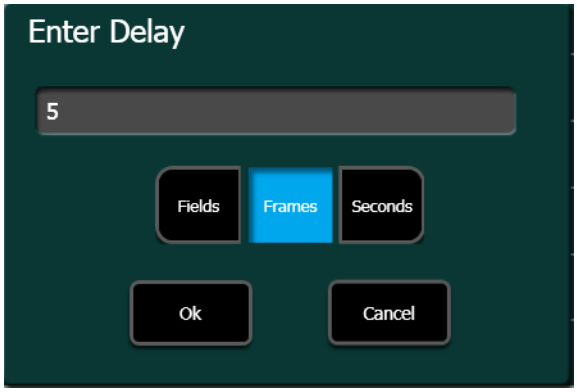
Insert Delay—Inserts a Delay (line) after the selected line (see *Inserting a Macro Delay*)

Insert Comment—Inserts an editable comment after the selected line; comments do not effect macro performance

Inserting a Macro Delay

1. Touch the **Insert Delay** button.
2. Touch the **Enter Delay** data pad and enter the value in the pop-up numeric keypad, for Fields or Frames or Seconds.
3. Touch **Enter**.

Figure 241. Enter Delay Dialog



Creating a New Macro

Creating a new macro can be done in the Macro Editor, however it may not be practical. It is recommended that you learn about Tiers, Groups, and component locations using existing macros first.

To create a new macro:

1. Touch an empty macro register in the Macros, Catalog menu.
2. Touch the **Insert New Line** button in the Macro Line Edit menu (Figure 240), the Component Edit menu is displayed (Figure 237).
3. Choose the Tier 1, Tier 2, Tier 3 (if necessary) levels by touching those buttons.
4. Choose the Group, Location, and Component by touching those buttons.
5. Touch the **Edit Value** button to set the value for the component.
6. Touch **Apply**.
7. Touch **Save**.

Repeat the above steps for each line of the macro.

ClipStore (Image Store Clips)

With the seamless integration of the K2 Summit/Solo technology into the Image Store menus, you can record and play clips with audio. The Summit provides four Video/Key channels while the Solo provides two.

Note See the *Kayenne Installation & Service Manual* for engineering configuration information.

- The ClipStore is supplied to record and playback with AVC-Intra 100 or DVCPRO HD compression format. Clips imported in DVCPRO HD, DVCPRO 25/50, DV, and MPEG-2 will play natively.
- The ClipStore supports embedded audio only. The AES inputs and outputs are not used.

The ClipStore is completely configured and controlled from the Kayenne menu and control panel. There is no need to use the built-in AppCenter Elite software. In fact, if changes are made to the ClipStore using AppCenter, they will be overwritten by the switcher the next time it sends a configuration to the ClipStore.

Note To change the Summit IP address, see the *Kayenne Installation & Service Manual*.

This highly integrated solution provides several powerful features, including:

- Fast access to clips and folders,
- Large storage capacity,
- Non-volatile memory—no loss of images due to power failure,
- Clip control from the Kayenne Menu Panel and clip stack control from the Kayenne Control Panel,
- ClipStore device controls (including macros and cues) are E-MEMable, and
- Make sub-clips from clips and build composite clips with audio.

Summit/Solo Software Version

Version 7.2.7.1403 is the current version of the AppCenter Elite software for the ClipStore server, as of the release of this manual. The latest version of the server software is available on the Kayenne Software Download site.

CAUTION Do not use AppCenter Elite software for ClipStore from the Summit/Solo server web site as it may not be compatible.

For more information about installing and updating AppCenter Elite software, see the Summit/Solo manuals.

ClipStore as an External Device

Note ClipStores 1-4 as devices can only be enabled in the Eng Setup, Devices, Node Settings menu in the Frame Suite Nodes & ID menu tab.

ClipStores 1-4 will appear as the first four external devices in the Device Enables scrolling list (Figure 242), in the Devices, Enables menu (and other Devices menus). External Device 1 will now be in the 5th position in the Device Enables list (Figure 242). Enable/Disable buttons in the Devices menu do not function for ClipStore.

Note For a two-channel K2 Solo, only ClipStores 1 and 2 are reserved and External Device 1 will be in the 3rd position.

ClipStore can be used in a gang like any other external device. For more information about ganging devices, see *Ganging* *on page 320*.

Figure 242. ClipStore in Device Menu

Kayenne Control Panel Operation

As with other external devices, device control is possible through the MFM (Multi-Function Module), the optional DCM (Device Control Module), and the System Bar. Engineering names (CS-1, CS-2, etc.) appear in the control panel displays and all motion controls provided from the server are available.

ClipStore motion controls can be learned as part of an E-MEM.

ClipStore Menu Operations

Clip Replay

The ClipStore output channels appear in the same columnar style as in the Stills menu (Figure 243). Also like the Stills menu, the selected output channel will be outlined in blue or red if on-air.

Note ClipStore channel represents a permanent Video/Key pair.

Clip replay is performed in the Image Store, Replay & Record, Clips (and Clip Record and Edit) menu (Figure 243).

Figure 243. Clips Menu

Folder Selection

Touch the **Current Folder** data pad located just above the scrolling clip list (Figure 243) to change the current folder. The Folders/Clips menu is displayed (Figure 244).

Touch the folder you wish to be the current folder and either select a clip on the right or press the **Cancel** button (bottom right of menu, Figure 244) to close and return to the Clips menu (if the **Cancel** button is touched, the folder will still be changed but it will not result in a clip load).

Figure 244. Folders/Clips Menu Selection

Menu Clip Selection

Clips can be selected in three ways in the menu:

- Touching a clip in the scrolling clip list (Figure 243),
- Touching the **Scroll Image List** data pad (Figure 243), and entering the Image ID for the clip (ascending numeric value in the current folder).
- Touching the Current Folders data pad and then touching a clip in the Current Clip scrolling list (Figure 244).

With the **Auto Load** button selected (highlighted green), the clip will be loaded into the selected ClipStore channel.

Clip Loading

As with Stills, to load a clip (Figure 243):

1. Turn on Auto Load by touching the **Auto Load** button.

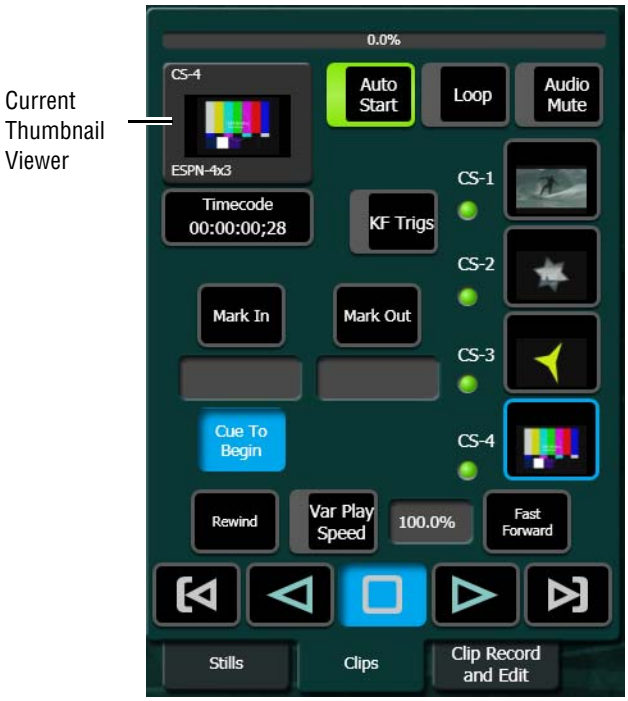
Note Auto Load must be on to load a clip.

2. Touch a ClipStore channel.
3. Touch a clip in the scrolling clip list.

The clip loads to the selected channel.

The Current Thumbnail Viewer (Figure 245) displays the currently loaded clip in the selected channel.

Figure 245. Current Thumbnail Viewer



Note When a ClipStore channel is selected and a clip is loaded, that clip will be highlighted in *blue* in the scrolling clip list (Figure 243) and the list will automatically scroll to display the selected clip.

Clip Search

You can search for clips using the **Search Clip** button (Figure 243). Touching the button displays the Search Clip keyboard. Type letters and/or numbers (minimum 1 character) and touch **Enter** to execute the search. The found clips will be listed in the scrolling clip list.

If Auto Load is on, the first clip in the resulting list will be loaded into the selected channel. If Auto Load is off, or the search finds no clips, then no clips will be loaded.

Playback

The Playback pane in the Image Store, Replay & Record, Clips menu provides playback and playback parameter controls for clips (Figure 246).

You can play a clip by loading it into a ClipStore channel and touching the Play button, or by turning on the **Auto Start** button and taking the channel on-air (Figure 246). For example, if you take the CS-1 channel on-air, either as a background or keyer, the clip loaded into the CS-1 channel will play automatically when the **Auto Start** button is on.

You can loop a clip by touching the **Loop** button (highlights green) or mute the audio of each channel individually with the **Audio Mute** button (Figure 246).

Other controls include (Figure 246):

- **Timecode** data pad—Touch the **Timecode** data pad to enter a timecode.
- **Mark In**/**Mark Out** buttons and data pads—Touch the **Mark In**/**Mark Out** buttons to set the mark-in/mark-out to the current clip position, touch the data pads to enter a Mark In or Mark Out point on a numeric keypad.
- **Cue to In** button data pad—Touch the **Cue to In** data pad and enter the value.
- **Var Play Speed** button and data pad—**Var Play Speed** button on, enables variable speed play. Touch the data pad to enter the playback speed value.

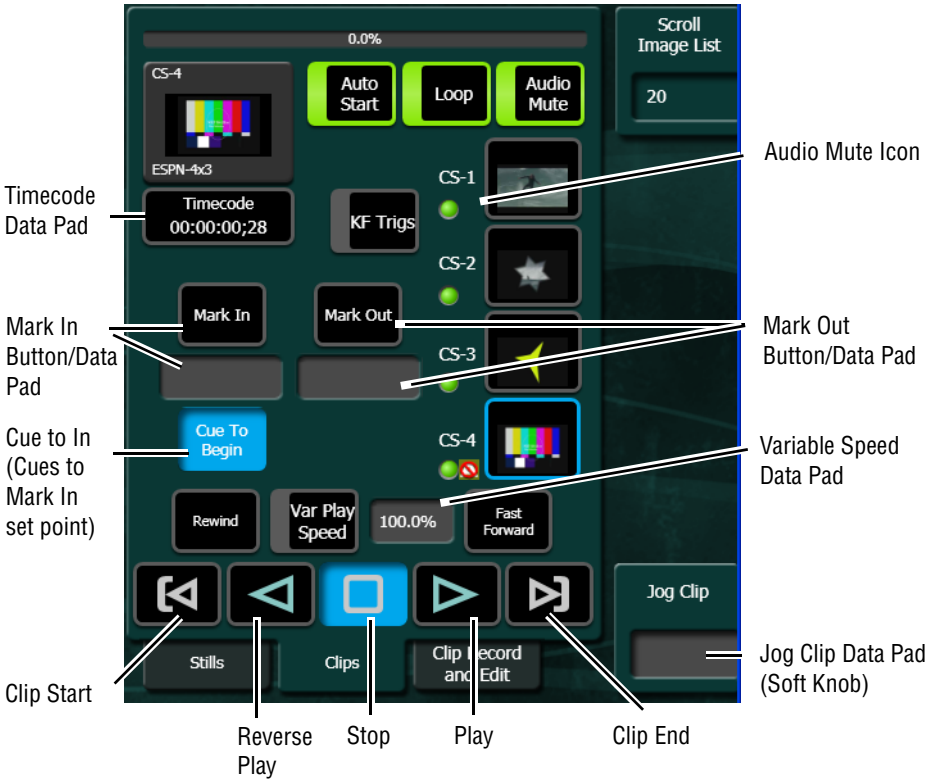
Device control buttons:

- **Rewind**
- **Fast Forward**
- **Start of Clip**
- **Reverse Play**
- **Stop**
- **Play**
- **End of Clip**

(The **KF Trigs** button is described in *Replay with E-MEMs*.)

Note All the functions listed above can be controlled by macros.

Figure 246. Playback Controls



Replay with E-MEMs

ClipStore replay can be controlled with E-MEMs. Keyframe triggers that are E-MEMable are:

- Load (Clip),
- Loop Enable/Disable,
- Cue (to in), and
- All Motion Controls including Variable Speed Play (**Var Play Speed** button).

Note The Master E-MEM has CS-1, CS-2, CS-3, and CS-4 assigned by default to MISC 1-4.

To create an E-MEM trigger, touch the **KF Trigs** button in the Image Store, Clips menu (Figure 247). The motion control buttons become jeweled toggle buttons, and **Loop Enable**, **Loop Disable** and **Cue** buttons are displayed (Figure 247). When a **Loop Enable**, **Loop Disable**, **Cue**, or motion control button is touched, that operation will be learned by E-MEM.

Figure 247. Clip Replay with E-MEM Control

Recording Clips

Clips are recorded with embedded audio in the Image Store, Replay & Record, Clip Record and Edit menus (Figure 248). The **Record** and **Edit** mode buttons (Figure 248) are positioned at the top right of the menu. To record, the **Record** mode button must be selected (highlighted light blue, Figure 248).

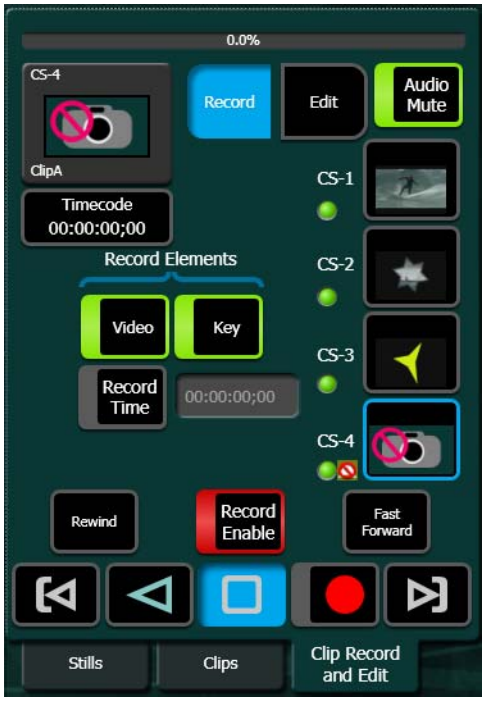
Figure 248. Record Mode

When the **Record Enable** button is touched, ClipStore ejects the clip from the selected channel, places the ClipStore channels in E/E mode, and displays a pop-up keyboard. Type in the name of the new clip. Once the name is typed, **Enter** is pressed, and the keyboard closes, the **Record Enable** button is highlighted red and the menu has changed to display recording controls and parameters in readiness for recording (Figure 249). The **Play** device control button is replaced by a **Record** button.

Clips can be overwritten by entering an existing clip name into the pop-up keyboard or by touching the **Cancel** button in the pop-up keyboard and touching a clip (or folder then clip) in the Folders/Clips menu (Figure 244). Once either operation is completed, you are returned to the Record mode menu and the **Record** button is present and highlighted in red.

Note Thumbnails do not display in the Current Thumbnail Viewer in Record Enable mode except when overwriting an existing clip.

Figure 249. Record Button Enabled



The **Video** and **Key** Record Elements buttons allow you to route the Aux Bus selections:

- Video Only—Video + Full Raster White,
- Key Only—Key + Key, and
- Video/Key—Video + Key.
- Set a Record Time using the Record Time button.

Note If an Aux Bus is not configured for the ClipStore output, the **Video** and **Key** buttons will always be on.

These elements are also very useful for editing when you want to *build* or *join* clips (see *Editing Clips on page 401*). To set a record time, touch the **Record Time** button and a pop-up keypad will appear to enter the desired value. Touch **Enter** when finished.

To record a clip:

1. Touch to select the ClipStore channel for recording.
2. Touch the **Record** mode button.
3. Define the Record Elements you wish to apply to the clip to be recorded.
4. Touch the **Record Enable** button.

5. Enter a new clip name or an existing clip name if you wish to overwrite that clip.
6. Touch **Enter**.
7. Touch the **Record** device control button.
8. Touch the **Stop** device control button when the desired length of the clip is reached.

Editing Clips

Clips can be edited in the Image Store, Clip Record and Edit menu. There are three types of clip editing provided:

- Cut Edit,
- Build Edit, and
- Join Edit.

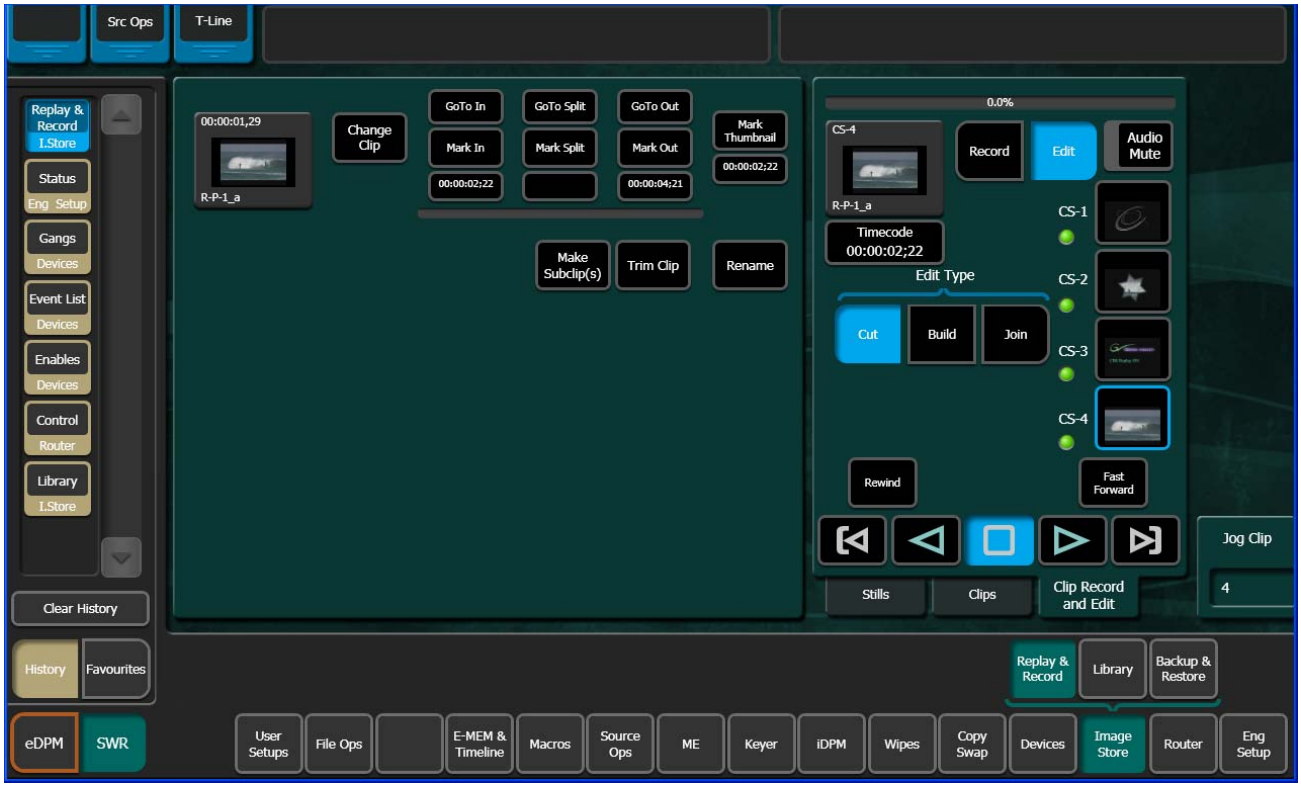
Cut Edit

Cut Editing allows you to edit a clip in the following ways:

- Rename Clips (use the **Rename** button).
- Mark a thumbnail, see *Cut Edit* *on page 401*),
- Trim and remove from the head of the clip to the Mark In point (*Trim and Remove* *on page 403*),
- Trim and remove from Mark Out point to the end of the clip (*Trim and Remove* *on page 403*),
- Make sub-clips (including splitting one clip into two) from the current clip (*Make Sub-clips from the Current Clip* *on page 404*), and
- Cut Edit while recording a clip (*Cut Editing while Recording* *on page 405*).

For Cut Edit, touch **Image Store**, **Replay & Record**, **Clip Record and Edit** and touch the **Cut** button in the Edit Type mode group (Figure 253).

Figure 250. Cut Edit Mode



Mark a thumbnail

The Cut Edit menu displays the currently loaded clip in the thumbnail view. If you wish to change the clip, touch the **Change Clip** button before editing (Figure 251).

Figure 251. Mark Thumbnail Point

1. Touch the **Change Clip** button to select a clip to edit (unless previously loaded, Figure 251).
2. Either jog, shuttle, or play to the desired frame and touch the **Mark Thumbnail** button or,
3. Touch the **Mark Thumbnail** data pad and enter the mark point in the pop-up Mark Thumbnail Point keypad (Figure 251), and touch **Enter**.
4. Touch the **Mark Thumbnail** button (Figure 251).

The new thumbnail replaces the old in all views.

Trim and Remove

Material can be removed from the head of a clip to a mark-in point and from a mark-out point to the end of a clip. Both operations can be performed on a single clip.

Trim Clip operations include:

- Setting only the mark-in point, and touching the **Trim Clip** button—the clip will be trimmed from the beginning of the clip to the mark-in point.
- Setting only the mark-out point, and touching the **Trim Clip** button—the clip will be trimmed from the mark-out point to the end of the clip.
- Setting both a mark-in and mark-out point, and touching the **Trim Clip** button—the clip will be trimmed on both ends (beginning of clip to mark-in and mark-out to end of clip).

To enter the mark-in/mark out points, either jog, shuttle, or play to the desired frame and touch the **Mark In/Out** button or touch the **Mark In/Out** data pad and enter the mark-in/out point in the pop-up keypad, and touch **Enter**.

Note Trim Clip to mark-in, trims up to the mark point in the clip so the marked frame is the first frame of the new sub-clip.

CAUTION Trim Clip from the mark-out point, trims (removes) the marked frame and trims to the end of the clip so the frame at the mark point will *not* be part of the new sub-clip.

Make Sub-clips from the Current Clip

A sub-clip can be created from the current clip with mark-in and mark-out values (or without and the clip length will be the same as the original) or split into two sub-clips.

1. To enter the mark-in/mark out points, either jog, shuttle, or play to the desired frame and touch the **Mark In/Out** button or touch the **Mark In/Out** data pad and enter the mark-in/out point in the pop-up keypad, and touch **Enter**.
2. Touch the **Make Subclip(s)** button.
3. Enter a clip name or accept the provided name (appends _a) and touch **Enter**.

   A new sub-clip with the trimmed length is created.

When making a split clip, the first clip is created from the current clip head to the split mark point, the second from the split point to the clip end.

To split one clip into two sub-clips:

1. Either jog, shuttle, or play to the point in the clip where you want to split the clip and touch the **Mark Split** button (Figure 252), or
2. Touch the **Mark Split** data pad (below **Mark Split** button) and enter the value for the split point in the Mark Split Point pop-up keypad, and touch **Enter** (Figure 252).

Figure 252. Mark Split (One Clip Split into Two)

3. Touch the **Make Subclip(s)** button.

   The Name First sub-clip pop-up keyboard is displayed.

4. Enter a name or accept the default name for the *first* sub-clip in the Name First sub-clip pop-up keyboard (for the default, _a is appended to the clip name).

5. Touch **Enter**.

6. Enter a name or accept the default name for the *second* sub-clip in the Name Second sub-clip pop-up keyboard (for the default, _b is appended to the clip name).

7. Touch **Enter**.

The two new sub-clips are created.

Cut Editing while Recording

A key advantage to using a ClipStore server is you can record and replay simultaneously. This allows you to create sub-clips from the currently recording clip.

The following rules apply to performing a Cut Edit operation during recording:

- Making sub-clips is the only available operation.
- Only the Cut Edit type will be available.
- Changing the clip will not be possible from the menu during this operation.

Once recording has begun, you can touch the **Edit** mode button, set mark-in/mark-out points, and create a sub-clip (see *Make Sub-clips from the Current Clip* *on page 404*).

A currently recording clip can also be loaded into another channel of ClipStore. From the other channel, sub-clips can be made from any part of the recording without interrupting the record.

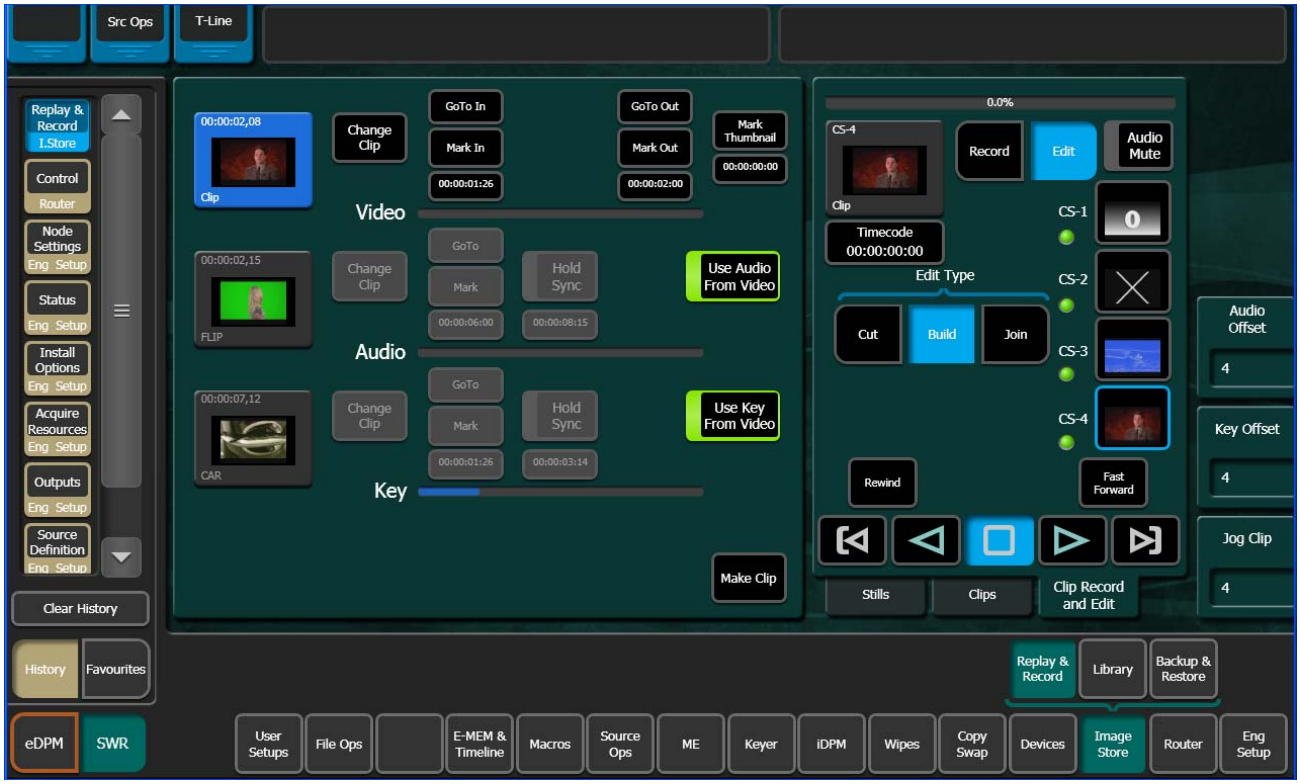
Build Editing

Build Editing (Figure 253) allows you to take elements from one long clip or from multiple clips and make a sub-clip, including:

- Video and Audio (audio from a clip or .WAV file),
- Video (with embedded audio) and Key, or
- Video, Audio (audio from a clip or .WAV file), and Key.

CAUTION Audio files must be 48kHz/.WAV file format, other file types will not be recognized by ClipStore.

Figure 253. Build Edit Mode



The clip created with the Make Clip operation will be a sub-clip that has its head to tail length defined by the mark-in and mark-out points of the Video track. (if there are no marks, the sub-clip created will be the same length as the original). Both Audio and Key tracks of the new clip will only exist inside the Video track's marks.

Video is the controlling track in the scratch clip, i.e. the Audio, Key, and motion control is slave to the Video track when selected.

Audio Offset, **Key Offset**, and **Jog** soft knobs are provided for editing (1/4 turn equals 1 frame).

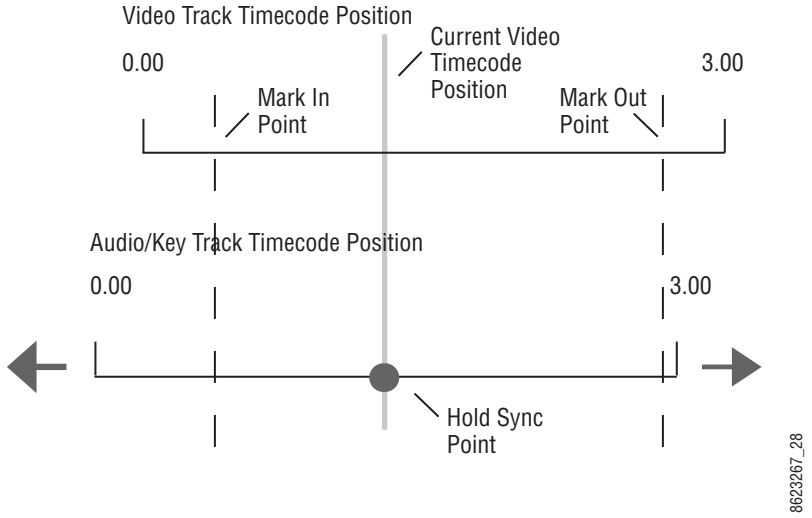
Hold Sync—Hold Sync sets the position of the Audio/Key track in relation to the Video track's current timecode position (Figure 254). The Audio/Key track's timecode can be offset in relation to the video track timecode by changing the Hold Sync Mark Point (using the **Hold Sync** data pad pop-up keypad or the **Audio**/**Key Offset** soft knobs). In this way, the Audio/Key tracks can be synchronized with the Video track. Different Hold Sync Points can be set for the Audio and Key tracks in relation to the Video.

Note If a key track from another clip is used, and starts past the mark-in point of the video track, full raster white will be used for the key until the key timecode begins when the composite clip is played. If an audio element from another clip is used, and starts past the mark-in point of the video track, there will be no audio until the start of the audio timecode when the composite clip is played.

Once the **Hold Sync** button is touched for either the Audio or Key, the Hold Sync point will be set and their positions in relation to the current video track timecode position become part of the scratch clip, and subsequently the new sub-clip when the **Make Clip** button is touched.

Note You can still change any of the current timecode values, including the video timecode by changing the mark-in/mark-out points and the Audio/Key timecode using the **Hold Sync** data pad or **Audio/Key Offset** soft knobs, before the **Make Clip** button is touched. Each change updates the scratch clip.

Figure 254. Hold Sync Point



The following provides examples and procedures of how to combine elements of Video, Audio, and Key. These composited elements become part of the new sub-clip.

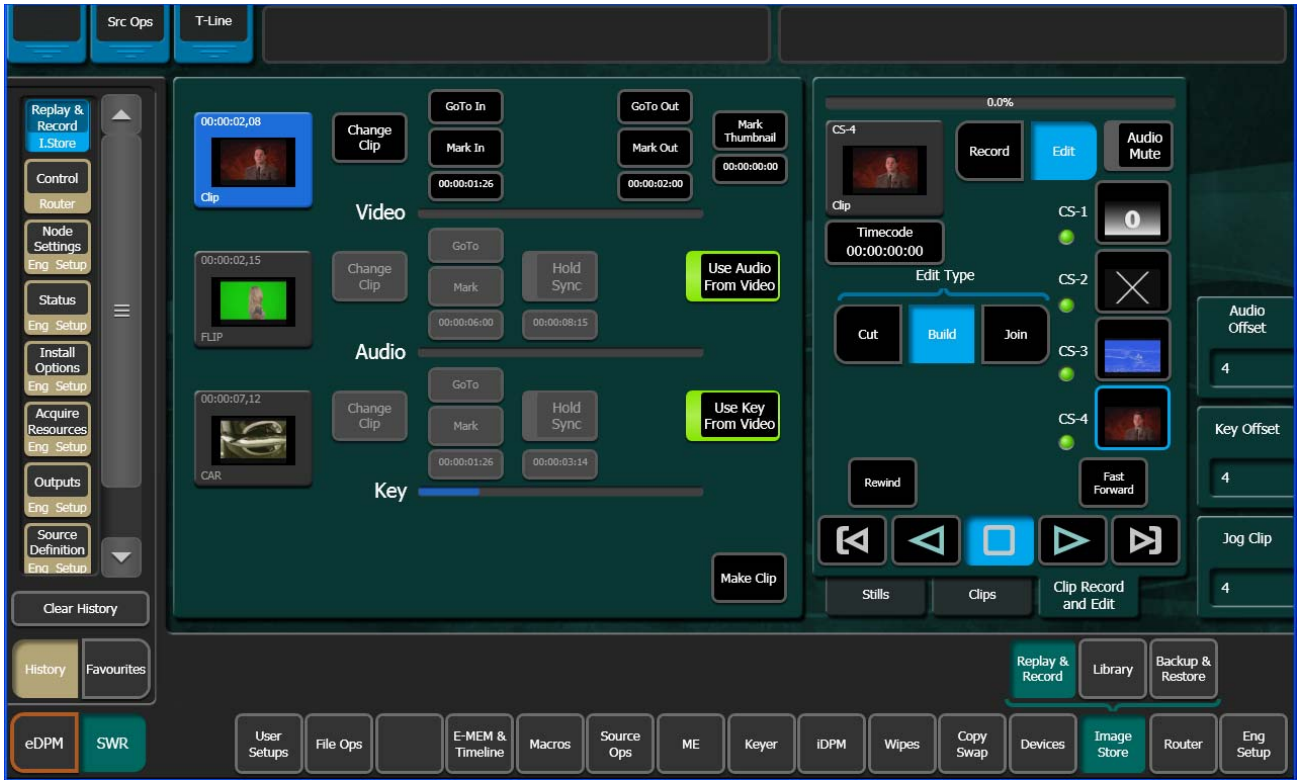
These procedures can also be used to make a composite clip of elements on one long clip, for example if both Video and Key track are recorded on one clip, the clip can be loaded as the Video track and then as the Key track, synchronized, and then a sub-clip made of the composite elements.

As with other ClipStore editing operations, if you enter the name of an existing clip, that clip will be overwritten when creating a sub-clip using the Make Clip operation.

Editing a Video Clip with Build Edit—The following example is of how to mark-in, mark-out, mark a thumbnail, and make a sub-clip. The **Use Audio From Video** and **Use Key From Video** buttons are enabled (highlighted green) which means only the video track will be edited and a new clip made with those changes:

Touch **Image Store**, **Replay & Record**, **Clip Record and Edit** and touch the **Build** button in the Edit Type mode button group (Figure 255).

Figure 255. Build Edit Mode—Video Only Edit



1. Unless the desired clip is loaded, touch the **Video Thumbnail Viewer** (Figure 255).
2. Touch the **Change Clip** button for the Video and touch the desired clip (Figure 255).
3. Determine where you want a mark-in point for the Video track by either playing/jogging to the mark while viewing the clip on a monitor and touching the **Mark In** button (Figure 255) or if you know the timecode, touch the **Mark In** data pad and enter the timecode into the pop-up keypad, and touch **Enter**.
4. Determine the mark-out point for the Video track and enter it as described for Mark In.

Mark a Thumbnail

1. Jog, shuttle, or play to where you want to mark thumbnail and touch the **Mark Thumbnail** data pad, or
2. Touch the **Mark Thumbnail** data pad and enter the mark-thumbnail point in the pop-up keypad, and touch **Enter**.

With the Video Thumbnail Viewer selected, you can test the composite elements using the motion control buttons.

Make the Sub-clip

1. Touch the **Make Clip** button.
2. Enter the name of the new clip and touch **Enter**.

The new clip is created and appears in the clip lists in the ClipStore menus.

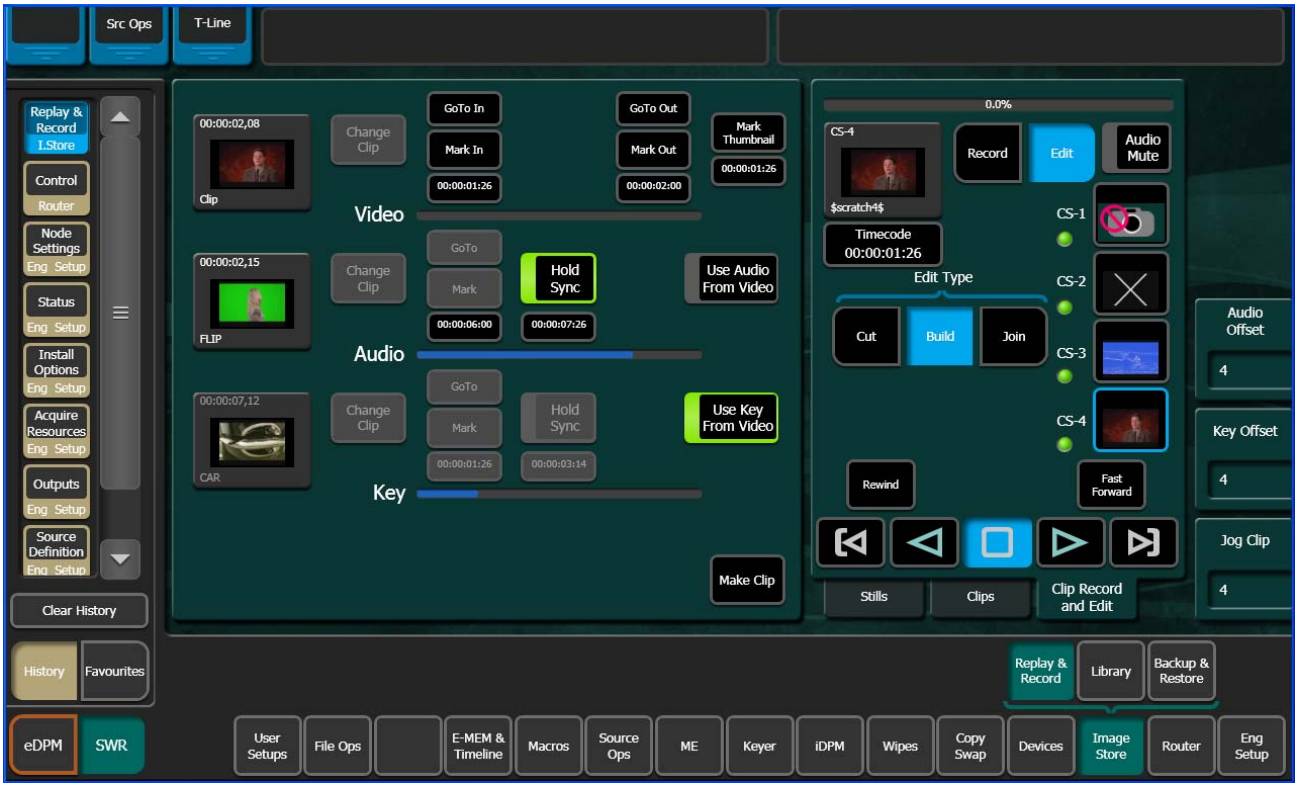
Note If Multiple sub-clips are desired from a built clip, use Build Edit to make the whole clip and then use the Cut Edit to make multiple sub-clips.

Adding a New Audio Element with Build Edit—If you require audio before or after video, a video track (for example of black) is needed so a mark can be made (this can be added with Join Edit, see *Join Edit on page 413*).

In this case, use the Video and Key of the loaded Video track but add/replace the Audio track and make a sub-clip. The **Use Key From Video** button is enabled (highlighted green):

1. Unless the desired clip is loaded, touch the **Video Thumbnail Viewer** (Figure 256).

Figure 256. Build Edit Mode—Audio Track Edit



2. Touch the **Change Clip** button for the Video and touch the desired clip (Figure 256).

3. Determine where you want a mark-in point for the Video track by either playing/jogging to the mark while viewing the clip on a monitor and touching the **Mark In** button (Figure 256) or if you know the timecode, touch the **Mark In** data pad and enter the timecode into the pop-up keypad, and touch **Enter**.
4. Determine the mark-out point for the Video track and enter it as described for Mark In.
5. Turn off the **Use Audio From Video** button (Audio section) by touching it (Figure 256).
6. Touch the **Audio Thumbnail Viewer**.
7. Touch the **Change Clip** button and touch the desired clip/.WAV file with the desired Audio track.
8. Synchronize the Audio track in relation to the current video track timecode position, if needed, using the **Hold Sync** data pad or the **Audio Offset** soft knob (see page 407 for more about Hold Sync).

With the **Video Thumbnail Viewer** selected, you can test the composite elements using the motion control buttons.

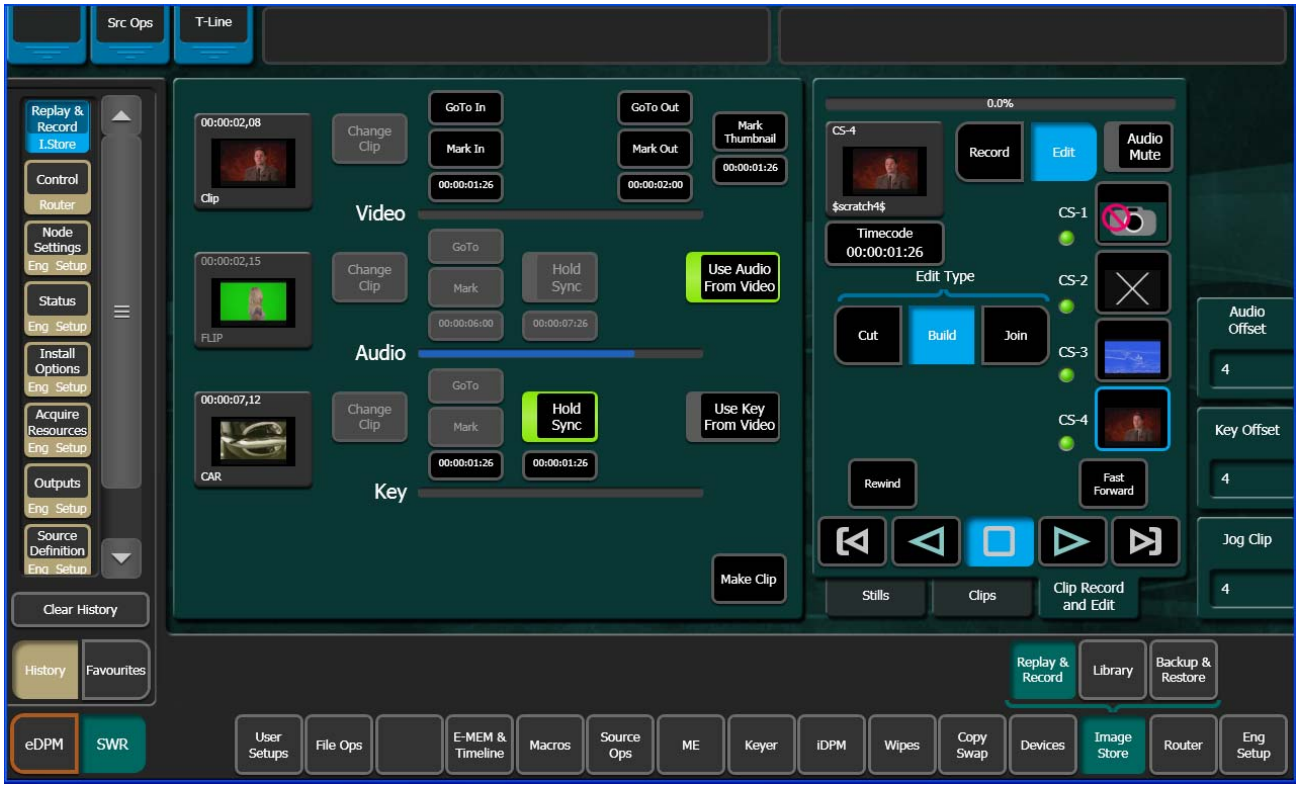
Make the Sub-clip

1. Touch the **Make Clip** button.
2. Enter the name of the new clip and touch **Enter**.

Add/Replace a Key Element with Build Edit—In this case, you want to use the video and audio of the loaded video element but add/replace the key track and make a sub-clip. The **Use Audio From Video** button is enabled (highlighted green):

1. Unless the desired clip is loaded, touch the **Video** thumbnail viewer (Figure 257).

Figure 257. Build Edit Mode—Key Track Edit



2. Touch the **Change Clip** button for the Video and touch the desired clip (Figure 257).
3. Determine where you want a mark-in point for the Video track by either playing/jogging to the mark while viewing the clip on a monitor and touching the **Mark In** button (Figure 257) or if you know the timecode, touch the **Mark In** data pad and enter the timecode into the pop-up keypad, and touch **Enter**.
4. Determine the mark-out point for the Video track and enter it as described for Mark In.
5. Synchronize the Key track in relation to the current video track timecode position, if needed, using the **Hold Sync** data pad or the **Key Offset** soft knob (see page 407 for more about Hold Sync).

With the Video Thumbnail Viewer selected, you can test the composite elements using the motion control buttons.

Make the sub-clip

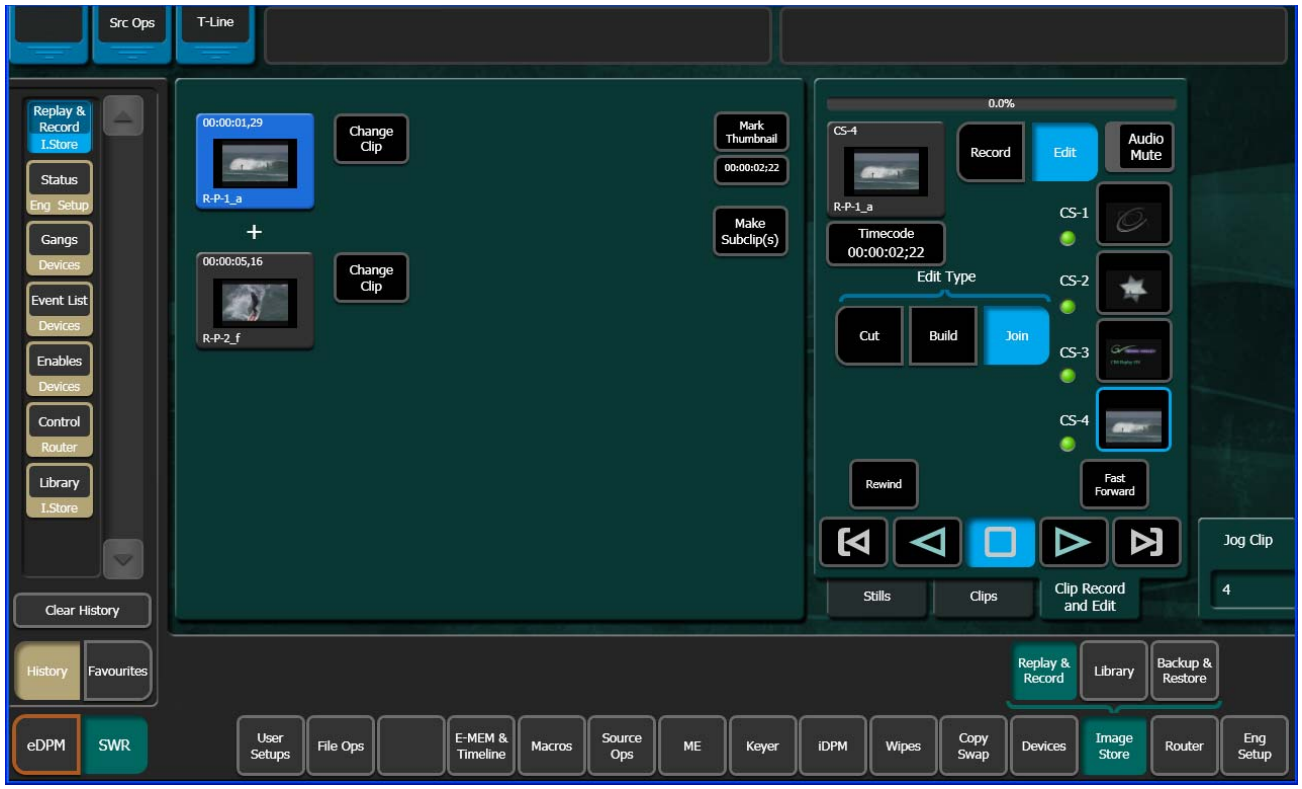
1. Touch the **Make Clip** button.
2. Enter the name of the new clip and touch **Enter**.

Join Edit

Join Edit allows you to append one clip to another, and mark a thumbnail if desired.

To go to the Join Edit mode menu, touch **Image Store**, **Replay & Record**, **Clip Record & Edit** and touch the **Join** button in the Edit Type mode group (Figure 258).

Figure 258. Join Edit Mode



1. Touch the **Change Clip** button for the first clip (top thumbnail) and touch the desired clip.
2. Touch the **Change Clip** button for the second clip (bottom thumbnail) to be appended to the tail end of the first, and touch the desired clip.
3. Mark a thumbnail if desired (optional).
   a. Determine where you want to mark thumbnail and touch the **Mark Thumbnail** data pad, or
   b. Enter the mark-thumbnail point in the pop-up keypad and touch **Enter**.
4. Touch the **Make Subclip(s)** button.

The new clip is created and appears in the clip lists in the ClipStore menus.

File Operations

ClipStore file transfers are performed in the ClipStore Library menu. Touch **Image Store**, **Library**. Files can be imported or exported using the **Copy**/**Paste** (or **Cut**/**Paste** in the case of ClipStore to ClipStore folder transfers) buttons in the To and From ClipStore and Disk/Folder menu tabs (Figure 259).

Note File renaming is not supported in the ClipStore Library menus.

File transfers can be performed from/to the following locations from the Kayenne Menu Panel:

- ClipStore Server,
- Image folder on the Kayenne Menu Panel,
- USB Storage Devices (seen as Removable Disks) and
- External USB Disk Drives (seen as Hard Disk Drives).

USB storage devices can be inserted into the USB ports on both the ClipStore server and on the Kayenne Menu Panel. Memory Sticks will be seen as Removable Disks and will be displayed in the From Disk/Folders and To Disk/Folders menu tabs. External USB Disk Drives will also be seen in the From and To Disk/Folders menu tabs however first a shared folder is needed on the device (see *Creating a Shared Folder for External USB Disk Drives* *on page 415*).

Figure 259. ClipStore Library Menu—File Transfer

Both files and folders containing files can be copied from disk to the ClipStore server. However, folders can only be copied to the top directory of the ClipStore server, “nested” folders are not permitted.

Files can be exported in multiple formats, by touching the mode buttons in the **Export Format** modes pane (Figure 259). This operation is only supported when the files selected for export are in the From ClipStore pane. *Files in Video/Key format can only be exported in GXF format.*

Note If a folder is selected for export, all files within the folder will be exported with the same format.

Creating a Shared Folder for External USB Disk Drives

To exchange files with an external USB disk drive, you will need to create a shared folder in the device, in Windows:

1. Insert the USB connector for the external USB drive in the Menu Panel.
2. Minimize the Kayenne menu.
3. Open **My Computer** from the Desktop.
4. Open the disk drive from the Hard Disk Drives list.
5. Create a new folder using the File menu, name the folder (for example “Kayenne Clips”).
6. Right-Click on the folder, and choose **Sharing and Security** from the pull-down menu.
7. In the **Sharing** tab, select the **Share this folder** radio button.
8. Press the **Permissions** button.
9. Allow full control for Everyone.
10. Click **Apply**.

    The folder is now shared. The new folder will be available in the Image Store, Library, From/To Disk Folders menu tabs.

Image Store (Stills)

With Kayenne Image Store, you can capture or transfer still images to take to air or use as part of an effect. Video, key, and paired video/key images can be captured for playback with Image Store. JPEG, TIFF, BITMAP and Kalypso (.gva/.gva) images are converted when transferred into the Image Store Cache from disk. Image Store Channels 1-6 can be paired as video\key pairs (three video/key pairs maximum). Images are assigned an 'Image ID' (either automatically or manually via keypad) and can be given an 'Image Name'.

Images can be selected and loaded from the Kayenne Menu or Control Panel, using the DCM (Device Control Module) or the System Bar.

File Format

Locally, images are stored as a .KIF (Kayenne Image Format) file.

Setup Information

For Engineering Setup information, see the *Kayenne Installation and Service Manual*.

Image Store Input Aux Delegate Mapping

Delegate Image Store inputs to the aux bus destinations on the Local Aux Module:

1. Go to the Aux Delegate Mapping menu by touching **User Setups**, **Panel Prefs**, **Aux Delegate Mapping** (Figure 260).
2. Select a Local Aux Module button in the Button/Delegation scrolling list (Figure 260).
3. Select an Image Store input (**IS 1**-**IS 6**) in the Image Store Inputs button delegation column (Figure 260).
4. Repeat Steps 2 and 3 for up to six Image Store inputs.

Figure 260. Image Store, Aux Delegate Mapping Menu

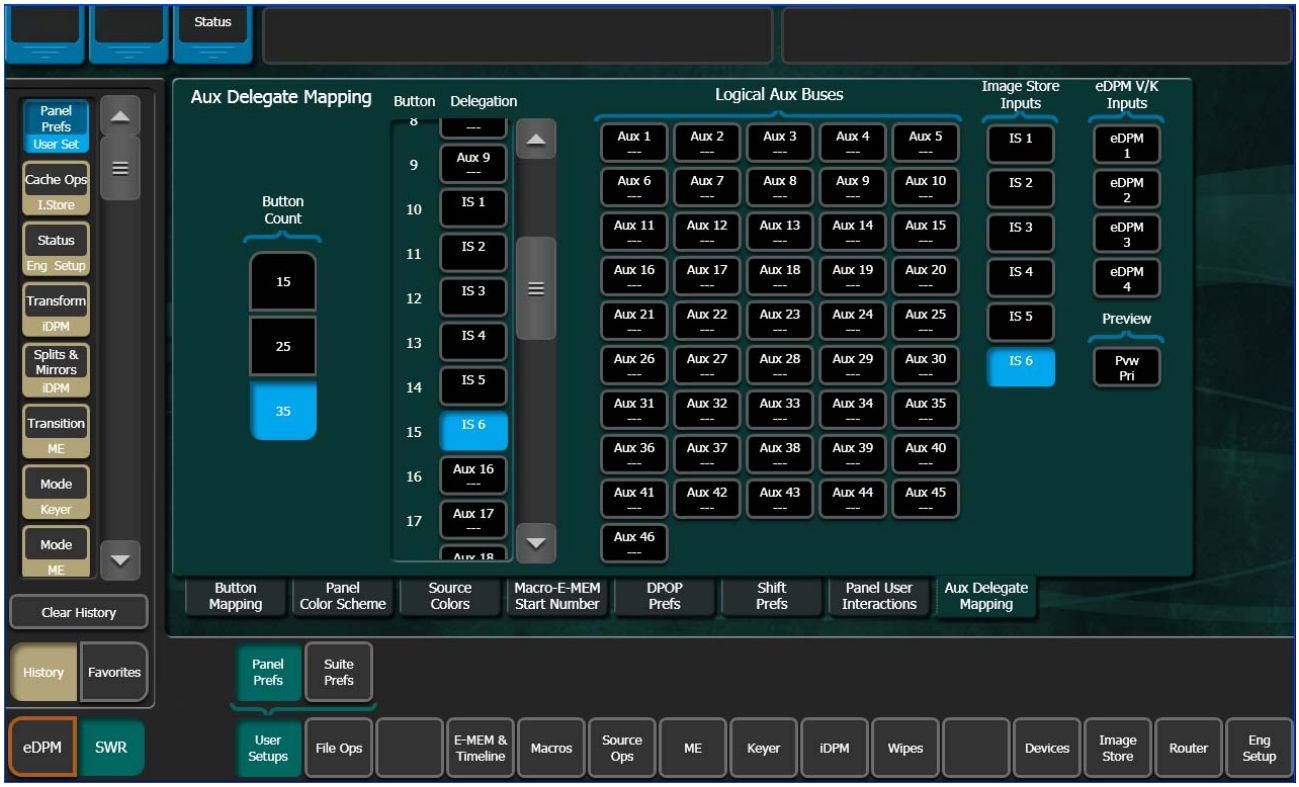


Image Store Operations

Menu Panel

From the Image Store menu, you can perform the following with still images:

- Capture and playback,
- File operations, and
- Backup and restore.

Image Store QuickTabs

There are two Quick Tabs (top-left) in the Image Store menus (Figure 261):

Src Ops (Source Operations) — Shortcut to the Source Ops menu that allows you to map a source to an Image Store channel and to configure Image Store for a key-only signal, still capture, and

T-Line (Timeline) — Shortcut to Master E-MEM, E-MEM & Timeline menu (see *E-MEM Operations* *on page 181*).

Figure 261. Image Store Quick Tabs

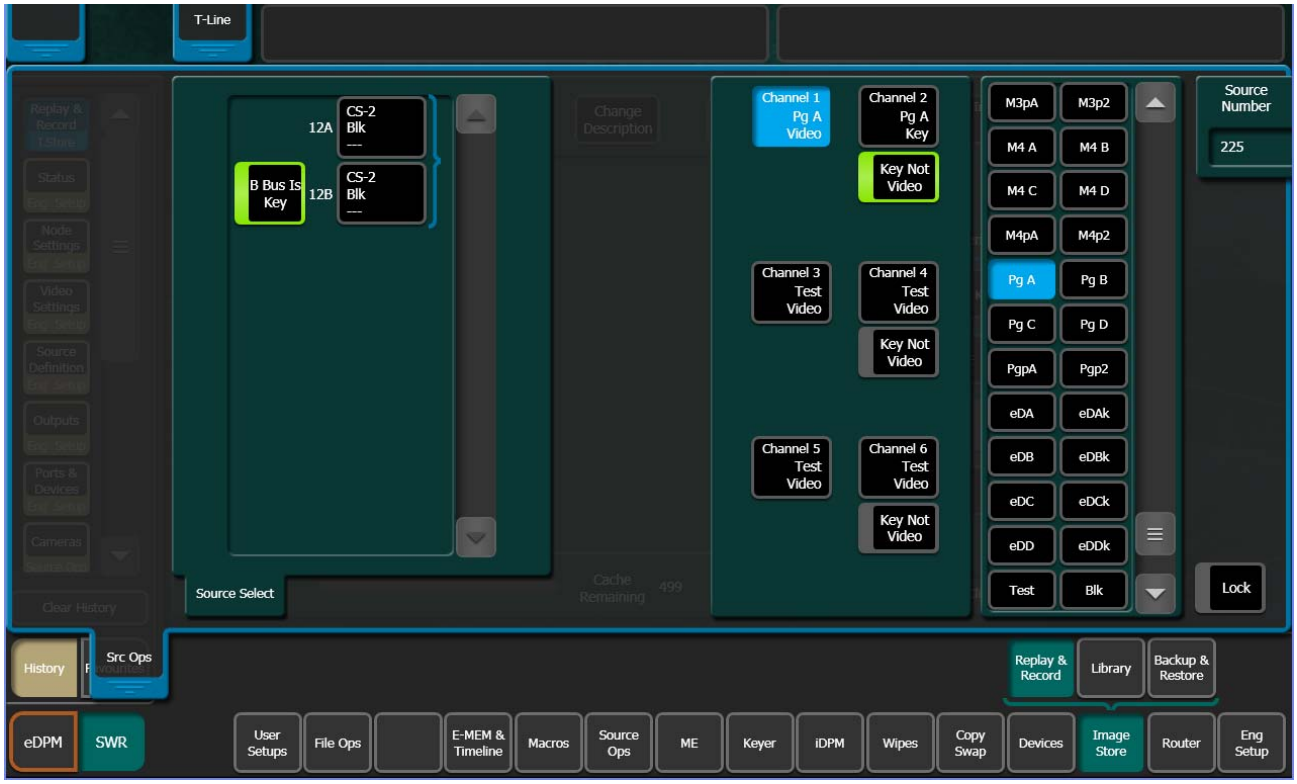


Image Icons and Lists

Images are displayed as icons (default) and also in a list view by touching the **List View** button, in the Playback and Capture Still menus. The following information is shown:

- Thumbnail (in thumbnail view),
- Image ID number,
- Image description,
- Not in the current standard,
- No thumbnail,
- Length, and
- Video (V)/Video and Key (VK).

Capturing a Still from Input Video

Image Store uses the “Grab” function to capture a still (in RAM) and the “Keep” function to load that still into cache. A “grabbed” image can be replaced with another Grab.

Image captures can be performed as a video, key (see *Key Signal-only Capture on page 425*), or a video/key pair. Odd numbered channels can output video only but even numbered channels can output both video and key. A key-only capture means adding a key to an existing video.

To capture stills, perform the following:

1. Setup the input sources on the Local Aux Module (see *Image Store Input Aux Delegate Mapping on page 416*).
2. Go to the Capture Still menu by touching **Image Store**, **Replay & Record**, **Still** menu tab.

Figure 262. Capture Still Menu

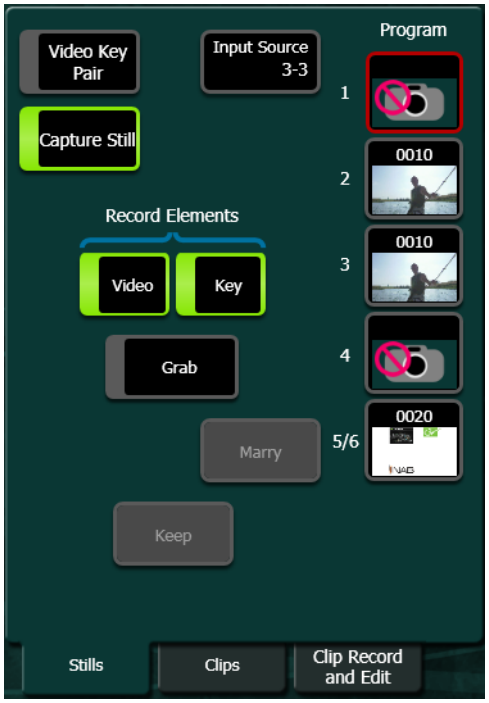
3. Select an Image Store channel by touching it (1-6 under 'Program').

4. Touch the **Input Source** data pad and touch the input source for the selected channel (Figure 262).

Figure 263. Input Source Button/Menu

5. Touch the **Show E-E** button. The **Show E-E** button becomes the **Grab** button (Figure 264).

Figure 264. Capture Still, Grab Button



6. Touch the **Grab** button, the captured image is displayed in the selected output (the **Grab** button returns to **Show E-E**).

   You can repeatedly touch the **Show E-E**/**Grab** buttons until the desired still is captured.

7. With Show E-E enabled, touch the **Keep** button (Figure 264) to place the captured image in cache.

8. A keypad is displayed with a **Name** button (Figure 265).

Figure 265. Keypad with Name Button

9. Choose one of the following three options:

   a. Touch **Enter** to accept the auto-generated Image ID (the next empty Image ID based on the last saved image),

   b. Type your own Image ID (1-8999) and touch **Enter**, or

CAUTION Entering an existing Image ID and touching the **Enter** button will overwrite the existing image associated with that ID.

   c. Touch the **Name** button and type an Image Description in the pop-up keyboard, touch **Enter**, and touch **Enter** again in the keypad.

   The captured image will be placed in cache and displayed in the scrolling image list in the Still menu.

Modifying/Adding Image Descriptions

Image descriptions can be modified or added by touching the **Change Description** button (top of scrolling image list) and entering the name in the pop-up keyboard. The name will appear in the image's icon when **Enter** is pressed.

Capturing Stills as Video Key Pairs

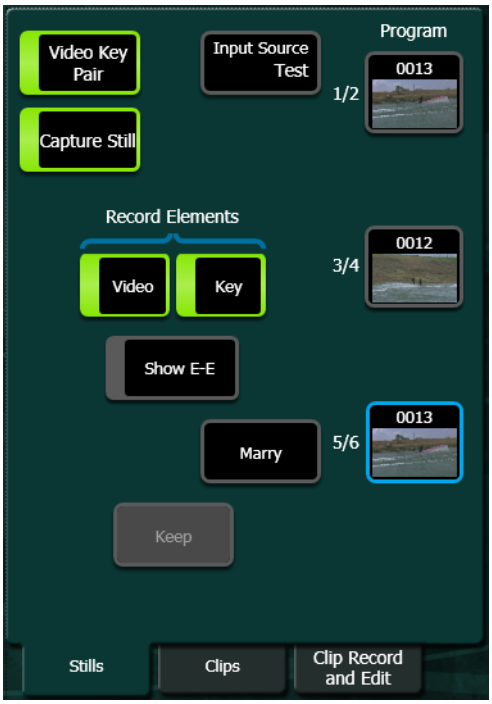
Channels 1 & 2, 3 & 4, and 5 & 6 can be captured (and played back) as video/key pairs (odd for video, even for key). For example, to capture a video/key pair from source input to Image Store Channels 1 and 2:

1. Go to the Image Store, Record & Replay, Stills menu tab and touch the **Capture** button (Figure 266).

2. Touch **Channel 1** to select it under the Program column, right side of menu.
3. Touch the **Input Source** data pad and touch the input source for Channel 1 to select it.
4. Touch **Channel 2** to select it.
5. Touch the **Input Source** data pad and select the input source for Channel 2.
6. Touch the image in Channel 1 or Channel 2.
7. Touch the **Video Key Pair** button.

   Channel 2 becomes the key and is now paired with the Channel 1 video, creating the Video/Key pair.

Figure 266. Capturing V/K Image Pair



8. Capture the still as described in *Capturing a Still from Input Video* *on page 418*, steps 4-8.

Marrying Two Videos as a Video/Key Pair

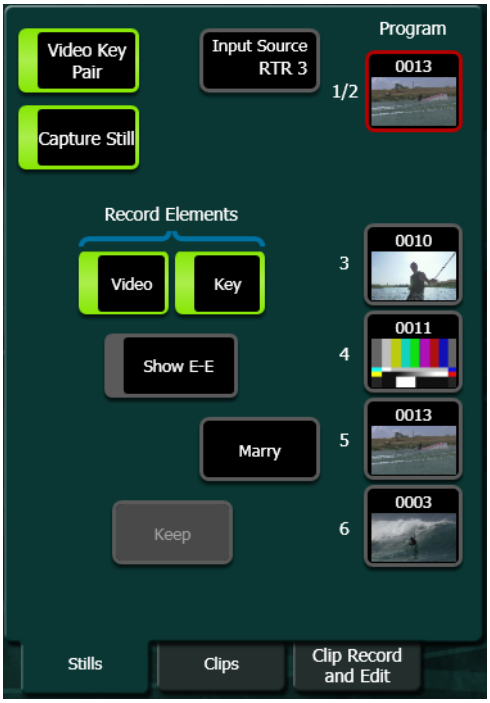
Two existing video images can be "Married" using the **Marry** button in the Capture Still menu, to create a video/key image with the same Image Store ID. Once married, the image will take the ID number for the video in the odd channel.

To marry two video images (video/key paired images cannot be married):

1. Go to the Image Store, Replay & Record, Stills menu tab.
2. Touch an odd Image Store Channel to select it.
3. Touch a video-only image in the scrolling box to be the video of the pair.
4. Touch the even Image Store channel of the pair (for example Channel 4) to select it.
5. Touch an image in the scrolling box to select it as the key for the pair.
6. Press the **Capture Still** button.
7. Touch the **Video Key Pair** button to highlight it.

   The **Marry** button is now available (Figure 266).
8. Touch the **Marry** button.

Figure 267. Capture Still Menu, Marry Button



Note The Marry function cannot be undone. The combined image is permanently video/key.

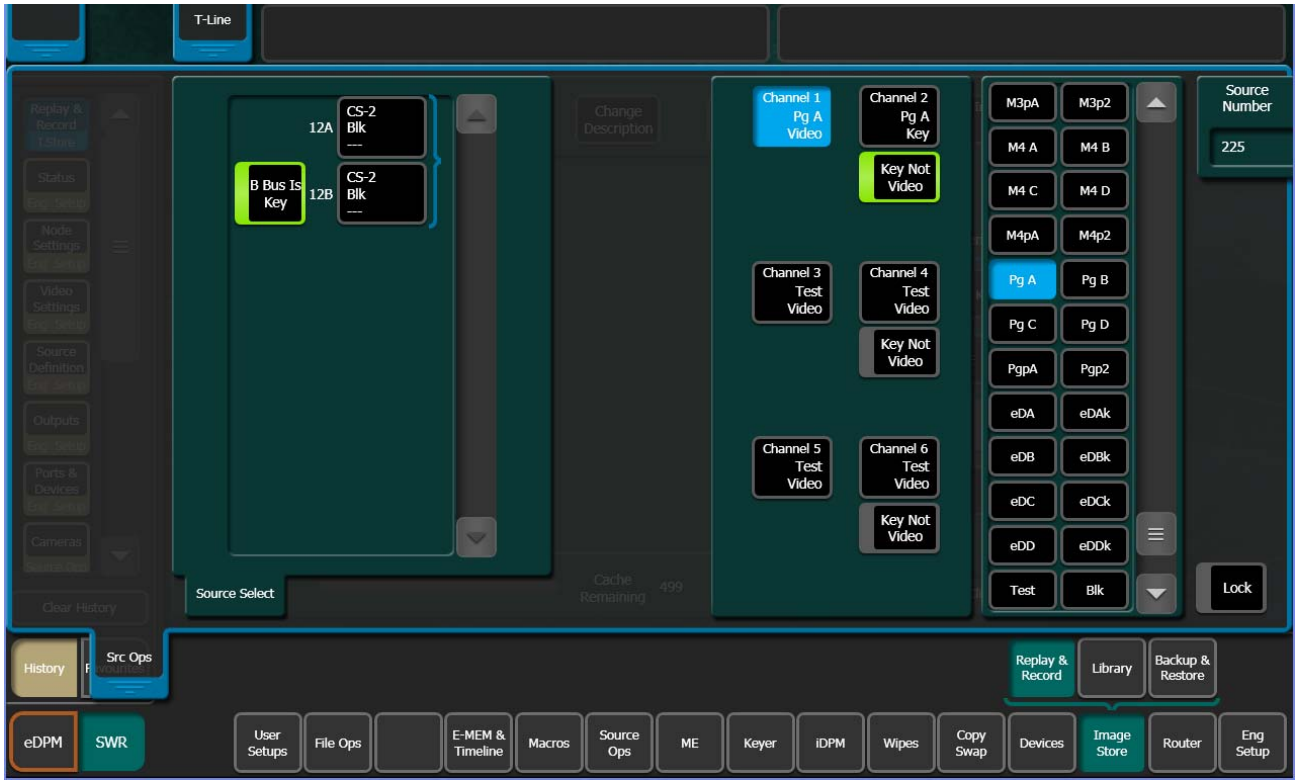
The two images become a video/key pair. The odd image's thumbnail/list item is displayed with its new Image ID and a V/K in the description. The image in the even numbered channel is now the key channel of the pair (Figure 268).

Figure 268. Married Image

Key Signal-only Capture

In addition to capturing a video or video/key, Kayenne can be configured to capture a key-only signal. This setting is in the **Src Ops** Quick Tab menu (Figure 269). *Also available in the Source Ops, Image Store menu*.

Figure 269. Source Ops, Quick Tab Menu



Using the **Key not Video** button changes an input source to a separate (unpaired) key signal.

1. Go to the Source Ops, Image Store menu by touching **Source Ops**, **Image Store**.
2. Touch the even numbered Image Store channel you want to record as a key.
3. Touch the corresponding **Key Not Video** button.
4. Using the Source scroll list, touch to select the desired source for the key.

   Any change to Image Store channels in this way will be reflected in the Image Store, Replay & Record, Stills menu tab.
5. Press the **Capture Still** button.
6. Verify that the channel defined as "Video Not Key" is selected.
7. Capture the key signal for that channel (see *Capturing a Still from Input Video* *on page 418*), or pair and capture the key signal with an odd channel (see *Capturing Stills as Video Key Pairs* *on page 422*).

Note If a linear key has been assigned in Eng Setup, that key will be captured but if no key was assigned, the key will be full raster white.

Split Key

With the **Key Not Video** button on, and an odd and even channel paired (*Capturing Stills as Video Key Pairs on page 422*), you can perform a Split Key operation from the Image Store Src Ops Quick Tab menu (Figure 270) using the **Split Key** button (see *Split Key on page 275*).

Figure 270. Src Ops Quick Tab Menu, Split Key button

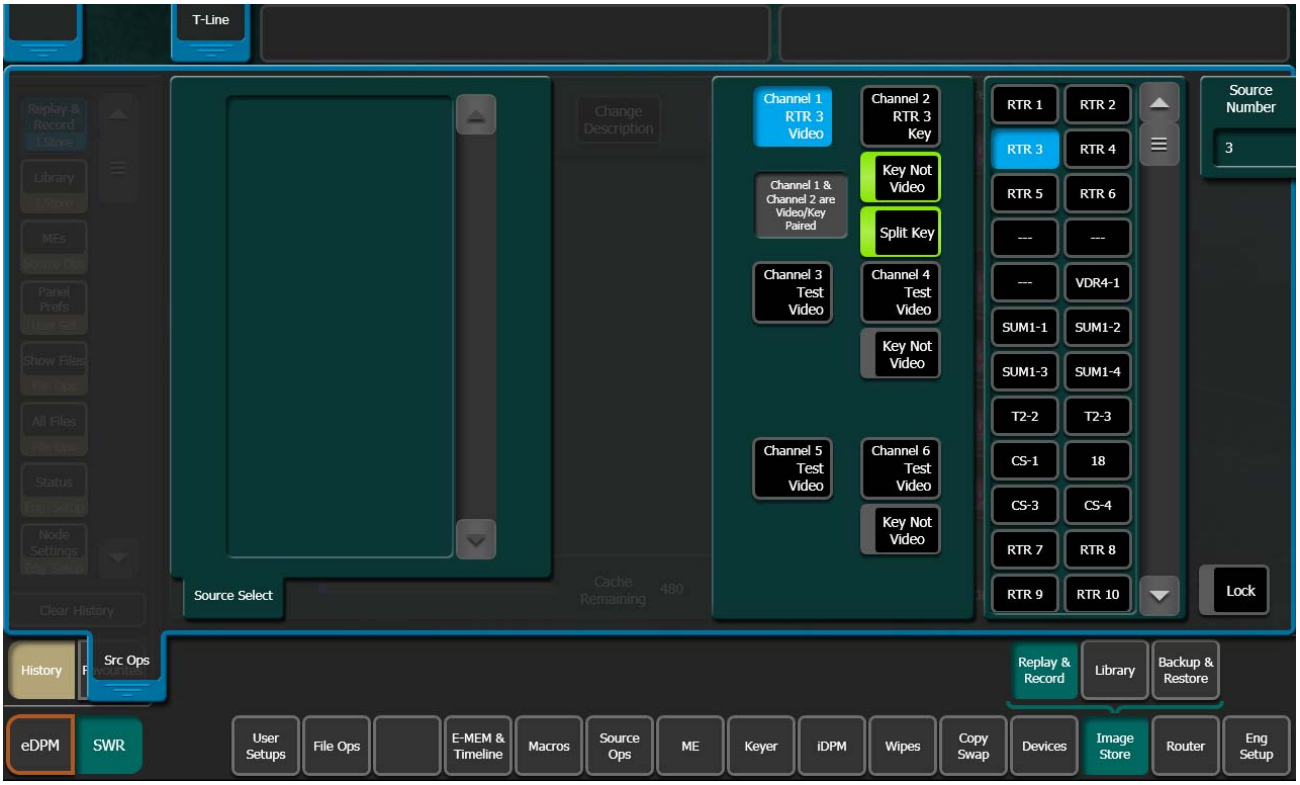


Image Playback

Image playback is performed in the Image Store, Replay & Record, Stills menu tab (Figure 271). Images can be loaded into Preset and then switched to Program or loaded directly to Program. Images can also be cropped, positioned, and loaded as a video/key in the Playback menu.

Figure 271. Playback Menu

Images can be loaded to an Image Store output in any of the following ways:

- With the **Auto Load** button turned on, touch a channel to select it then touch an image in the scrolling list.
- With the **Auto Load** button off, touch a Image Store channel to select it then touch the **Scroll Image List** soft knob button data pad to display the *Enter an Image ID to go to* keypad (Figure 272), enter an image number, and then touch **Enter**.

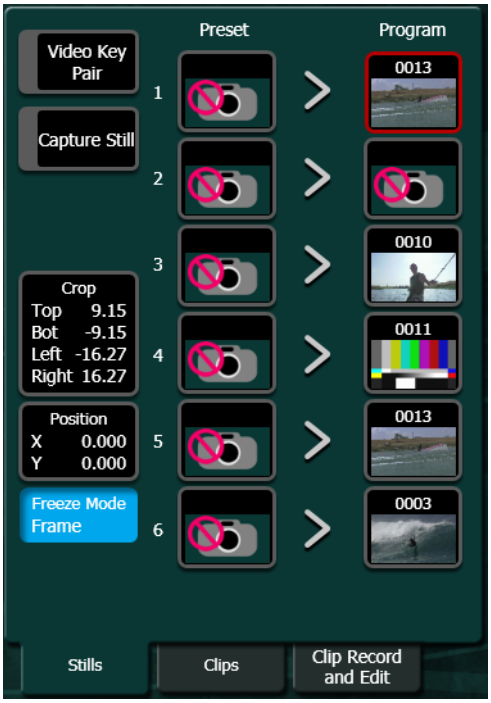
Figure 272. Scroll Image List Keypad

- Type **dot** (.) then touch **Enter** in the Image ID keypad to load the next image containing content on the same output as previously selected.
- Type Image ID # + **dot** (.) + Output channel # in the Image ID keypad and touch **Enter** to load the image ID to an output, for example typing **123.3** then touching **Enter** loads Image ID 123 on output channel 3.

Images in output can be paired by selecting the odd or even image (1&2, 3&4, 5&6) and touching the Video Key Pair button located at the top-right of the menu (Figure 271).

On-Air tally is represented by a red border around the image in Program (right side of menu), otherwise the image is outlined in blue when selected (Figure 273).

Figure 273. Playback Menu, On-Air



Cropping Images

Images can be cropped in the Playback menu:

1. Touch to select the image you wish to crop.
2. Touch the **Crop** data pad (Figure 274) to display the Crop menu.

   Soft knob data pads are provided to adjust crop parameters (right side of menu) and aperture type and confirm buttons to choose and enable which type of aperture will be used for the crop (Figure 274).

Figure 274. Crop Menu

3. Touch either the **Production Aperture** or **Clean Aperture** type button (Production Aperture is the default) (Figure 274).
4. Use the soft knobs or soft knob data pads to adjust the crop settings (touching a soft knob data pad displays a keypad) (Figure 274).
5. Touch the **Confirm Crop** button to perform the crop function (Figure 274).

Positioning Images

The position of images can be changed in the Position menu (Figure 275).

Figure 275. Position Menu

1. Touch the image you wish to re-position.
2. Touch the **Position** data pad to display the Position menu (Figure 275).
3. Touch the **Horizontal** (X) or **Vertical** (Y) data pads (Figure 275) and enter a value in the keypad to change the image position, then press **Enter**, or use the Menu Panel soft knobs to adjust the image position.
4. Touch the **Confirm Position** button to complete the change in position and close the Position menu (Figure 275).

Freeze Mode

Freeze Mode can be set to Frame, Field 1, or Field 2 using the **Frame**, **Field 1** or **Field 2** buttons. This is very useful if you need to eliminate motion flicker or artifacts from an image. To set the Freeze Mode (Figure 276):

1. Touch an image from the scrolling list.
2. Touch the **Freeze Mode** button.
3. Viewing the image on a monitor, touch the **Frame**/**Field 1**/**Field 2** buttons to change the mode for the best image.
4. Touch the **Confirm** button.

Figure 276. Freeze Mode Button

Image Store Library

The Image Store Library menu allows you to perform file operations within Image Store. Native Kayenne and Kalypso (see *Kalypso Still Image Conversion on page 440*) and JPEG, TIFF, and BITMAP images can be transferred directly into the Image Store Cache from the Menu Panel, a USB Memory stick, or a networked PC (see *Shared Image Folder on a Networked PC on page 437*). Conversion for supported formats is automatic.

Image selection in the Library menu employs a dual pane Image Browser. The left hand pane is the source (From) and the right hand pane is the destination (To). The Cache pane has a grey background color to distinguish it from the Disk/Folders pane (green).

The Image Store Library menu displays directories with file icons and cached images in list form. Cached images are listed with text only and provide the following information about the image (Figure 277):

- Image ID
- Image Description (name)
- M/S (Still)
- Length
- Format
- Content (Y/N)

File Transfers

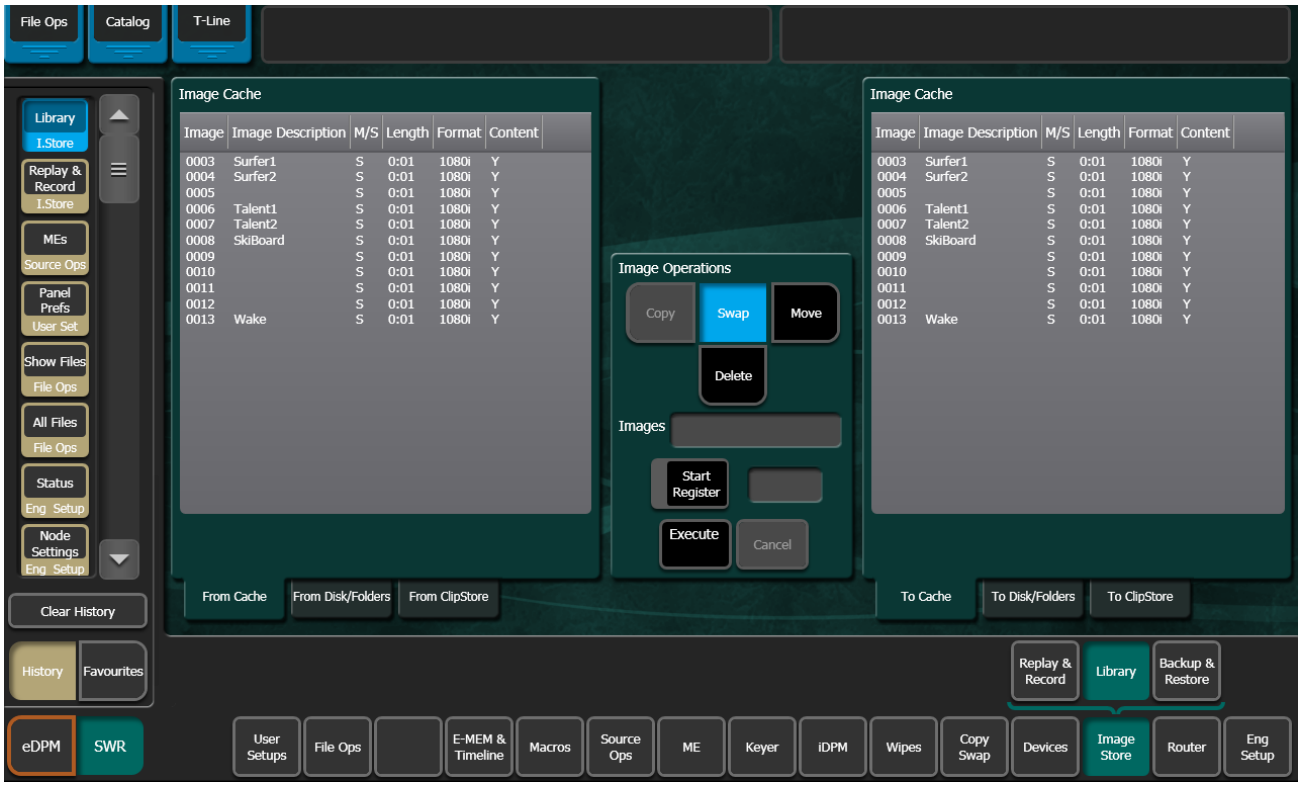
From a USB Memory Stick

See *Directory to Cache File Transfers on page 437*.

Cache to Cache

Cache management is immediate and swap and move functions are supported. Touch Image Store, Library, and touch the Cache tabs in the From and To panes (Figure 277).

Figure 277. From Cache/To Cache, Move Operation



From cache to cache transfer supports the swap and move operations:

Swap button — Allows you to swap images between Image Store IDs, for example if you have an effect that recalls ID 0022 but you 'd like a different image to be recalled during certain shows, and you do not want to replace the image, you can swap images between the IDs.

1. Touch the From Cache tab (left).
2. Touch the To Cache tab (right).
3. Touch the **Swap** button in the Image Operations pane.
4. Touch the **From** data pad in the Range area.
5. Enter a range of Image IDs to swap in the Start ID Number/End ID Number pop-up keypads.
6. Touch the **To** data pad in the Range area.

7. Enter a range (must be the same number of images as in the 'To' range) of different Image IDs to swap in the Start ID Number/End ID Number pop-up keypads.
8. Touch the **Execute** button.

Return to the Cache Ops, Playback menu to see that the images have swapped IDs.

Move button — Allows you to move images to a new Image Store ID number, for example IDs 0001-0010 could be moved to 0050-0060.

CAUTION Images/image IDs can be overwritten so use caution when executing a move.

1. Touch the From Cache tab (left).
2. Touch the To Cache tab (right).
3. Touch the **Move** button in the Image Operations pane.
4. Touch the **From** data pad in the Range area.
5. Enter a range of image IDs in the Start ID Number/End ID Number pop-up keypads.
6. Touch the **To** data pad in the Range area.
7. Enter a new range of image IDs in the Start ID Number/End ID Number pop-up keypads.
8. Touch the **Execute** button.

Return to the Cache Ops, Playback menu to see the moved images.

Directory to Directory (and File to Directory) File Transfers

At the top of the directory structure, folders can be copied and pasted, created, deleted, and renamed in the From and To Disk/Folders panes, using the Utilities pane buttons (top, middle of the menu).

Files can be copied to directories and vice versa using the Copy button and the Range data pads (see *Cache to Cache* *on page 435*).

Copy button — Allows you to copy one range of Image IDs to a new or existing range (overwrite) in the From and To panes.

1. Touch the **Copy** button in the Image Operations pane.
2. Touch the **From** data pad in the Range area.
3. Enter a range of image IDs in the Start ID Number/End ID Number pop-up keypads.
4. Touch the **To** data pad in the Range area.
5. Enter a range of image IDs in the Start ID Number/End ID Number pop-up keypads.

6. Touch the **Execute** button.

Return to the Cache Ops, Playback menu to see the copied images.

Directory to Cache File Transfers

Files can be copied from directories to cache and vice versa using the Copy button and the Range data pads (see *Directory to Directory (and File to Directory) File Transfers* *on page 436*), including directories on a USB Memory Stick.

To transfer files from a USB Memory Stick:

1. Copy supported files to a USB Memory Stick.
2. Insert the USB Memory Stick into the Kayenne Menu Panel (right side of menu).
3. Access the Image Store, Library menu by touching Image Store, Library menu.
4. Double-click on the drive icon for the Memory Stick.
5. Use the Range data pads to copy the files to the Image Store cache.

Shared Image Folder on a Networked PC

You can transfer image files of a supported format from a networked PC to the Image Store Cache, however if you cannot access the cache from the remote Kayenne menu due to network security, complete the following steps. Alternatively, you can transfer image files to cache using a USB Memory Stick (see *Directory to Cache File Transfers* *on page 437*).

CAUTION If the network is part of a domain or you are unable to access shared folders across a network, contact your local Systems Administrator.

To set up a shared folder with Windows XP, perform the following:

Set the System Properties

The PC will require a static IP address, a computer name, and a login and password.

1. Open the **Start** menu, and select **Settings**, click on **Control Panel**.
2. Double-click on the **System** icon.
3. Click on the **Computer Name** tab.
4. Click on the **Change** button, the Computer Name Changes dialog appears.
5. Click on the **Workgroup** radio button.

6. Type `WORKGROUP` (all caps) into the Workgroup text box.
7. Click on **OK**.
8. The Computer Name Changes Welcome dialog is displayed, click **OK**.
9. Reboot the computer.
10. Login to the workgroup using a valid login and password.

Create an Images Directory and Configure it for Sharing

1. Create a folder in C:\ and name it Images.
2. Right-click on the Images folder and choose **Sharing and Security.**
3. Click on the **Sharing** tab.
4. In the Network sharing and security pane, click in the **Share this folder on the network** and **Allow network users to change my files** check boxes to select them.
5. Click on **View your Windows Firewall settings** at the bottom of the dialog. Ensure that the Windows Firewall is Off, if not turn it off, and click on **OK**.
6. Click on **OK** in the **Sharing** tab.

Set Local Security Settings

1. From the Start menu, navigate to **Settings**, **Control Panels** using the pull-down menus.
2. Double-click on the **Administrative Tools** icon.
3. Double-click on **Local Security Policy.**
4. Double-click on **Security Options**.
5. Double-click on **Network access: Let Everyone permissions apply to anonymous users** and click on the **Enabled** radio button to select it and click **OK**.
6. Click on **Network access: Shares that can be accessed anonymously** in the scrolling list, add the Images directory by pressing **Return** and typing `Images`, and click **OK**.
7. Double-click on **Local Policies** to expand it.
8. Double-click on **User Rights Assignment**.
9. Double-click on **Deny access to this computer from the network.**
10. Ensure that "Guest" is not in the list, if it is, remove it and click on **OK**.
11. Close the User Rights Assignment window.

Set File Sharing in Windows Explorer

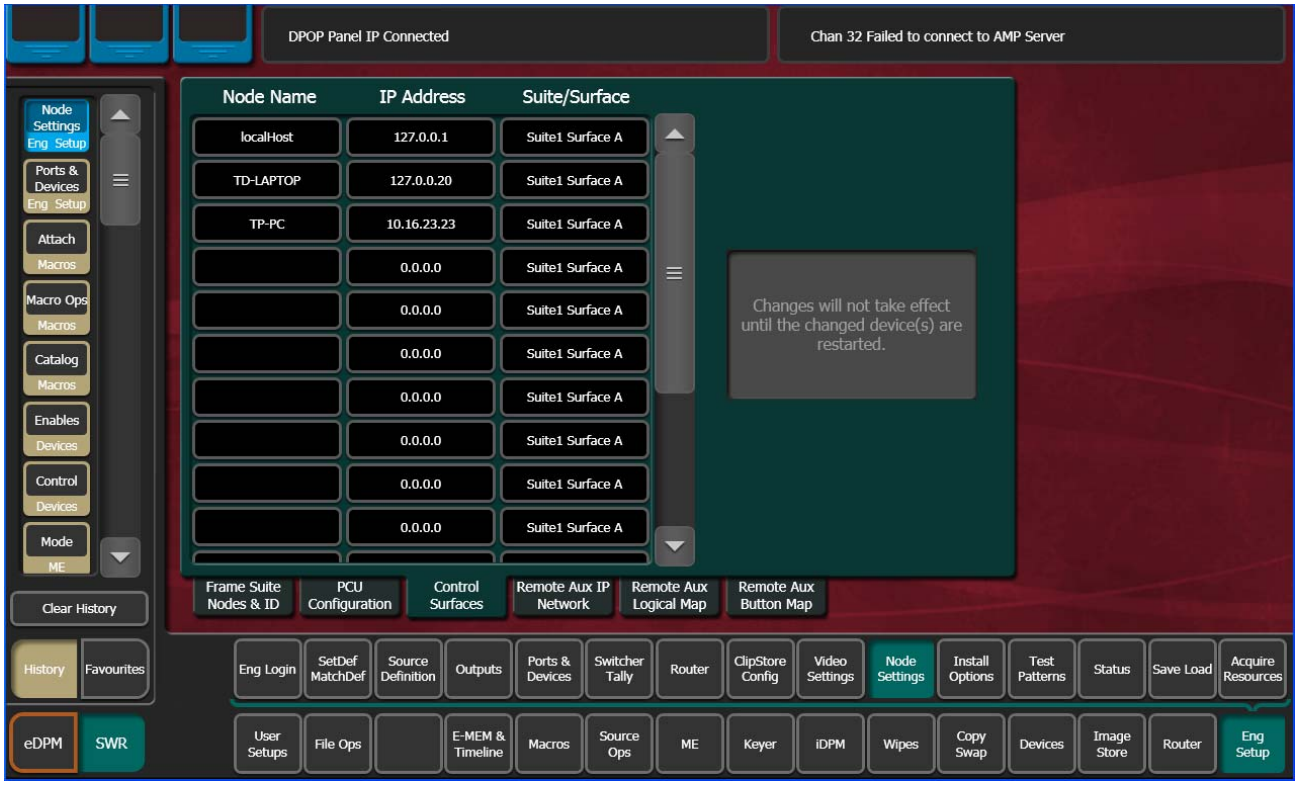
1. Open a Windows Explorer window.
2. Click on the **Tools** pull-down menu, select **Folder Options**.
3. Click on the **View** tab.
4. Deselect the **Use simple file sharing (Recommended)** check box by clicking on it and click on **OK**.
5. Navigate to C:\ in Windows Explorer, right-click on the **Images** directory, and select **Sharing and Security**.
6. Click on the **Sharing** tab.
7. Click on **Share Permissions** and click in the **Full Control**, **Change**, and **Read** check boxes to select them and give everyone full control.
8. Click on **OK**.
9. Click on the **Security** tab and give full control to all groups and users, including Everyone (if Everyone is not present, add it and give full control).
10. Click on **OK**.
11. Select the Customize tab and set the **Use this folder type** as a template: pull-down tab to **Pictures (best for many files)**, and click **OK**.

Adding a PC as a Node

To view the shared Image folder between the PC and the Kayenne switcher, the PC must be added as a node in the Eng Setup, Node Settings, Control Surfaces menu on the Menu Panel.

To access the Control Surfaces menu, touch **Eng Setup**, **Node Settings**, **Control Surfaces** (Figure 278).

Figure 278. Control Surfaces Menu



1. Touch a blank data pad in the IP Address column.
2. Enter the IP Address of the PC in the IP Address pop-up, and touch **Enter**.

Note Decline when prompted to restart the menu.

3. Enter a name for the PC by touching the adjacent data pad to the IP Address under the Name column and touch enter.
4. Restart the menu.

Kalypso Still Image Conversion

Stills created by a Kalypso Video Production Center can be converted for use on a Kayenne system. Kalypso files are converted by copying them to the Kayenne Image Cache or to another directory on the Kayenne system using the Kayenne Image Store Library menu. Once converted they are available for immediate use on-air, and can be copied or backed up using the Kayenne system the same as any Kayenne Image Store images.

Kalypso image files are renamed during the conversion process. For example, a Kalypso I0000007 file set is converted to a Kayenne Image Store file; 0007.kif.

Conversion Requirements

The following conditions must be met:

- The directory containing the Kalypso stills must be accessible to the Kayenne Image Store, either on a USB Memory Stick or in the C:\Images directory on the Menu Panel.
- Both of the Kalypso still .gvi and .gva file components must be present for each image.
- The still files must be named using the default Kalypso numbering format (I000000.gvi/.gva, but not greater than I008999.gvi/.gva). If a Kalypso still has been renamed, change it back to this naming format using the Kalypso system, or by renaming both the .gva and .gvi files to matching file names directly in the computer directory.
- Thumbnail .bmp images are not supported (the Kayenne system generates its own thumbnails). Kalypso image .bmp files can be ignored, and can safely be deleted from the directory to keep them from appearing on the Image Store Library menu screen.
- Kalypso clip conversion is not supported.
- Kalypso images converted to Kayenne use cannot be reconverted back. Retain the original Kalypso Still Store files if they are still needed on that system.

Note Kalypso NTSC Still Store images contain 486 lines, while the Kayenne Image Store supports 487 lines. A Kayenne system will display one black line at the bottom of the image raster of converted Kalypso NTSC stills.

Conversion Procedure

Kalypso still images are converted using the normal Kayenne Image Store Library copy procedure.

1. Use the **Image Store**, **Library** menu and use the **From Disk/Folders** tab to navigate to the directory containing the Kalypso stills.
2. Select **To Cache**, or select **To Disk/Folders** and navigate to the desired destination folder.
3. Select the individual Kalypso file or range of files to convert by clicking the **From** button and entering the range.

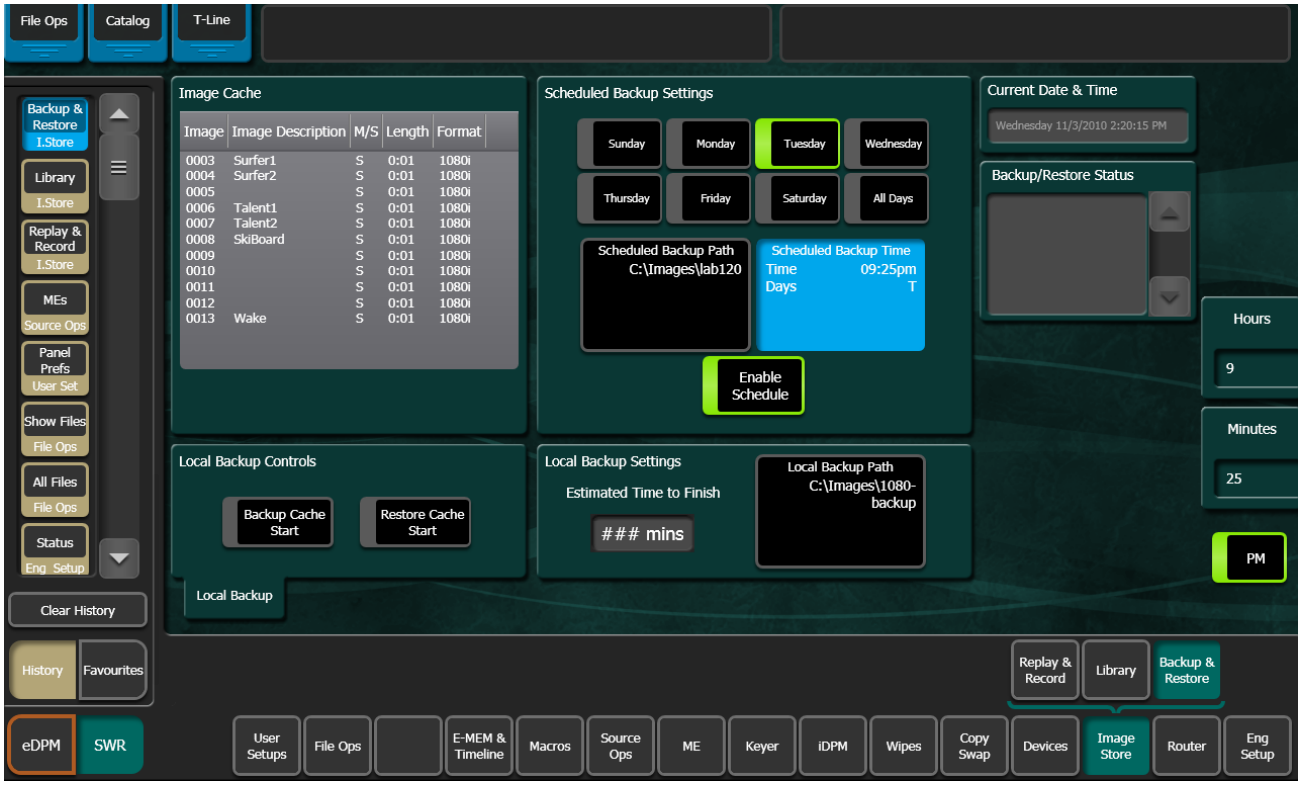
Note Only files with both .gva and .gvi components named using the Kalypso file naming format within the allowable range can be selected in the list.

4. Select the destination range by clicking the **To** button and entering the range.
5. Touch the **Copy** button to copy the file(s) to the desired destination. The conversion to Kayenne format, file naming, and range will occur during the copying process.

Backup & Restore

The Image Store Backup & Restore menu provides control of manual and scheduled backups to local disk and restore from local disk. To access the Backup & Restore menu, touch Image Store, Backup & Restore (Figure 279).

Figure 279. Backup & Restore Menu



Manual Backup

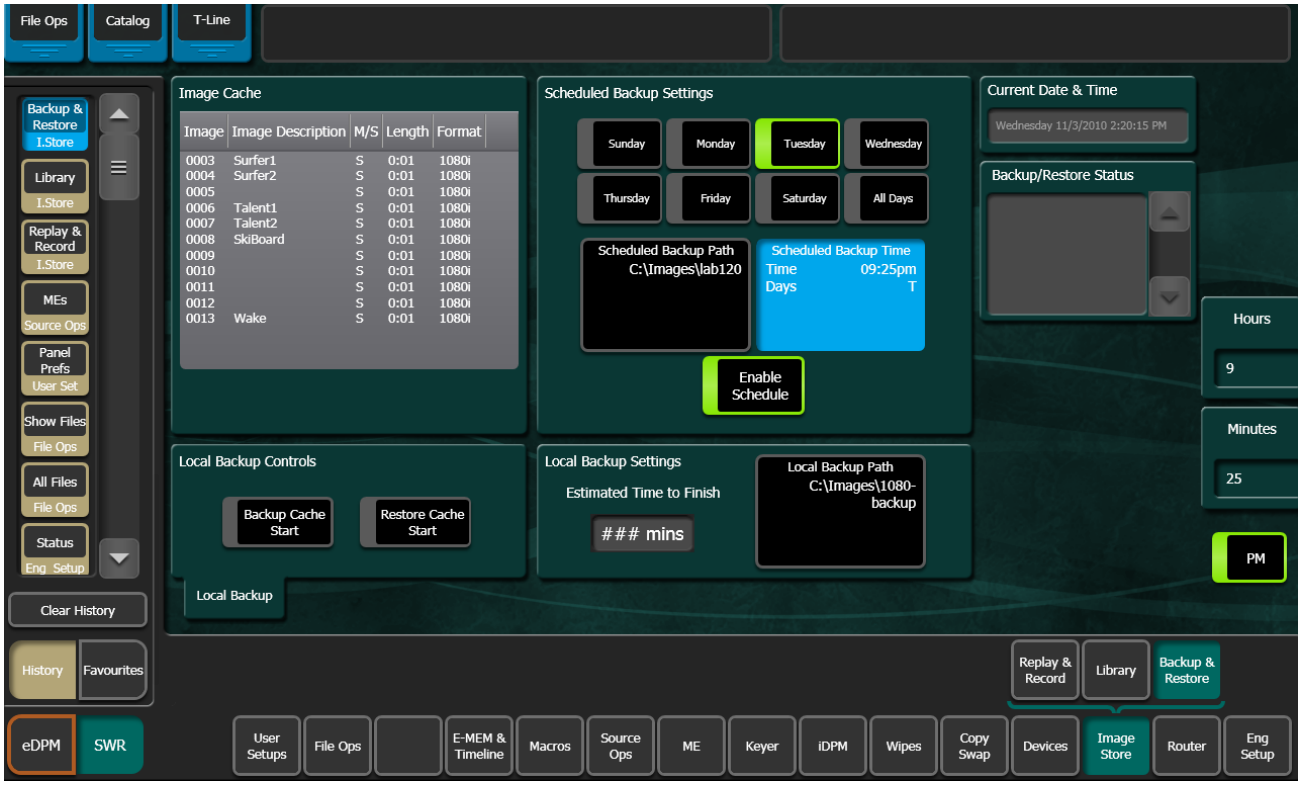
To manually backup the Image Store Cache locally (Figure 279):

1. Touch the **Local Backup Path** data pad.
2. Touch to select a target folder by navigating to an existing folder in the navigation pane (left), or by creating a new target folder:
   a. Navigate to the desired directory in the navigation pane.
   b. Touch the **Create Folder** button.
   c. Enter a folder name in the pop-up keyboard.
   d. Touch the **Accept** button.
3. Touch the **Backup Cache Start** toggle button to begin the backup operation (border highlights green).

Scheduled Backup

Use the scheduling controls in the Backup & Restore menu to schedule backups for one, several, or all days, including the time of day. To access the Backup & Restore menu scheduling controls, touch Image Store, Backup & Restore (Figure 280).

Figure 280. Backup & Restore menu, Backup Scheduling



1. In the Scheduled Backup Setting pane, touch the day(s) you wish to schedule the backup (also **All Days** button can be touched).
2. Touch the Scheduled Backup Time data pad.
3. Either by touching the **Hours**/**Minutes** data pads and entering values in the pop-up keypads or using the soft knobs on the Menu Panel, enter a time of day.
4. The default is AM unless you touch the **PM** toggle button to turn it on (highlights green, shows am/pm in the **Scheduled Backup Time** data pad at the end of the time).
5. Touch the **Scheduled Backup Path** data pad and touch to select a target folder by navigating to an existing folder in the Navigation pane (left), or by creating a new target folder:
   a. Navigate to the desired directory in the navigation pane.
   b. Touch the **Create Folder** button.

c. Enter a folder name in the pop-up keyboard.

d. Touch the **Accept** button.

6. Touch to toggle on the **Enable Schedule** button (highlights green).

Restore

To restore the Image Store Cache from the local drive (Figure 279):

1. Touch the **Local Backup Path** data pad.
2. Touch to select a source folder by navigating to an existing folder in the navigation pane (left).
3. Touch the **Restore Cache Start** toggle button to begin the restore operation (border highlights green).

   a. If restoring from a scheduled backup, verify that the Local Backup Path shows the correct path.

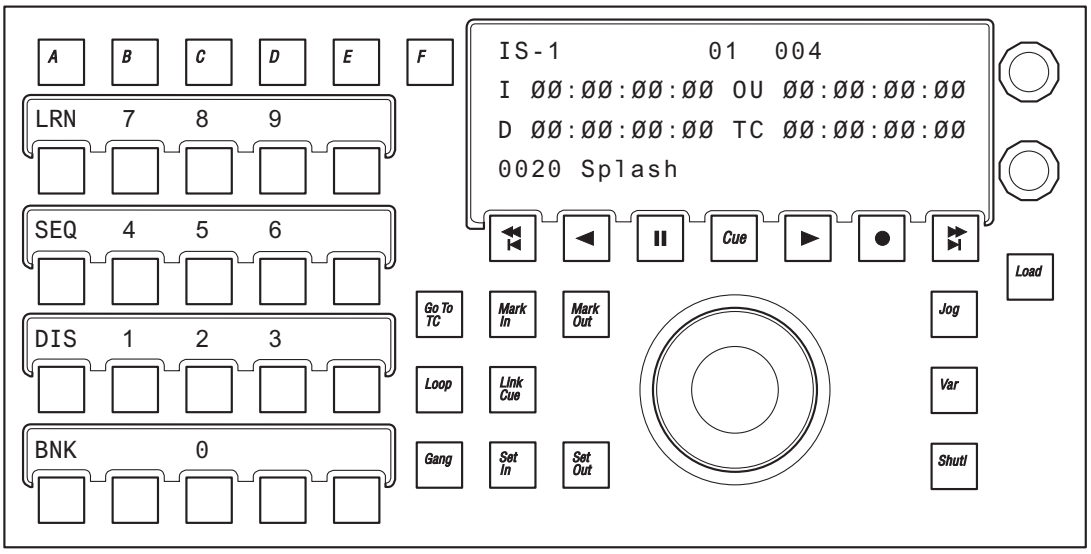
Device Control

Images can be controlled from both the DCM (Device Control Module) and the System Bar on the Control Panel.

DCM

The DCM (Device Control Module), allows you to scroll through and select an Image Store Channel (1-6), select an image for the channel, and load that image (Figure 281).

Figure 281. DCM, Image Store Device Control



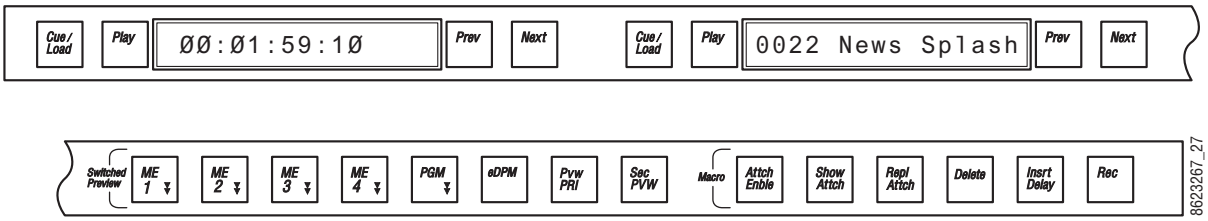
1. Use the soft knob in the upper right of the DCM to scroll through the devices until the desired Image Store Channel is seen in the display.
2. Use the bottom-most soft knob to scroll through the images until the desired Image ID is displayed.
3. Press the **Load** button.

The image is loaded to the Image Store output channel.

System Bar Control

Image Store Channel images can be selected and loaded from the System Bar Module (Figure 282).

Figure 282. System Bar Module, Image Store Device Control



1. Press and hold down a source select button that has an Image Store Channel attached.
2. Press the **PREV** and **NEXT** buttons together in the desired Device Control Group (alternatively, you can press and hold down the **PREV** and **NEXT** buttons and then press a source button).

3. Press the **Prev**/**Next** buttons for that Device Control Group until the desired image is displayed.
4. Press the **Cue/Load** button to load the image.

Camera Control with Ethernet Tally

Kayenne Camera Integration provides the ability to place cameras into a usable but not fully shaded setup/rehearsal mode. The Kayenne Switcher can connect to up to 99 cameras via the Grass Valley LDK Connect Gateway. Cameras can be acquired by multiple suites.

Note For configuration information, see the *Kayenne Installation & Service Manual*.

Switcher camera control is provided by the Menu Panel and Multi-Function Module in the Control Panel.

Camera control from the Kayenne system makes camera source setup fast and easy by allowing you to:

- Turn color bars on/off to quickly identify which source is associated with a camera,
- Control a subset of camera settings:
  - Auto Iris enable/disable,
  - Auto Black level (trigger),
  - ND (Neutral Density) Filter settings, and
- Load a Scene File with a single button push or recall a Scene File with an E-MEM.

Note The Camera sub-level is assigned to an E-MEM level in the Menu Panel.

Ethernet Tally allows you to:

- Tally camera associated sources using Tally Calcs and
- Tally the Red, Yellow, or Green indicator on the camera from the switcher Menu Panel/Control Panel.

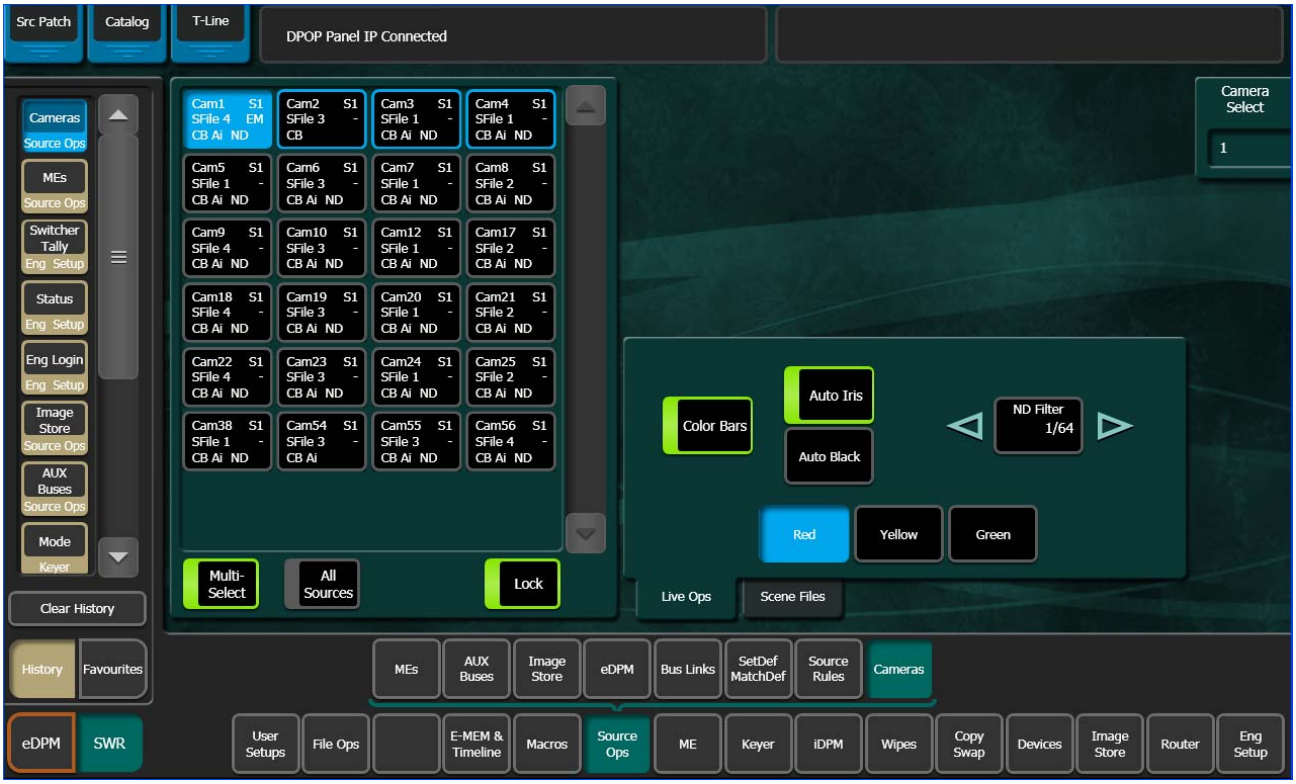
Camera Operations

Camera control from the Kayenne switcher provides remote control of a subset of camera functions.

Source Ops

Camera user operations from the menu are performed in the Source Ops, Cameras, Live Ops menu tab (Figure 283).

Figure 283. Source Ops, Cameras, Live Ops Menu



Live Ops

Kayenne camera control provides the ability to place cameras into a usable but not fully shaded setup/rehearsal mode using the menu buttons in the Live Ops menu tab (Figure 283):

- **Camera Sources**—Select from 1-99 defined camera sources for control.
- **Color Bars**—Enable/disable color bars to verify the camera as the associated source.
- **Auto Iris**—Enable/disable camera's Auto Iris.
- **Auto Black**—Triggers a reset of camera's black level.
- **ND (Neutral Density) Filter**— Changes the neutral density filter wheel setting.

  Use back and forward arrow buttons (Figure 283) to scroll through and enable 1/4, 1/16, 1/64 filter wheel settings, or CLR to clear the filter wheel setting.

Ethernet Tally Operations

When installed and configured, the Kayenne switcher sends tally over Ethernet to cameras. This is described in the *Kayenne Installation & Service Manual*. In addition, the **Red**, **Yellow**, and **Green** buttons in the Source Ops,

Cameras menu (Figure 283) allow you to test the camera tally colors and/or send a call to the camera operator.

Scene Files

Up to four Scene Files saved by a camera operator can be quickly loaded to selected cameras with the **Fast Recall** (**1-4**) buttons or recalled as part of an E-MEM, using the **Scene File in E-MEM** (**1-4**) buttons, in the Source Ops, Cameras, Scene Files menu tab (Figure 284).

Figure 284. Source Ops, Cameras, Scene Files Menu

Scene File Fast Recall—Allows you to recall scene files 1, 2, 3, or 4 to all selected cameras in the Camera Source list. Simply select a camera source or sources and touch a **Scene File Fast Recall** (**1-4**) button (Figure 284).

Scene File in E-MEM—The **Camera** level button in the User Setups, E-MEM Prefs menu can be used to assign camera sub-levels to levels (and are definable) and recalled as part of an E-MEM. E-MEMs can be used for example so the TD could recall and turn off a Star Filter on all cameras instead of it being an engineering task.

1. Touch a camera source or sources in the Camera Sources list.
2. In the Scene Files menu, touch the numbered **Scene File in E-MEM** (**1-4**) button for the scene file you wish to save as part of an E-MEM.

3. Touch the **Enable** button (highlights blue when on).

   EM (for E-MEM) is displayed in the selected camera's button data.

4. Go to the Cameras E-MEM Prefs level by touching **User Setups**, **Suite Prefs**, **E-MEM Prefs**, **Cameras**.

5. Touch the level to which you wish to assign the Camera's sub-level.

6. Touch **Done**.

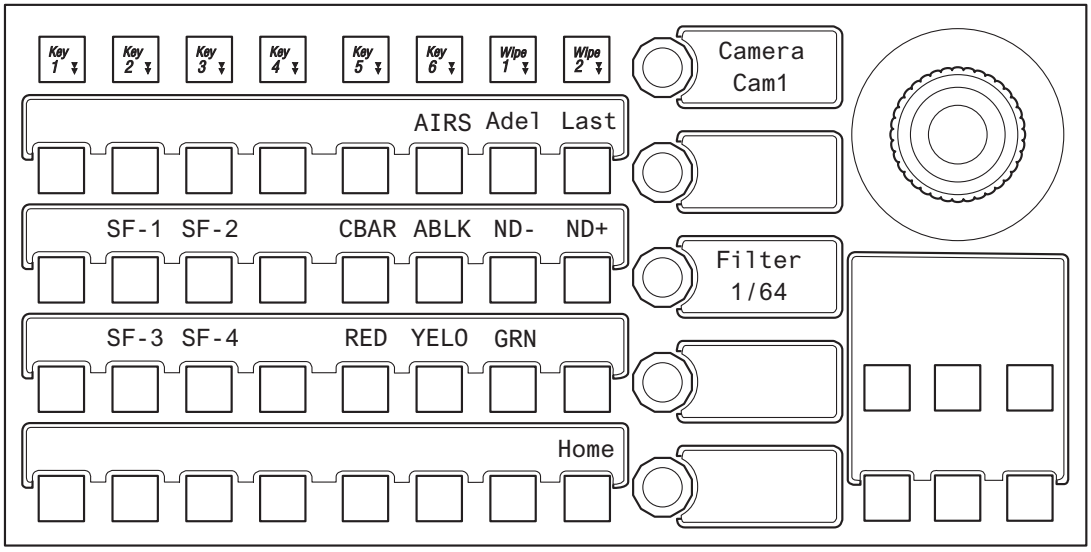
7. Build an E-MEM recalling the level with the camera sub-level assigned.

   The enabled Scene File will be recalled for the selected cameras.

Multi-Function Module

To access the Camera menu in the Multi-Function Module, press the **Cams** button from the Home menu (Figure 285).

Figure 285. Multi-Function Module, Camera Menu



The Camera (Cams) menu in the Multi-Function Module has the same controls as the Camera menu in the Menu Panel (see *Source Ops* *on page 447*):

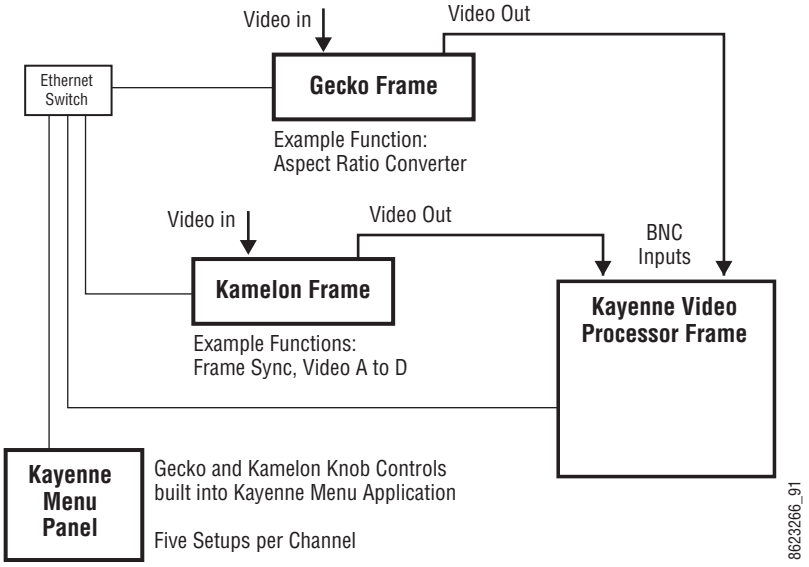
- **AIRS**=Auto Iris enable/disable
- **CBAR**=Color Bars enable/disable
- **ABLK**=Auto Black (trigger)
- **ND-**=Reverse scroll (through filter wheel settings)
- **ND+**=Forward scroll (through filter wheel settings)
- **RED**=Red tally (press and hold)
- **YELO**=Yellow tally (press and hold)
- **GRN**=Green tally (press and hold)
- **SF-1** through **SF-4**=Fast Recall of Scene Files 1-4
- **Camera** soft knob scrolls through defined cameras (1-99).
- **Filter** soft knob display is controlled by **ND-** and **ND+** buttons and displays the current filter wheel setting (1/4, 1/16, 1/64, CLEAR).

Newton Modular Control

Introduction

The Newton modular control system provides comprehensive and consolidated real-time control of Grass Valley modular products. Some Newton functionality has been incorporated into the Kayenne Menu Application. This makes it possible to control Grass Valley Gecko and Kameleon frame modular products from a Kayenne Menu panel or PC running the Kayenne Menu Application. The modular frames must reside on the same subnet as the Kayenne system (Figure 286).

Figure 286. Newton Modular Control Diagram



Installation on Kayenne

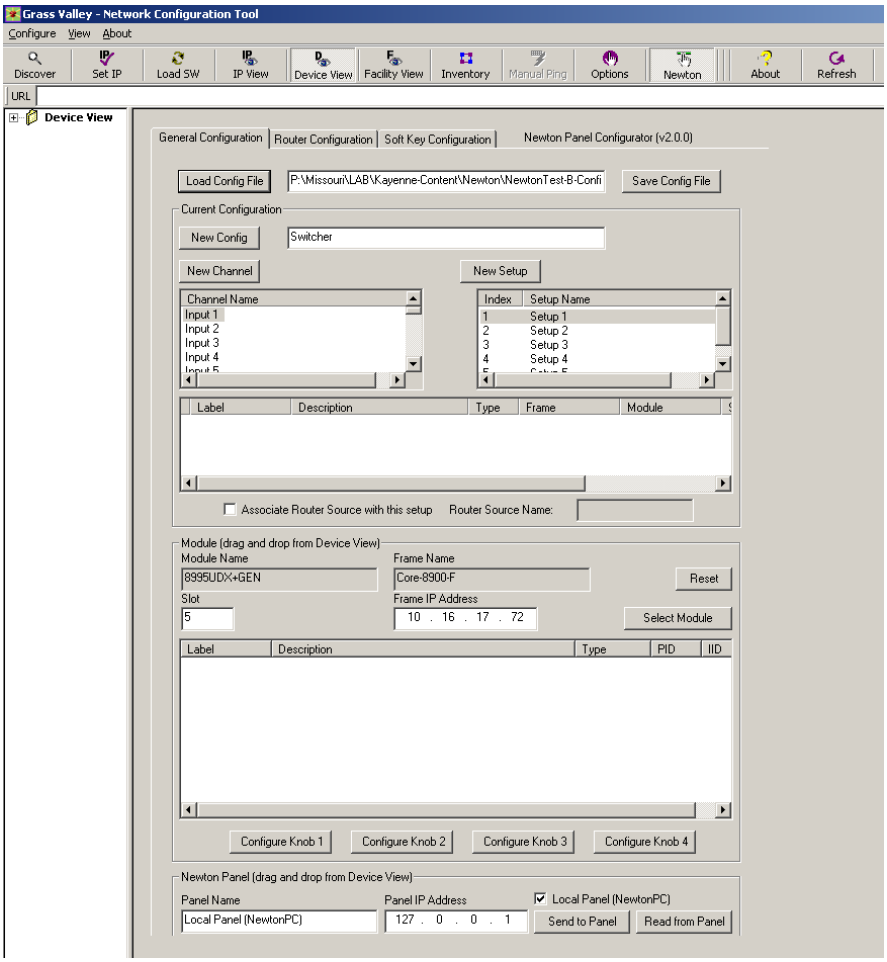
Kayenne's Newton interface is installed during the standard Kayenne Menu Application installation procedure. The Newton menu (Figure 288 on page 454) is available on all Kayenne systems running 1.5.2 or newer software. However, a Newton system must be available on the Kayenne network, and configuration steps will be required before this menu becomes functional.

Selecting the NetConfig installation option from the Kayenne Installer program will install a compatible version of NetConfig with the NetConfig Newton Configurator plug-in.

Newton Controls Configuration

Newton functionality within Kayenne can be configured using any PC on the Kayenne network, provided the configuration tools are installed onto that PC. Select the **NetConfig** option in the Kayenne Installer program to install these configuration tools. During this process, the NetConfig network configuration application and a Newton Configurator plug-in are installed. The tool is accessed by launching NetConfig and touching the Newton tab on the top menu bar (Figure 287).

Figure 287. NetConfig Newton Configurator Plug-in



The Configurator tool is used to define the functionality of Newton controls by creating a Newton configuration file. The Newton configuration establishes a one-to-one relationship of Newton channels to Kayenne physical inputs (BNC connectors on the Video Processor Frame). Each Kayenne input/Newton channel can have up to five different setups defined. A default Newton configuration file with 96 channels (inputs) is provided with five empty setups for each channel. Using the configurator, controllable parameters in modules which are in the video path for each switcher

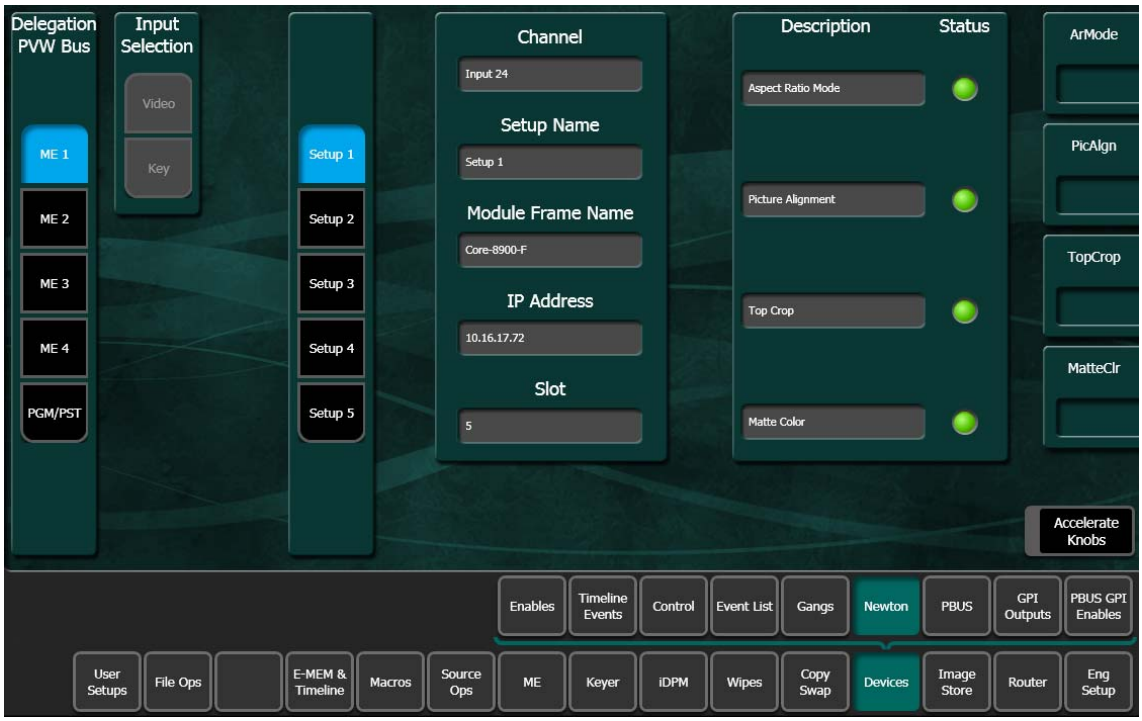
input can be assigned to Kayenne Menu Panel knobs. The user is then able to control those modules directly from the Kayenne system.

Refer to the separate *Newton Instruction Manual* and *NetConfig Instruction Manual* for specific information about how to configure the Newton controls. These manuals are available for download from the Grass Valley website.

External Device Newton Menu Description

Once configured, module parameters can be adjusted on the Kayenne Newton menu, which is accessed by touching **Devices**, **Newton** (Figure 288).

Figure 288. External Device Newton Menu



Selection of a module parameter to control is mediated though the Kayenne source selection mechanism. By selecting a source on the currently delegated Preview bus of the Kayenne's Main panel, the source's physical input, and that input's associated Newton channel controls are activated on the Kayenne's Device menu.

Delegation Pvw Bus

The Delegation Pvw Bus pane is used to select which Preview bus will be used to select the Newton channel to be controlled.

Input Selection

When a video/key source is selected, you choose to control either the video input or the key input with the **Video** and **Key** buttons.

Setup Selector

The Setup buttons are used to select the desired set of controls from the setups defined for that channel. The menu displays asterisks for setups that have no parameters assigned.

Newton Channel Information

Channel – The number of the Kayenne input BNC used to select the current Newton channel is displayed.

Setup Name – The currently selected setup (1-5) is displayed in this pane.

Additional information for the currently selected channel is displayed below.

If multiple modules are daisy chained together in a Newton channel, the information displayed will be for the module with a parameter assigned to the top knob.

Newton Controls

On the right side of the menu the active control functions are identified. Direct knob control and datapad numeric entry are available. The menu displays asterisks for unconfigured controls. The status of the function for each control is also reported, with green indicating a connection exists and the data is valid, and red indicating no connection.

Accelerate Knobs – Selecting this button accelerates knob adjustments by a factor of 10, providing coarse and fine knob control.

Refer to the separate *Newton Instruction Manual* for specific information about Newton controls.

Glossary

Auto Transition

A transition having a predefined duration generally initiated by pressing a control panel button.

Aspect

The ratio of a picture's horizontal and vertical dimensions when correctly displayed (4:3, 16:9).

Background Bus

A row of buttons on an ME used to select background video signals. Typically labeled A and B, with A representing the current output, and B representing the next output.

Background Transition

A transition between the background video signals selected on an ME.

Background Video

Video that forms a background scene into which a key may be inserted.

Backing Color

The color in a chroma key scene that will be replaced with another video signal.

Bit Rate

The number of bits per second passed from one point to another.

Black

A black video signal generated within the switcher.

Box Wipe

A rectangular wipe pattern. For masking, the Kayenne system provides a special box wipe pattern generator allowing independent control of the placement of each side of the box.

Chroma

The depth or saturation of color. Chroma, hue, and luminance make up the three characteristics of television color.

Chroma Key

A video key effect in which one video signal is inserted in place of areas of a particular color in another video signal. Blue and green are the chroma key colors most frequently used.

Clean Feed

A final output of the switcher that does not include downstream key effects or fade to black. Also see *Programmable Clean Feed*.

Clip

A threshold level adjustment to which the keying attribute (luminance, chrominance) is compared for generating the internal key control signal. Clip, in conjunction with gain, sets the switching point between the background and the key fill. Also see *Gain*.

Clip High, Clip Low

An alternative to Clip and gain keying, providing independent control of the points where the background video and the key fill video are each fully visible.

Complex Wipe Pattern Generator

A wipe pattern generator with additional capabilities (for example, matrix wipes).

Component Video

A video signal that keeps color and luminance information separate. RGB; Y, R-Y, B-Y; and Y, Cr, Cb are examples of component video.

Composite Video

An encoded video signal that combines color information with luminance information. NTSC, PAL, and D-2 are examples of composite video.

Compositing

Combining two or more video signals together into one output signal.

Control Signal

A signal used to perform an alteration or transition of video signals. For example, control signals are used for keying, masking, and wipe transitions.

Control Surface

The set of controls available to a single operator. These controls may reside on separate but related control panels.

Cross Fade

See *Mix*.

Crosspoint

An electronic switch, usually controlled by a button on the panel, that allows video or audio to pass when the switch is closed.

Cut

An instantaneous switch from one picture to another. Switching circuitry allows cuts only during the vertical interval of the video signal to prevent disruption of the picture.

VDR (Video Disk Recorder)

A video recorder and playback device using hard disk storage in place of video tape.

Delegate

To assign panel controls to a particular operating function. Some panel controls (buttons, knobs, joystick) can affect more than one function. The operator can choose an alternative function by delegating the panel controls to that function (typically by pressing or holding down a panel button).

Deserializer

A device that converts serial digital information to parallel.

Dissolve

See *Mix*.

DPOP (Double Press Open)

Pressing a control panel button twice rapidly to open a related menu. On the Kayenne system, buttons supporting DPOP are labeled with a graphical indicator.

Effect

A setup of panel controls specifying the sources involved and any processing applied to those sources. Effects can be learned (saved) and recalled by the E-MEM effects memory system.

Effect Transition

Recalling an E-MEM effect so that a transition is automatically performed at the start of the recall.

Effects Processor

The portion of a switcher that performs mixes, wipes and cuts between background and/or effects key video signals.

E-MEM Effects Memory

A feature that permits control panel setups to be stored for later recall.

Engineering Setups

On the Kayenne system, a collection of configuration settings that establishes an essential baseline for system operation and integrates the Kayenne system into a facility.

Ethernet

A form of high speed data transport between devices on a network.

Fade To Black

A mix transition to black.

Field

One scan of an interlaced video image. In interlace systems, two fields are required to make a complete picture (video frame) because alternate lines are scanned.

Fill Video

A video signal which fills a hole cut in background video by a key control signal.

Fixed Linear Key

A linear key that uses predetermined Clip and gain settings that are not adjustable.

Flip-Flop

A transition where the sources selected on the background buses (for example, preset and program) of an ME are exchanged at the end of a transition. The original preset bus source becomes selected on the program bus, and the original program bus source becomes selected on the preset bus.

FPGA

Field Programmable Gate Array.

Frame

One complete scan of a video image. For interlace video, alternate lines are scanned, and so a frame containing all the picture information consists of two fields.

Frame Rate

The number of frames presented per second. For interlace systems the frame rate is half the field presentation rate.

Gain

An amplification factor applied to a key control signal by a keyer that determines how much, if any, of the background and key fill video will be mixed together at the key edge areas. Low gain (1, or unity) generally results in a linear key.

General Purpose Interface (GPI)

An interface that allows limited remote control of some of a device's functions.

House Sync

Sync generated within a facility that is used as a reference for generating and/or timing other signals.

Hue

The location of a color on the color spectrum (i.e. red, yellow, green, blue). Chroma, hue, and luminance make up the three characteristics of television color.

Image Store

A device that captures, saves, and outputs a still video image.

Interlace

A system of video scanning where the odd and even numbered lines of a picture are presented consecutively as two separate interleaved fields. The two fields required to make a complete picture are called a frame.

Jitter

An undesirable variation in the timing of transitions in a digital signal.

Joystick

A hardware positioner with control of multiple axes.

Key

An effect where a portion of a background scene is replaced by a new video. Key cut and key fill signals are involved, though in some cases the same signal may be used for both (self key).

Key Cut

In key effects, the key cut signal is used to specify where to cut a hole in the background that will be filled with the key fill video. The key cut signal determines the shape of the key effect.

Key Fill

In key effects, the video signal which fills the hole cut in the background video.

Key Invert

Reversing the polarity of a key, such that material formerly keyed out will be keyed in, and vice versa.

Key Mask

A key mode which allows use of a wipe pattern generator to prevent some undesirable portions of the key cut signal from cutting holes in the background video.

Key Priority

The stacking order of multiple keys. The keyed signal with the highest priority appears in front of all the others. Keyed signals appear below higher priority keys and in front of lower priority keys, in a stack. A key priority transition changes the order of the keys without changing the background output.

Key Frame

A complete definition of an effect at a single point in time. Default keyframe values can be set for a suite.

Learn

To save a panel setup using E-MEM.

Linear Key

A key in which the keyer signal is faithfully reproduced in the final key effect. Linear keying preserves soft key edges, and generally has a gain of 1, or unity.

Look Ahead Preview

Video that shows the result of the currently setup next transition.

Looping, Loop-Through

An input that includes two connectors. One connector accepts the input signal, and the other connector is used as an output for connecting the input signal to another piece of equipment. On Kayenne, only the analog reference input is loop though.

Luminance

The brightness of the picture or area of the screen being considered. Chroma, hue, and luminance make up the three characteristics of television color.

Luminance Key

A key effect in which the portions of the key cut signal that are greater in luminance than the clip level cuts the hole in the background scene. Generally used when the key cut and key fill signals originate from the same source. Luminance key clip and gain is adjustable.

Mask

See *Key Mask*.

Matte

Internally-generated color video which can be adjusted for luminance, hue, and chroma. Matte can be used to fill areas of keys and borders.

Matte Fill

Using matte video to fill the hole of a key effect.

Matte Generator

A video generator that produces matte signals.

ME

Abbreviation of mix/effects, pertaining to the circuitry and controls involved in compositing video signals.

Mix

A transition between two video signals in which one signal is faded down as the other is faded up.

Multiplier

A control circuit in which a control signal is multiplied with one or more input video signals. The resulting video output level varies from full on to full off according to the state of the control signal.

Object

An individual a functional area of a system, typically one of several having similar capabilities.

Pattern Border

A variable width border that occurs at the edges of a wipe pattern.

Pixel

A picture element. A pixel is a digital sample of the luminance and color values of a picture at a single point.

Preference

See *Suite Preference* and *User Preference*.

Profile

Model name of a Video Disk Recorder.

Point of Use

A location in the system where a resource is used. A resource is generally used at different locations at different times. However, with some resources it is possible to use the same resource at different locations at the same time.

Preset Bus

A row of source buttons used to select the source that will be output by that ME during the next background transition. Also called the B bus.

Preset Pattern

A key effect in which a wipe pattern that has been preset to a desired size and location is used to cut the key hole. The characteristics of the pattern are set using pattern controls.

Preview

A video signal that is viewed before it is output by the switcher. See also *Look Ahead Preview* and *Switched Preview*.

Program Bus

A row of source buttons used to select the source for the current output of that ME. Also called the A bus.

Programmable Clean Feed

A type of clean feed where different keys can be selected for inclusion or exclusion from the clean feed.

Recall

To restore a previous panel setup that has been learned using E-MEM.

Reclocking

The process of clocking the data with a regenerated clock to remove jitter.

Resource

A capability of the system, typically consisting of a set of circuitry.

Register

A place to store an effect.

Saturation

The degree of purity of a color. Adding white to a color reduces its degree of saturation.

Self Key

A key effect in which a single video signal serves as both the key cut and key fill.

Sequence

On the Kayenne system, a feature allowing a series of E-MEMs to be recalled in a specific order with a single command.

Serial Digital Video

Passing video data bits in serial form (one bit after another), along a single wire. Standard Definition serial digital video (SMPTE 259M) operates at 270 MBits/sec (2 x 13.5 MHz x 10 bits).

Serial Interface

An interface which allows the switcher to be controlled remotely by a computer editor or other serial controller. Data is passed serially between the editor and the switcher at selectable baud (transmission) rates.

Serializer

A device that converts parallel digital information to serial.

Soft Border

A wipe pattern border which is mixed on the edges to give a soft effect.

Soft Edge

A pattern edge between two video signals in which the signals are mixed for a soft effect.

Source

1) An external device providing video. A source may provide only one video signal, or it may provide two signals (key fill and key cut).

2) The video signal(s) from a source, along with the source definition information associated with that source. See *Source Definition*.

Source Definition

A definition of the video signals making up a source, the device type and name of source, and the default processing and other parameters to be used for that source. The Kayenne system is based on source selection, rather than choosing crosspoints.

Source Memory

A feature where the last keying and video processing settings for a source are retained and re-imposed when that source is re-selected. Default source memory values can be set for each source on each bus.

SPOP (Single Press Open)

Automatically opening a related menu when a control panel button is pressed. On the Kayenne system, buttons supporting SPOP are labeled with a graphical indicator.

Stack

See *Key Priority*.

Suite

One or more control surfaces configured for use on the same project.

Suite Preference

A collection of settings used to configure a suite to create a consistent working environment for all involved.

Switched Preview

An special output of the system connected to a dedicated monitor. The operator can select and switch various system video signals to that output to preview them.

Sync

(1) General term for a synchronizing signal or signal component. Digital systems generally employ an analog external timing reference signal (such as color black or tri-level sync) to synchronize different pieces of equipment. Within the digital signal itself, however, synchronizing information is carried by special digital codes inserted at the beginning and end of each active line.

(2) In analog television systems, sync is the portion of the video signal which occurs during blanking and is used to synchronize the operation of cameras, monitors, and other equipment. Horizontal sync occurs within the blanking period in each horizontal scanning line, and vertical sync occurs within the vertical blanking period. A color black signal is often used for synchronizing different pieces of analog equipment.

Tally

A light which lights up to indicate that the associated button has been selected or to indicate that the associated input to the switcher is on-air.

Terminate, Termination

To complete a circuit by connecting a resistive load to it.

Transition

A change from one picture to another. Cut, mix, and wipe are transitions.

User Preference

A collection of control surface configuration settings available to a user that allows customizing of the working environment.

Vertical Interval

The portion of the video signal that occurs between the end of one field or frame and the beginning of the next.

Video Fill

A video signal used to fill the hole made by a key cut signal.

Video Path

The path that video takes through the switcher.

Wash Matte

A type of matte that contains two elements rather than a single flat color. For example, a wash matte can have one color that mixes gradually across the screen to another color.

Wipe

A transition between two video signals that occurs in the shape of a selected pattern.

Wipe Pattern Generator

Circuitry that creates patterns that can be used to create wipe transitions, preset patterns, key masks, and matte washes.

Work Buffer

An active area of memory where the current effect parameters are stored, allowing the operator to use and modify the effect without changing the data stored in E-MEM.

Index

Numerics

A

B

C

D

E

F

G

H

I

K

L

M

N

O

P

Q

R

S

T

U

V

W