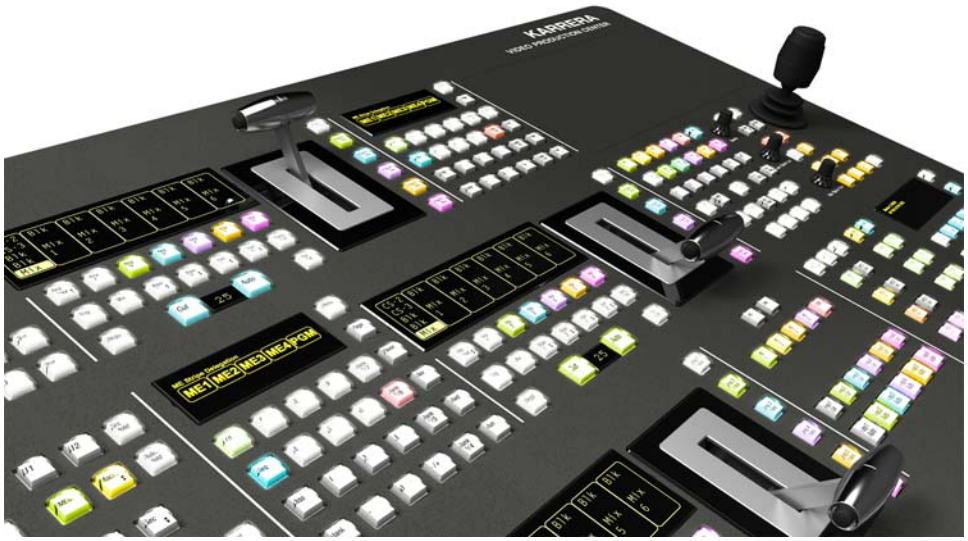
grass valley

KARRERA

VIDEO PRODUCTION CENTER



User Manual

Software Version 4.0

www.grassvalley.com

071880500
MARCH 2012

KEMA Quality

CERTIFICATE

Certificate Number: 510040.001

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Grass Valley Web Site

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.

grass valley

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 *Karrera User Manual* is designed for operators of Karrera systems.

Standard Documentation Set

The standard Karrera documentation set consists of a:

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

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

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

The *Karrera 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 *Karrera 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 Karrera system.

Section 1

Introduction

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

Overview

The Grass Valley Karrera 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.

Features

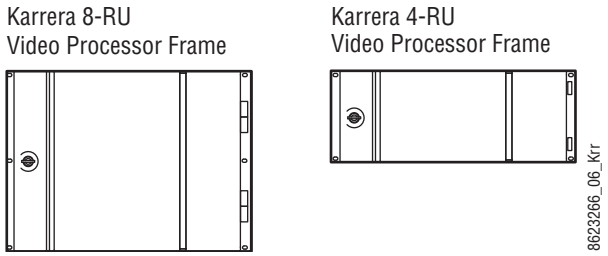
- Frames scale from 1 to 2.5 MEs in compact (4 RU) frames and from 1 to 4.5 MEs in standard (8 RU) frames.
- Half-ME option includes cut/mix transitions and six linear/luminance keyers.
- Up to 48 inputs and 24 outputs in the compact frame and up to 96 inputs and 48 outputs in the standard frame.
- Up to 16 floating internal DPM channels—four per ME—available on any full-function keyer. Plus four powerful expansion DPMs available in the standard frame.
- Up to 30 keyers, six per ME.
- Keys 1 through 4 on full MEs have two pages of video and key storage.
- 999 macros with many ways to recall macros from panel. Integrated macro editor allows users to edit macros online or offline on a PC running the menu application.
- 1,000 E-MEM registers with Define E-MEM for fine control in creation and editing of effects. Define E-MEM exposes 23 sublevels per ME for partial keyframing and allows the assignment of non-ME sublevels to MEs.

- Suites mode shares resources in one video processor frame across two different production suites while completely isolating the resources in one suite from the other as well as supporting more than one control panel in the same suite.
- DoubleTake™ Split ME Mode effectively increases the number of MEs to a total of up to 10 and includes FlexiKey™ Programmable Clean Feed Mode for separately programmable configurations of keyers from four ME outputs.
- Complete multiformat production with up/down/cross converting of HD input and output formats, including aspect ratio conversion, color space conversion, and motion adaptation on up to 16 inputs and eight outputs in the standard frame.
- Transition Chaining augments parallel video paths using Key Chaining, Background Chaining, and Partition Sync functions to simplify productions requiring multi-client feeds.
- Live 3D production is as straightforward as 2D production. DoubleTake simplifies configuration of ME resources with parallel background and keyer paths. Transition Chaining ensures left eye and right eye content is automatically switched in parallel with all the resources of Karrera's MEs.
- Fully interoperable with the Encore™, Jupiter™, and SMS-7000 routing control systems; LDK series cameras using LDK Connect Gateway; and with the K2 media server family. Supports Ethernet and serial AMP protocol, BVW, VDCP, PBus II, and Odetics protocols, as well as controlling devices using PBus II and GPIs. Supports Grass Valley Editor protocol.
- Integrated external ClipStore provides multiple channels of video/key pairs for over 10 hours of nonvolatile video/key/audio clip content.
- Tally (multiple tally calculators for contact closure, and tally contribution via serial port).

Karrera Video Processor Frames

The Karrera Video Processor Frame is available in two sizes. The 8-RU standard size frame supports up to 4.5-ME systems. The 4-RU compact frame supports 1-ME through 2.5-ME Karrera systems (Figure 1). The number of licensed boards present in the Karrera frame determines the number of MEs available, as well as the number of video inputs, outputs, GPIOs and Relay Tallies.

Figure 1. Karrera Video Processor Frames



Karrera Control Surfaces

A Karrera control surface typically consists of a Control Panel and a Menu application. Representative Karrera control surfaces are shown in the following illustrations.

Figure 2. Karrera 3-ME 35 Control Surface

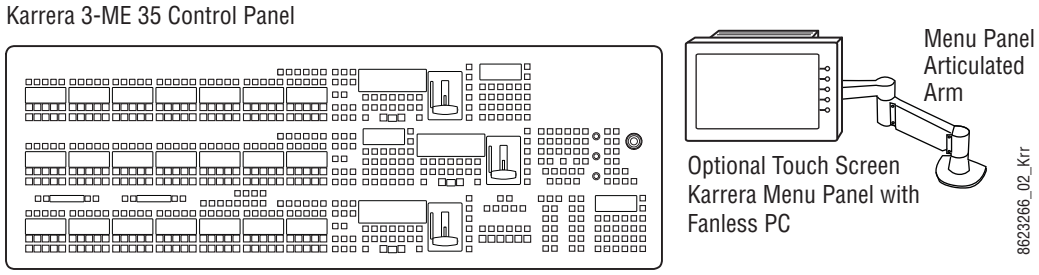
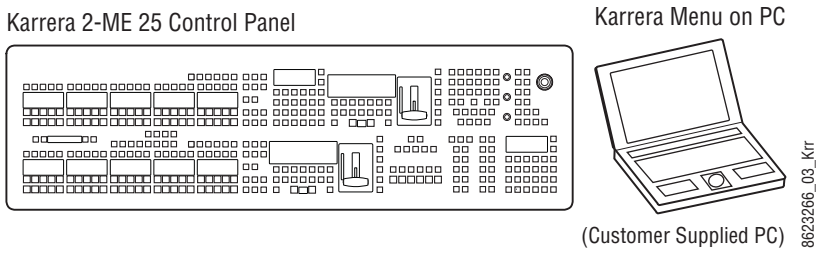


Figure 3. Karrera 2-ME 25 Control Surface



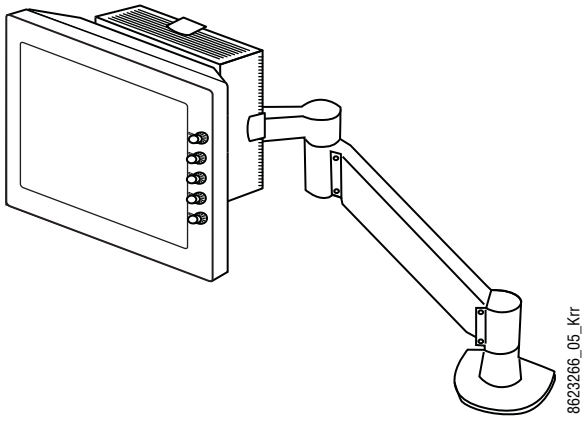
Karrera Menu Application

The Karrera Menu application software provided with every Karrera system can be run on a standard PC. This software accesses all the functionality of a Karrera system, permitting mouse and keyboard control from a laptop, or remote control from any location on the network.

Touch Screen Menu Panel Option

A hardware Karrera Menu Panel is available as an option, which features a wide format 15 in. touch screen display. An articulated arm is also included, offering a wide variety of installation options (Figure 4).

Figure 4. Menu Panel with Articulated Arm



The Menu Panel has a standard VESA-75 hole pattern and M4 threads, compatible with this and many other mounting devices. The Menu Panel also 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).

A fanless PC, running Windows OS, is available which mounts behind the Menu Panel.

Soft Panel (KSP) Option

Figure 5. Soft Panel Application

The KSP is an optional 1-ME Soft Panel GUI which provides direct control of switching crosspoints, recalling effects and macros together with an integrated version of the Karrera Menu application. A customized PC keyboard is included with the option for users who like quick cut and mix action from a hard-button interface. The KSP can be used as an adjunct to a main panel, providing a second seat (second control surface) in a Suite, or as the only control surface for a second Suite.

The KSP GUI application is designed to run on a PC platform. The screen must be 1920x1080 resolution or better (which is common in professional video environments). A touchscreen is not required, but can be very useful.

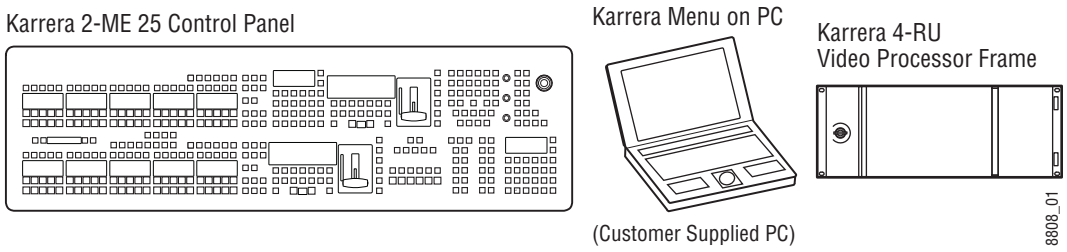
The KSP software is included with the switcher application software. Purchasing the option provides a software license that enables the interface, and includes a customized PC keyboard. The license activates an unlimited number of KSP applications associated with a video processor frame. Additional customized PC keyboards are also available for purchase.

Karrera System Examples

Basic Single Suite System

A basic Karrera system consists of a Control Panel, a Karrera Menu application running on a PC, and a Video Processor Frame. The Control Panel and Menu application make up a control surface associated with that frame (Figure 6).

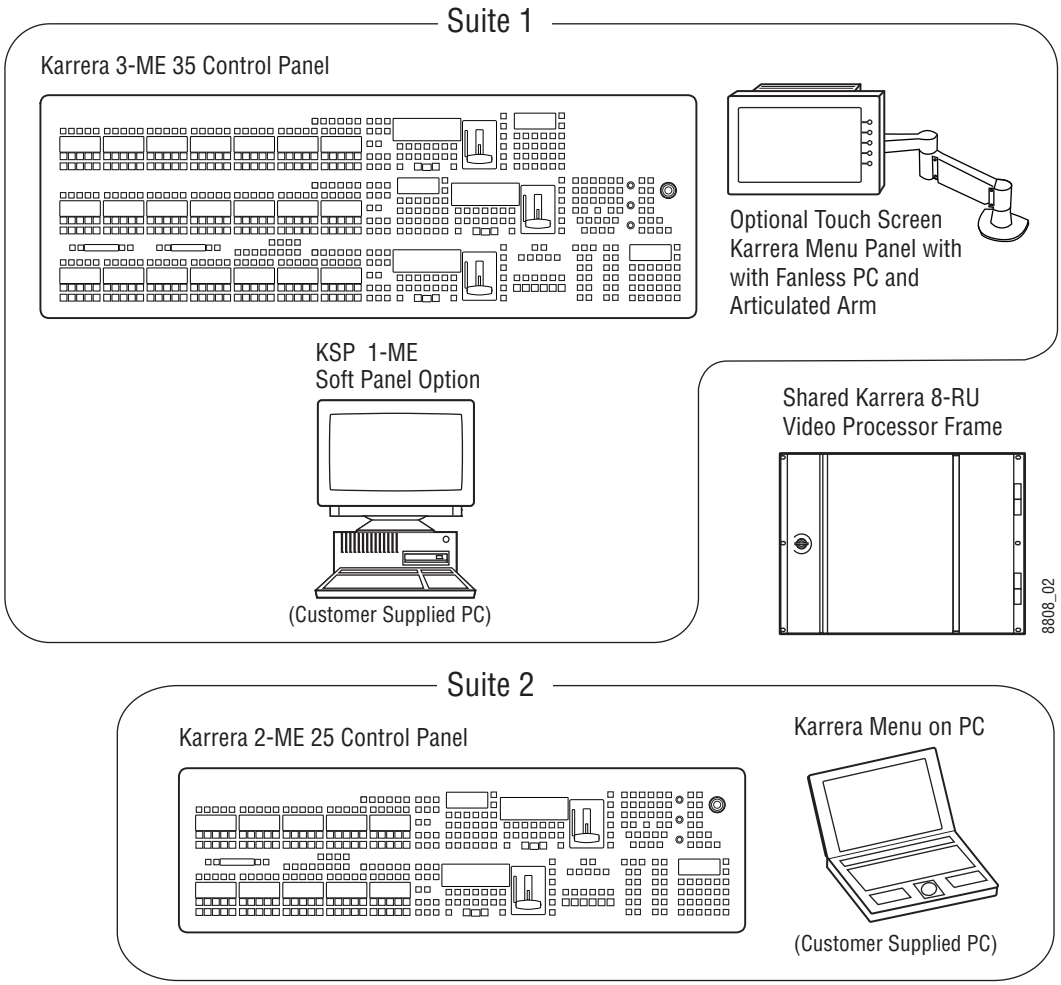
Figure 6. Karrera Single Suite Compact Frame Example



Multiple Suites and Control Surfaces

A Karrera 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 Karrera system (Figure 7).

Figure 7. Karrera Multi-Suite Standard Frame Example



Section 2

User Setups and Preferences

Introduction

The Karrera Control Surface allows you to customize how you work and how you save your switcher settings. You can create personalized user setups and suite preferences that determine the look and operational characteristics of the Control Surface. User setups and preferences can all be saved and transported on removable media (see File *File Operations* *on page 39*).

Some configurations will require setup in the Engineering menus as well. Detailed descriptions of the Engineering menus are available in the *Karrera Installation & Service Manual*.

This section will provide you with information about setups and preferences for basic Karrera operations. For more advanced setups and operation see *Advanced Operations* *on page 217*.

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 39*).

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 Karrera. Table 1 shows the source to button mapping for the 1st (unshifted) and second levels for a 35 button 3-ME system.

Table 1. 3-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 2 shows the 3rd shifted level.

Table 2. 3-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 3 shows the 4th shifted level.

Table 3. 3-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 4 shows the source to button mapping for the 1st (unshifted) and second levels for a 25 button 2ME system.

Table 4. 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 5 shows the source to button mapping for the 3rd level for a 25 button 2ME system.

Table 5. 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 6 shows the source to button mapping for the 4th level for a 25 button 2ME system.

Table 6. 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
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 button, that button will be mapped in the same location across all Shift Levels.

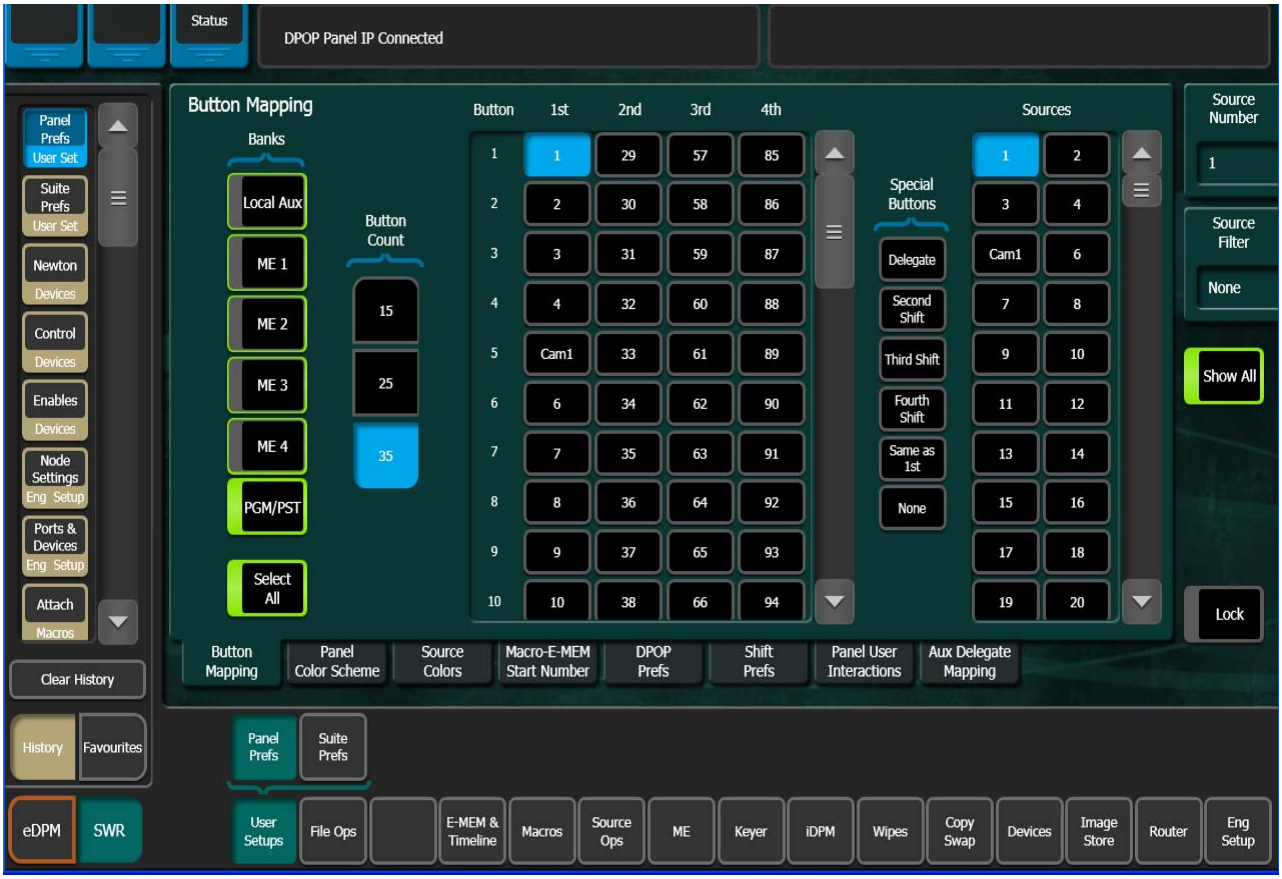
If a Karrera system's NV memory is cleared, local panel button mappings will revert to the factory defaults shown above.

Source Button Mapping

On the Karrera system, each bank on the Control Panel (Source Select areas) 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, source names should be defined for all sources 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 8).

Figure 8. Button Mapping Menu



The **Banks** delegation buttons (Figure 8) are used to select the device to be mapped.

Local Panel Source Button Mapping

The Karrera Control Panels are considered local panels. Local panel button mapping 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 8). 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 Karrera 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.
4. Repeat Step 2 and Step 3 until all the bank buttons have been mapped.

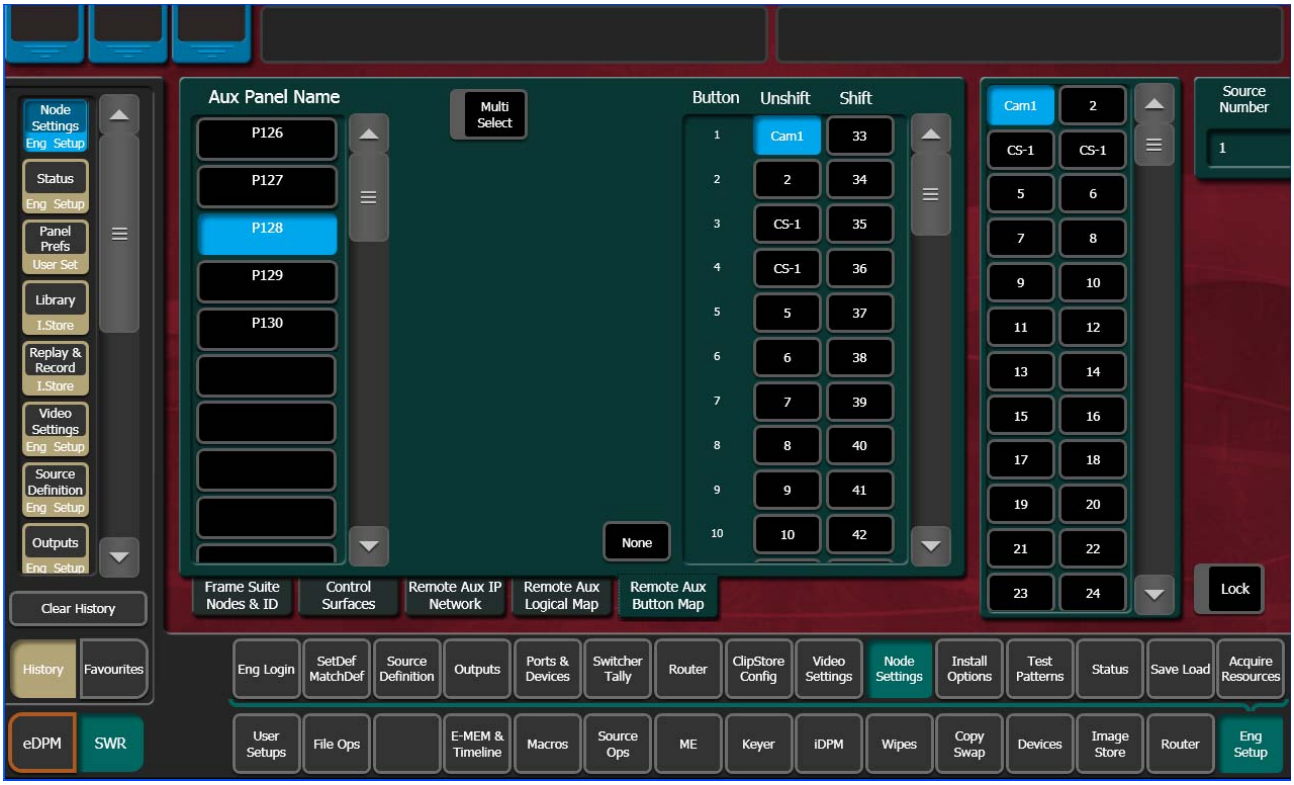
Remote Aux Panel Source Button Mapping

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 *Karrera 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 9).

1. Individual Remote Aux Panels are selected by touching the buttons in the left pane. Select the **Multi Select** button for group selection (Figure 9).

Figure 9. 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 27) to map the source buttons on the Aux panel. Select the Aux source button in the central pane, then select the Karrera source in the right pane.

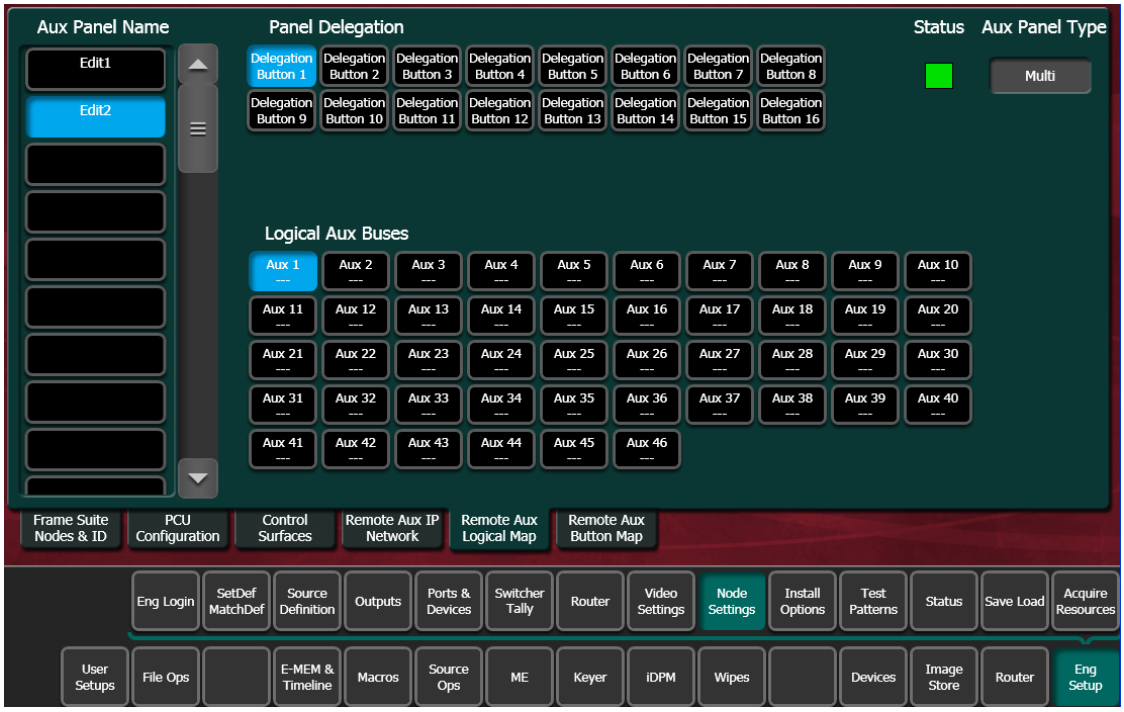
Note Button mapping settings for Remote Aux Panels assigned to a Control Surface are saved to the Panel Prefs configuration file. Button mapping settings for Independent Remote Aux Panels are saved to the Eng Setup configuration file.

Aux Bus Delegation Button Mapping

Map 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 10).

Figure 10. Remote Aux Bus Delegation Button Mapping Menu



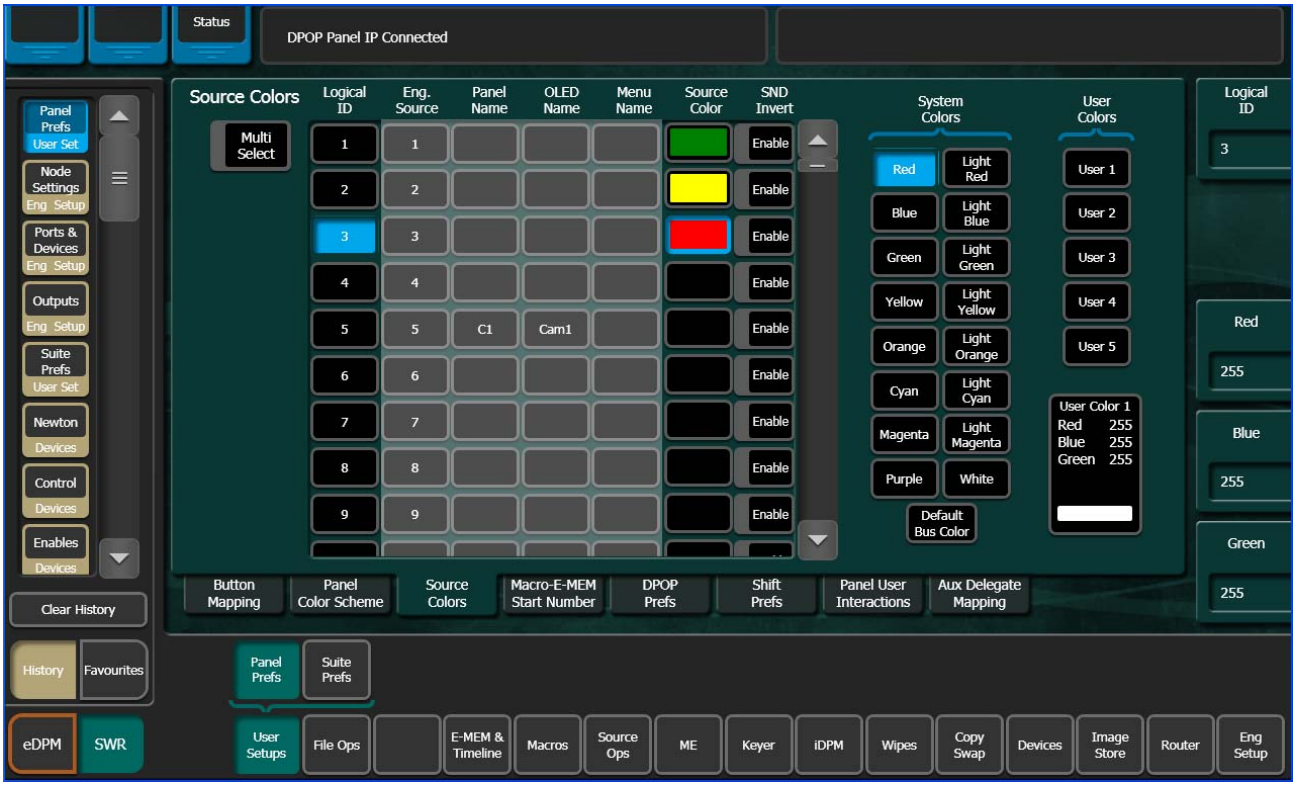
1. In the Panel Delegation pane, choose the Remote Aux Panel to configure. Only one Remote Aux Panel can be selected at a time.
2. In the Logical Aux Buses pane, select the Aux Bus delegation button you wish to map.

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 11 for quick reference.

Figure 11. Source Colors Menu



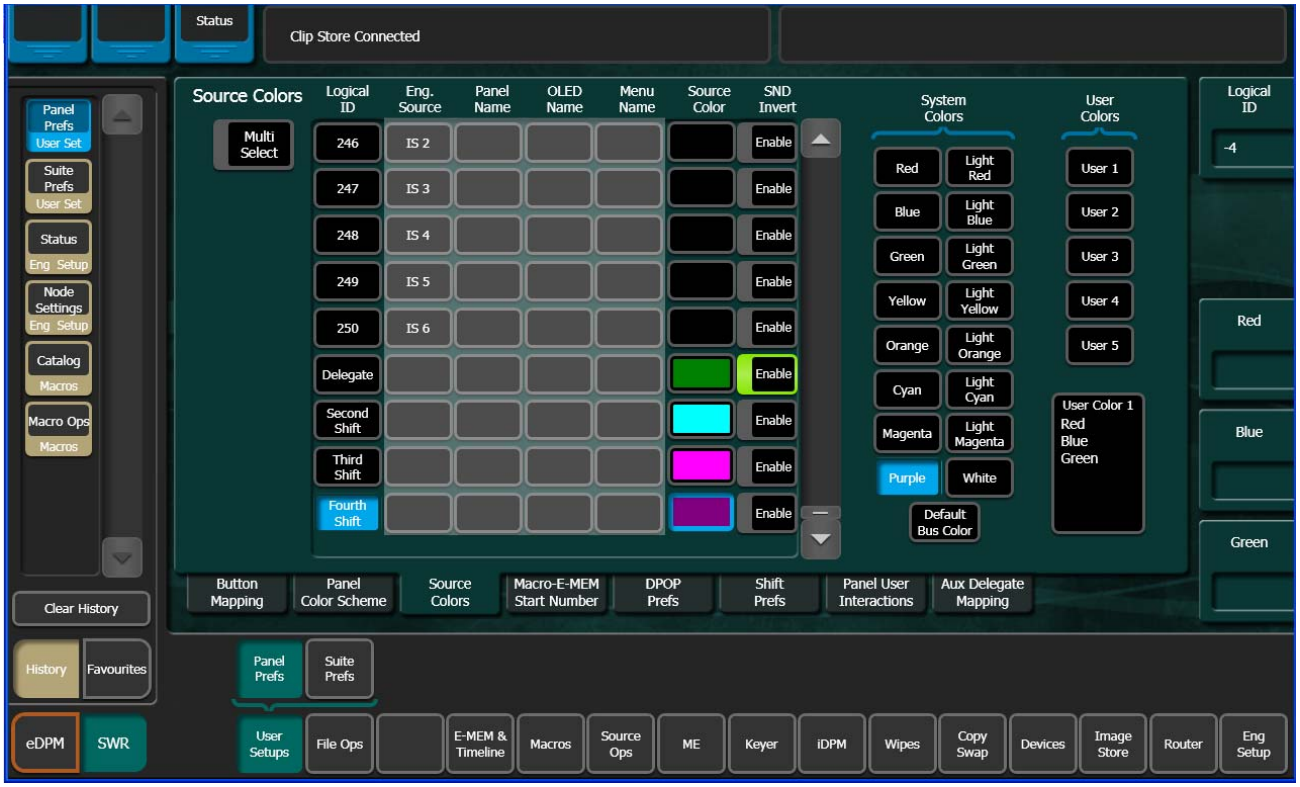
Assign Source Colors

1. Touch **User Setups**, **Panel Prefs**, **Source Colors** to go to the Source Colors menu (Figure 11).
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 Area 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 12).

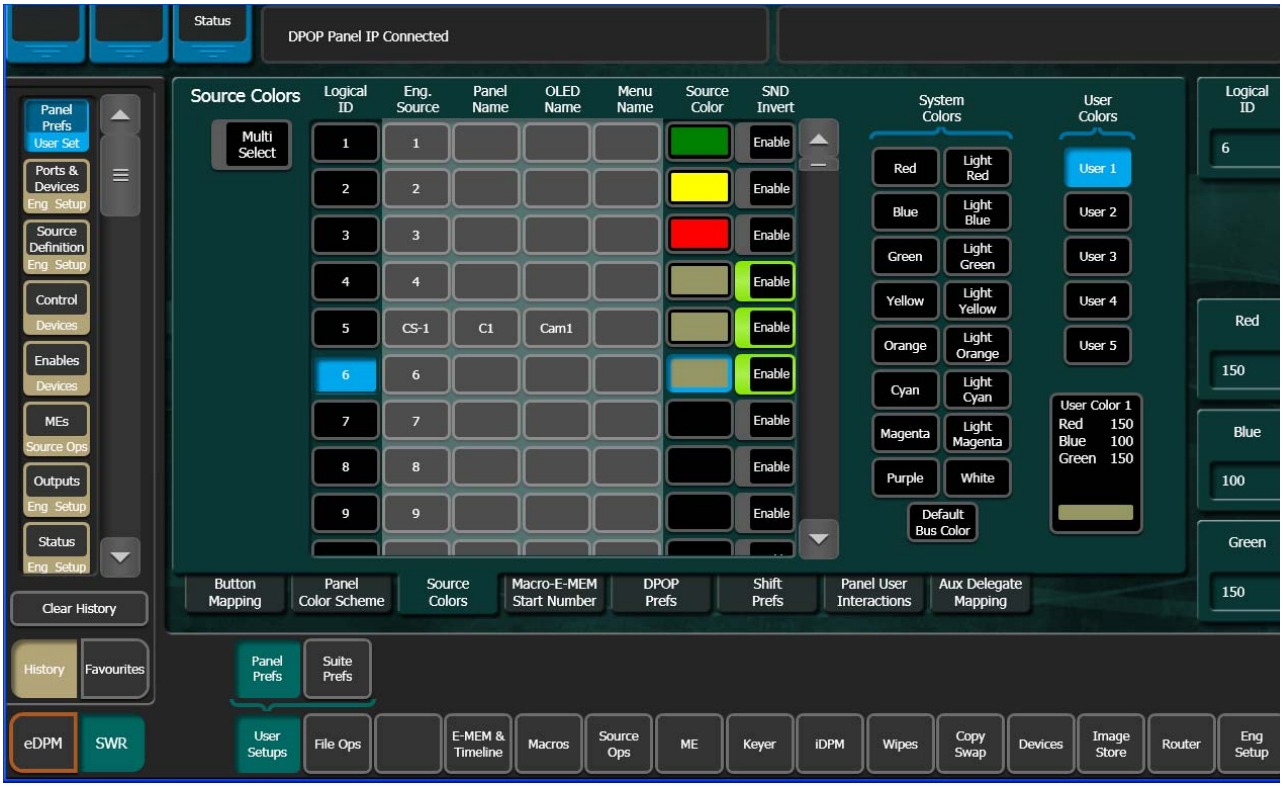
Figure 12. Source Colors Menu, Bus Delegate and Shift Button Configuration



Assign User Colors

The User Color buttons allow you to create custom colors for sources (Figure 13). You can change the button color for one source or several using the Multi-Select button for each button (1-5).

Figure 13. Source Colors Menu—User Colors



1. Touch **User Setups**, **Panel Pref t**o go to the Source Colors menu (Figure 11).
2. Touch a User Colors button **User 1-User 5**.
3. Adjust the User Color using the Red, Blue, Green data pads (Figure 11, 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 Karrera 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 Karrera 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 14) 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 Area. 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 Karrera 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 Karrera suite. Ensure the Karrera 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 Karrera suites, however.

Name Display Hierarchy

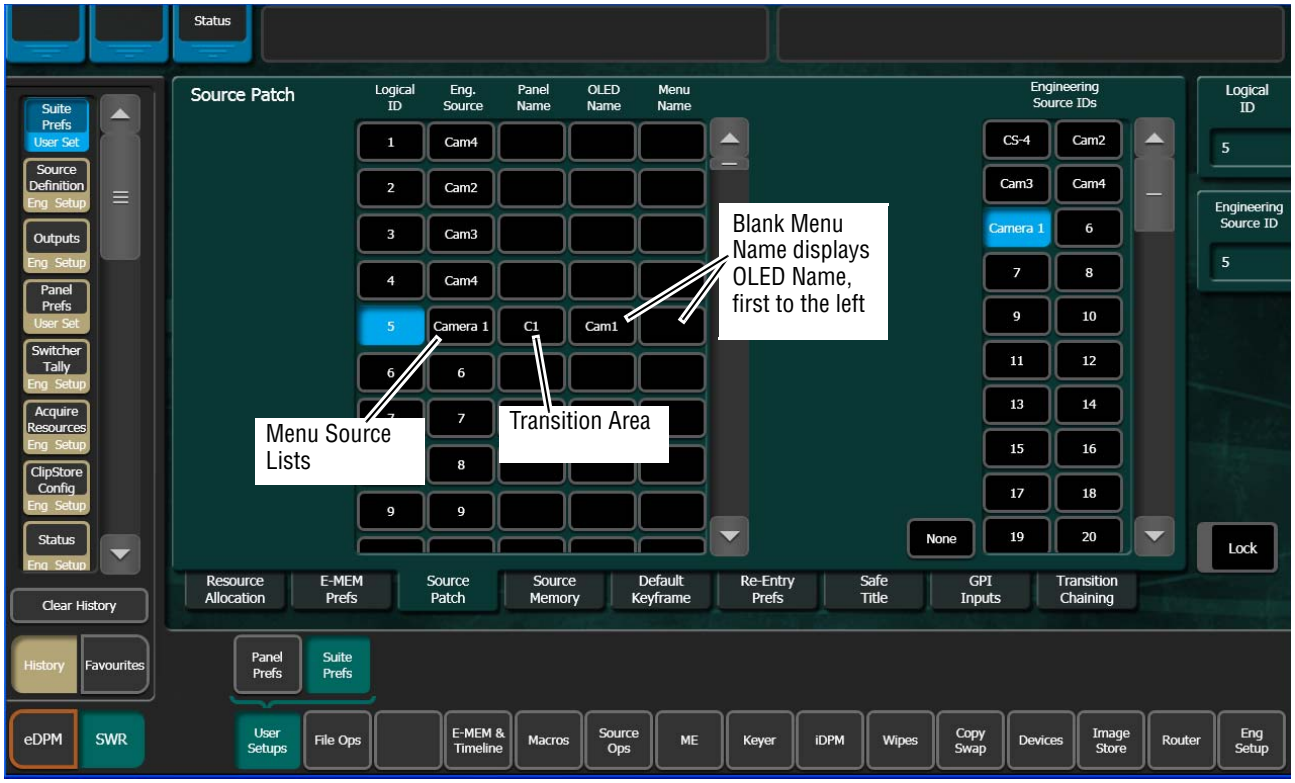
If a source's engineering name is left blank, the Eng ID number will be used. If no alternative names are defined for that source, then that Eng ID number will appear on all the Karrera system displays.

If an engineering name has been entered (*see Karrera Installation & Service Manual*) then the engineering name will be displayed on all the Karrera 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 14), 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 14).

Figure 14. 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 Karrera 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. These can be used to permit alternative processing of the same incoming signal. For example, the same camera input can be assigned to two Logical IDs, and one of these Logical sources can be given a Source Rule that can be cut on Key 5, and the other be given a Source Rule that cuts on Key 6. Selecting these different versions of that same source would automatically apply or clear the keys, as needed.

Using Source Patching for Effects Portability

Source patching makes it possible to build effects on a Karrera system in one facility or truck, and then use those effects on a different Karrera 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 Karrera system. Do not load the Eng Setups of one facility into the other, as this will overwrite that facility's existing Engineering configuration.

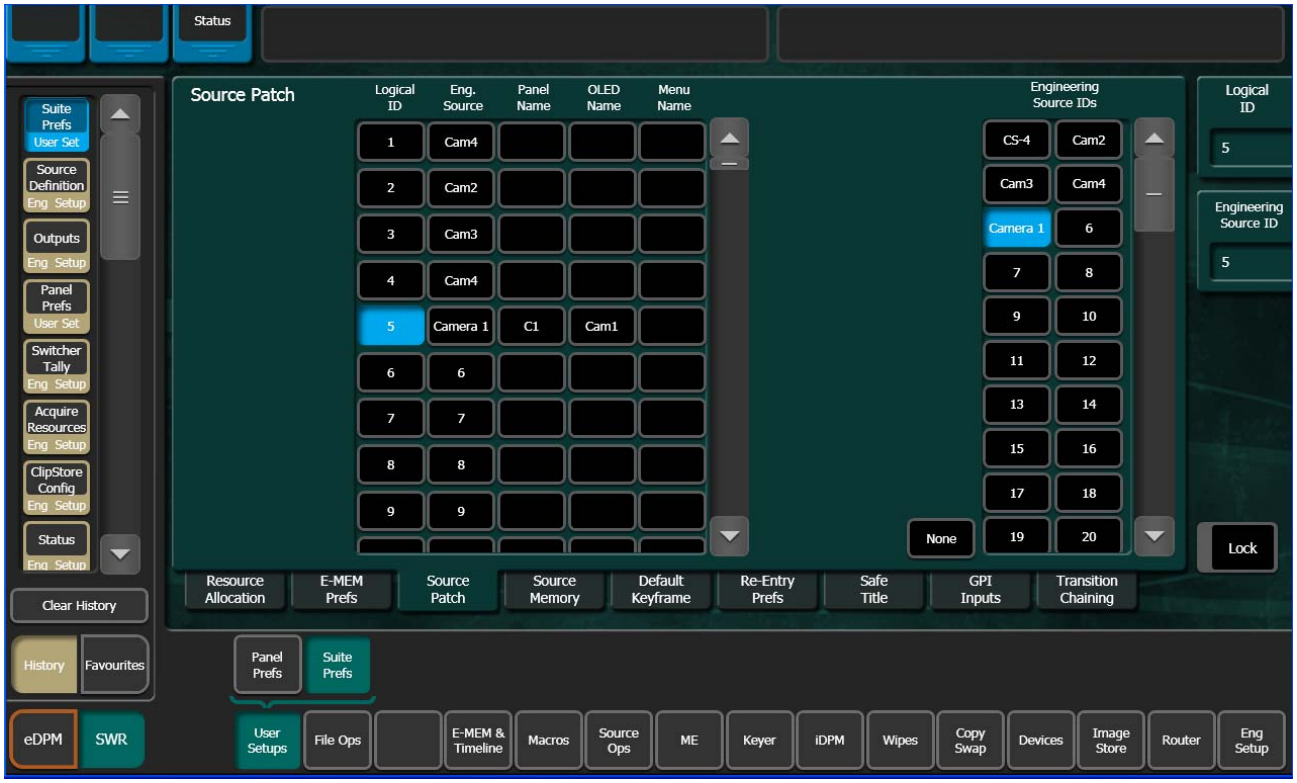
Once the Suite Prefs and effects are loaded at the new facility, go to the Source Patch menu and map the appropriate Engineering sources of the new facility to the original list of Logical sources. Your effects should now run as previously designed without having to edit or rebuild them. When satisfied 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 15).

Figure 15. 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 15).

3. If you wish, you can give sources alternative names in the Source Patch menu in the following ways (Figure 15):

- Panel Name —Source will appear in the Transition and Multi-Function area with this name,
- OLED Name (SND Name column)—Source Name Display will appear in mapped ME/PGM PST Source Select areas and the Multi-Function area with this name (see *Alternative Source Names* *on page 33*).
- 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 15). See *Using Source Patching for Effects Portability* *on page 36*.

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 area (**EMEM Edit**, **CWB** button) of the Control Panel.

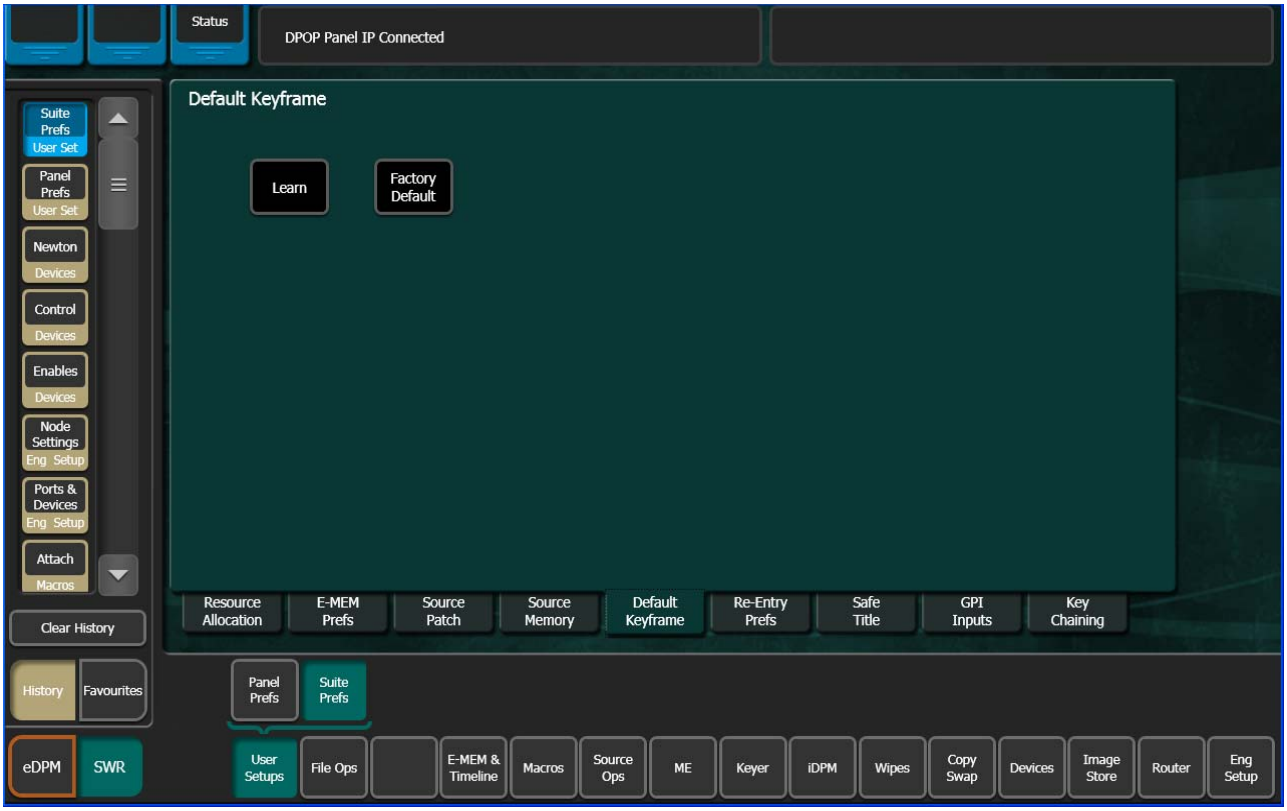
- **SPOP** clears the working buffer of enabled levels to Default Keyframe, however it does not clear the source memory.
- **DPOP** clears the working buffer of enabled levels to Default Keyframe and clears the source memory to the default settings for sources selected on enabled levels.

The Default Keyframe menu is used to learn the current Karrera 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 Karrera ME.

The Default Keyframe menu is accessed by touching **User Setups**, **Suite Prefs**, **Default Keyframe** (Figure 16).

Figure 16. Default Keyframe Menu



To Learn a Default Keyframe:

1. Setup the entire Karrera 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.

File Operations

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

Features

The Karrera 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

Karrera 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 Karrera system. Files are *copied* from one location to another without affecting the current operation of the Karrera system. File information is *loaded* to Karrera system RAM, and this immediately affects the operation and capabilities of the Karrera 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

Karrera files are named by the user when saved, and this name appears below the icon. The extension for each Karrera system file type is listed in Table 7.

Table 7. Karrera 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-Karrera generated file icons show the file name with extension, and displays the extension letters in the icon.

Karrera Drive Access

The Karrera 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 Karrera files that can be managed as a group.

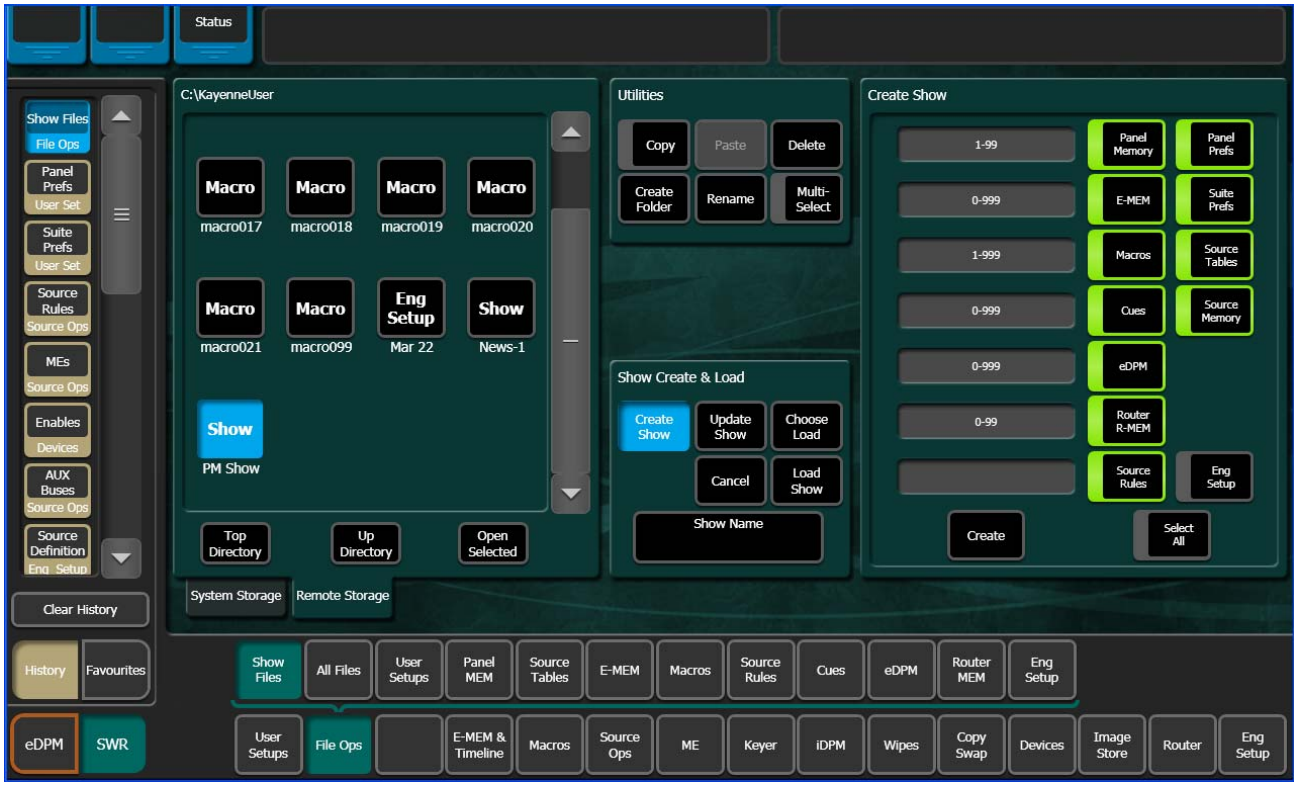
Touching the **Create Show** button opens a create show pane.

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 17).

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 17. Create Show File Operations



CAUTION The **Eng Setup** button is off by default as ports and server IPs are unique so transferring Show files from one location to another (including suites) requires planning to prevent interruption.

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.

Turning on the **Clear and Replace** button removes all files and replaces them so you can limit what is loaded to what is in the Show file and not a cumulative load/overwrite.

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 Karrera settings for those items.

Note A best practice is to set the E-MEM range from 0-999 each time there is an update, this will ensure that new registers are included (the same practice can be applied to other file types).

Load Show

Touching the **Load Show** button immediately loads all the files in the currently selected show into the Karrera 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 oper-

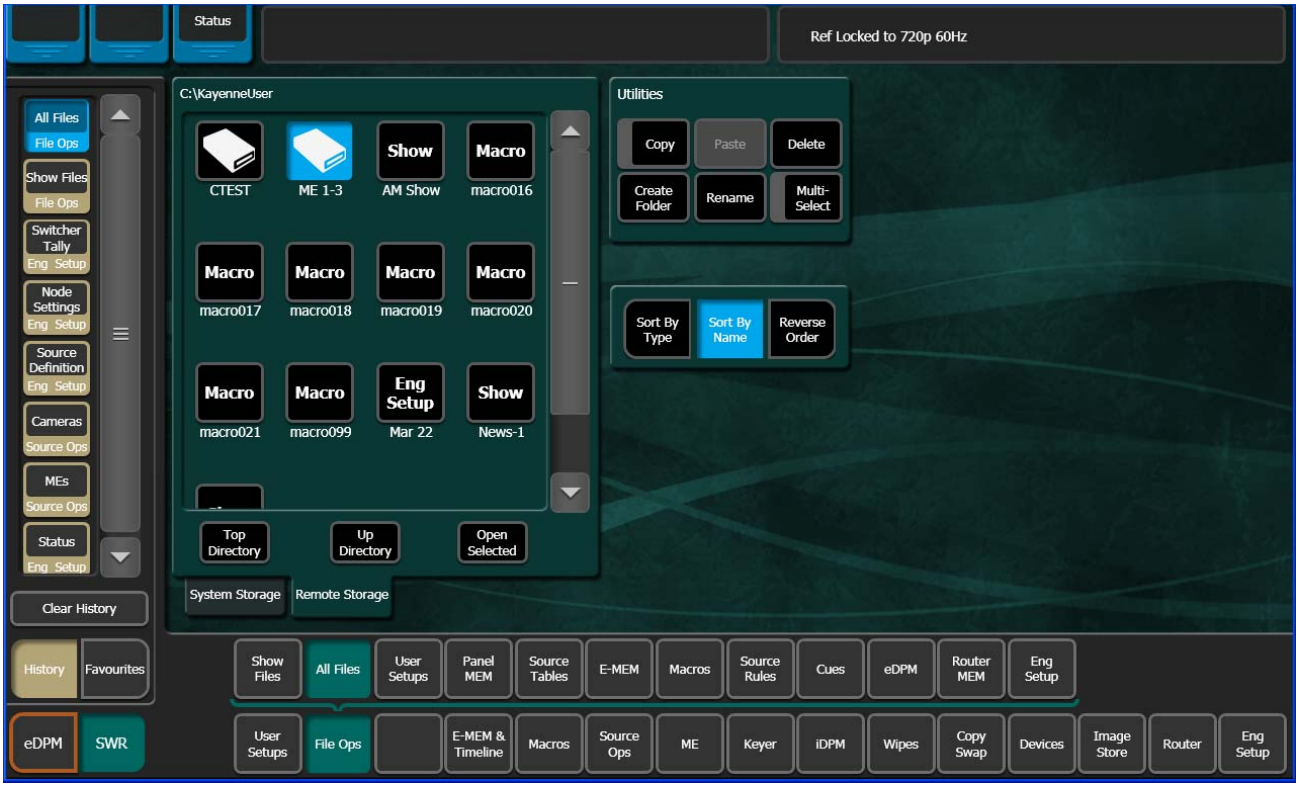
ation (source mapping, source name displays, available effects, etc.) will change depending on what files are being loaded.

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 Karrera system file storage. The menu is accessed from **File Ops**, **All Files** (Figure 18).

Figure 18. File Operations Menu

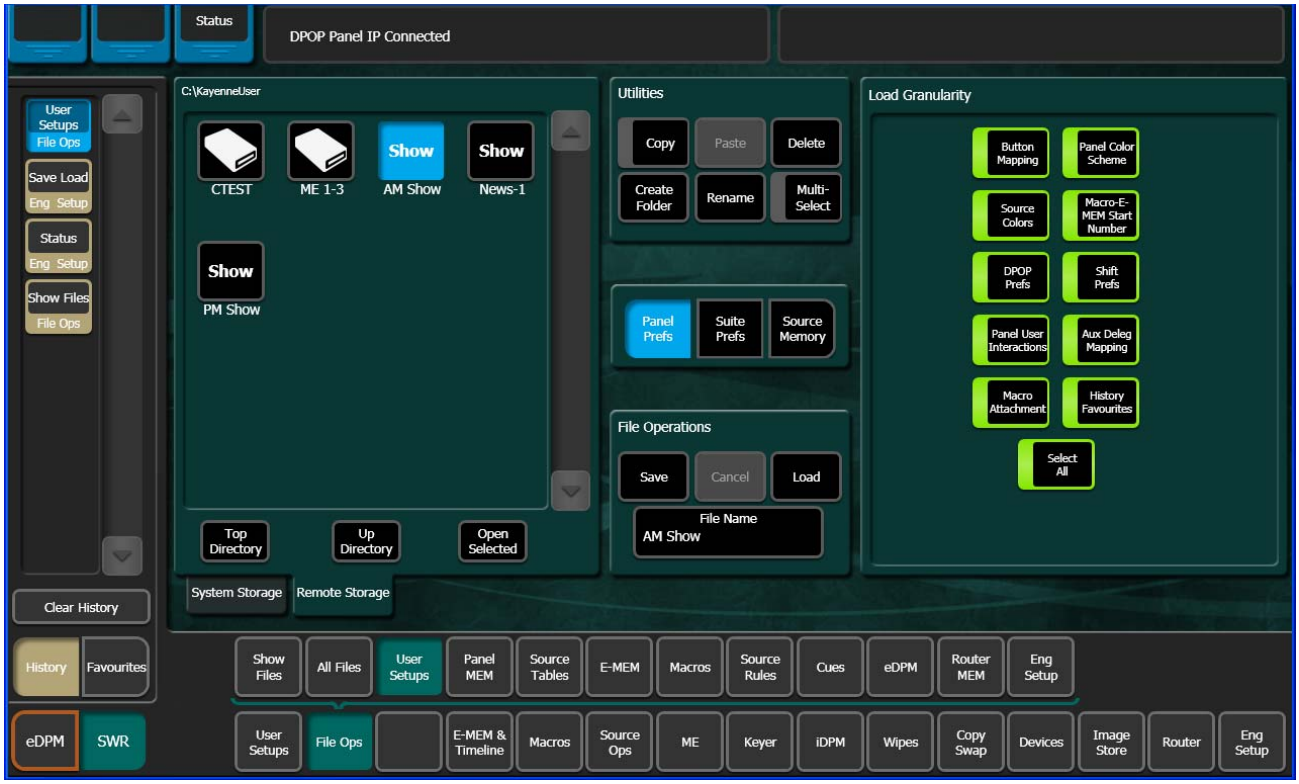


User Setups File Operations

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 19).

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 19).

Figure 19. 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.

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.

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.

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 Karrera system is currently using with the selected file information. When configuration files are loaded, significant changes to Karrera 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.

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.

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.

Save Source Rules Files

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

Load Source Rules Files

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

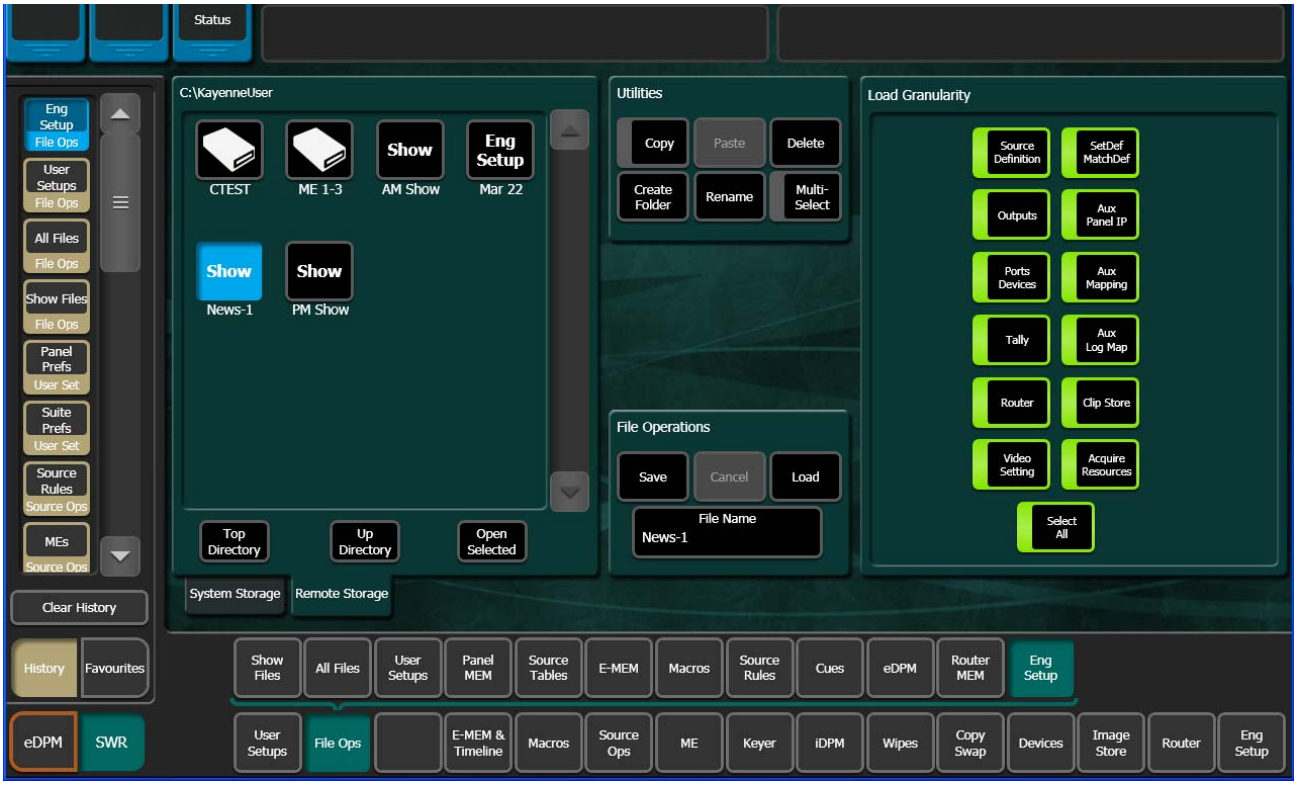
Eng Setup Operations

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 20).

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

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

Figure 20. Eng Setup Save-Load Menu



Section 3

Video Mix/Effects

Introduction

This section provides information about switcher features and functionality that directly affect video content (images), for example: modifying, processing, routing, and manipulating images in space.

MEs and Keyers

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.

Keyers are used to insert 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 Karrera system supports the following types of keys:

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

The Karrera system also supports self keys and split keys.

Chroma Key Operating Notes

The Karrera 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 Karrera chroma key also has an Auto Setup feature that can create an excellent chroma key under most circumstances without the need for manual adjustment.

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.

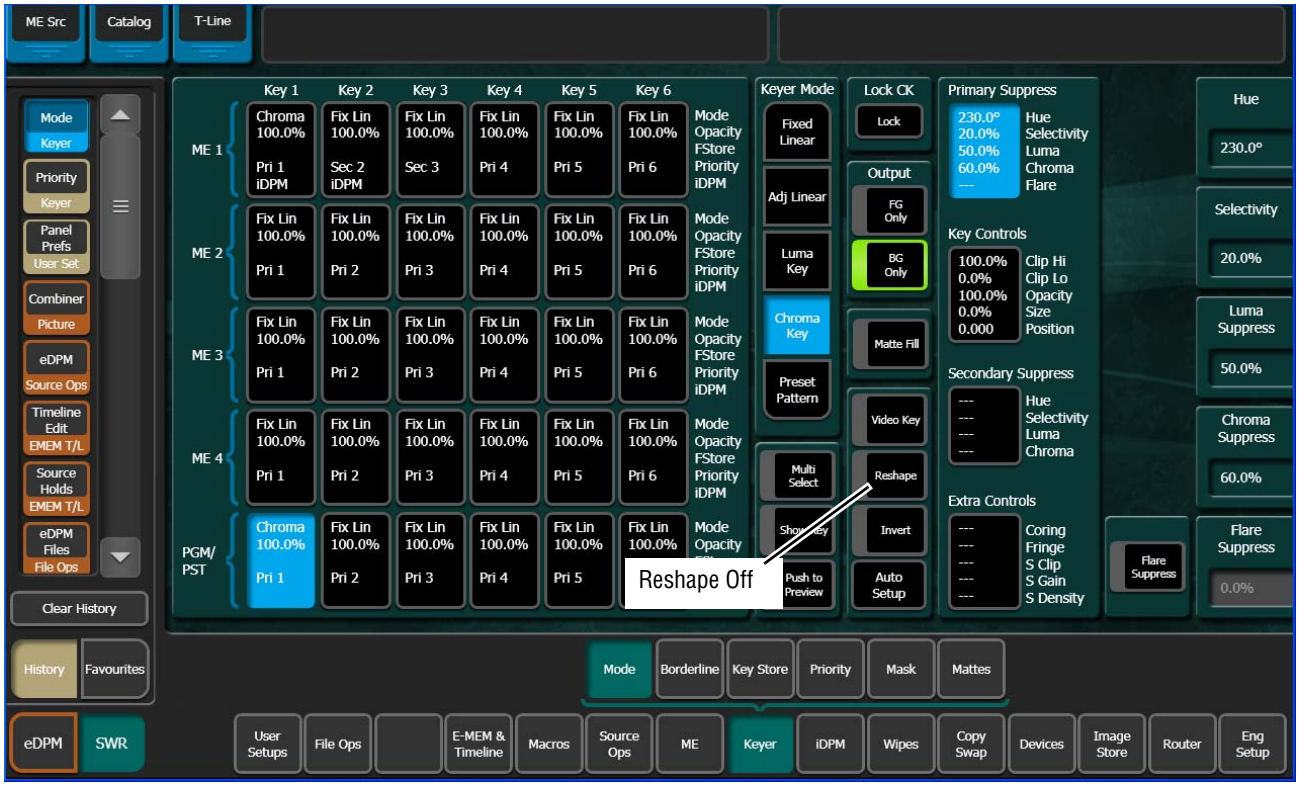
Chroma Key Using Auto Setup

1. Press one of the **Key 1-Key 4** Transition buttons on an ME to delegate the keyer you wish to use.
2. Choose the selected keyer's key bus that has the chroma key source and the chroma key backing color.
3. Select the **Chr** as the key type in the Multi-Function area (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 4** button for that full keyer in the Keyer Transition area) and make sure **Reshape** is off for the keyer you are using (Figure 21).

Figure 21. Keyer Menu, Chroma Key Reshape Off



6. Press the **Auto Setup** button in the Multi-Function area. 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 56*). In particular, if there are problems with translucent areas (hair, smoke) secondary suppression controls can be useful (see page 60).
   - Auto Setup with Reshape produces a chroma key with harder edges, but accommodates wider set variations (see below).

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

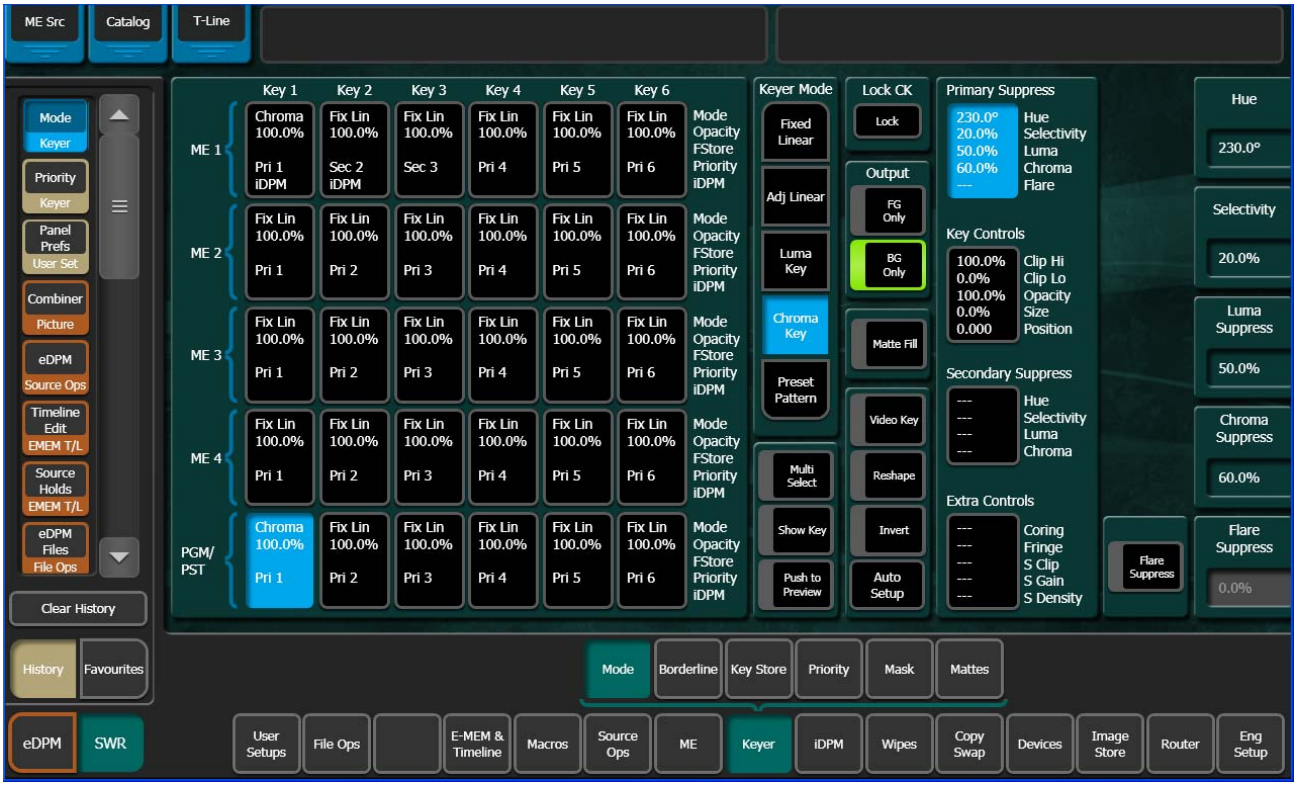
If the Auto Setup of the hue fails to provide a suitable chroma key, additional controls are available in the Keyer menu for fine tuning the key. Chroma key manual set up consists of choosing the best set of compromises to provide adequate detail and color fidelity to meet your needs. While using this 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** menu 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

On the Menu Panel, touch **Keyer, Mode**. You can also double press the **Chr** button in the Multi-Function area 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 22).

Figure 22. 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 22).

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.

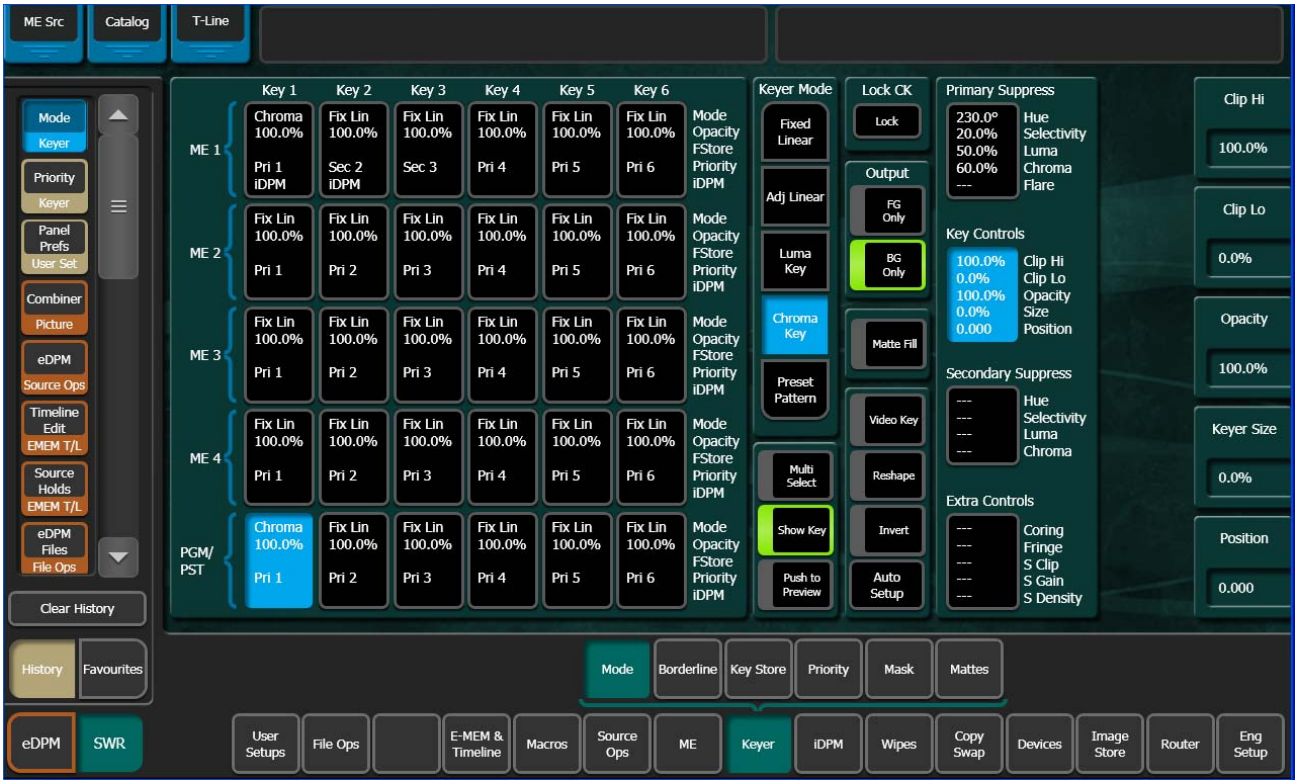
Key Controls

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 23) and look at the ME preview output on a picture and waveform monitor.

Figure 23. 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

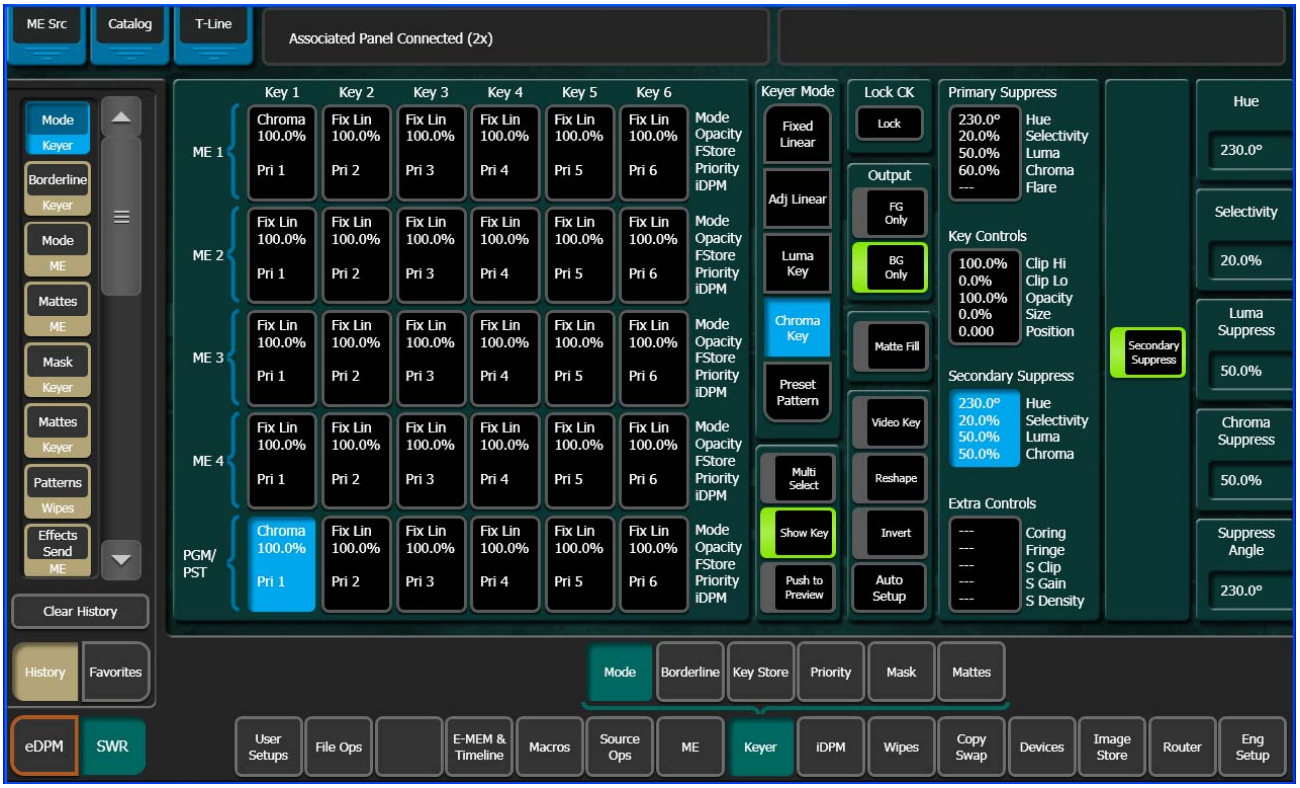
Secondary color suppression is intended to improve the color of translucent areas (e.g., glass or smoke) or fine detail near the edge of a foreground subject (e.g., hair). These areas can be take on some of the backing color. Much less secondary suppression will be needed than is used for primary suppression, 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 24).

Figure 24. Sec Suppress Controls



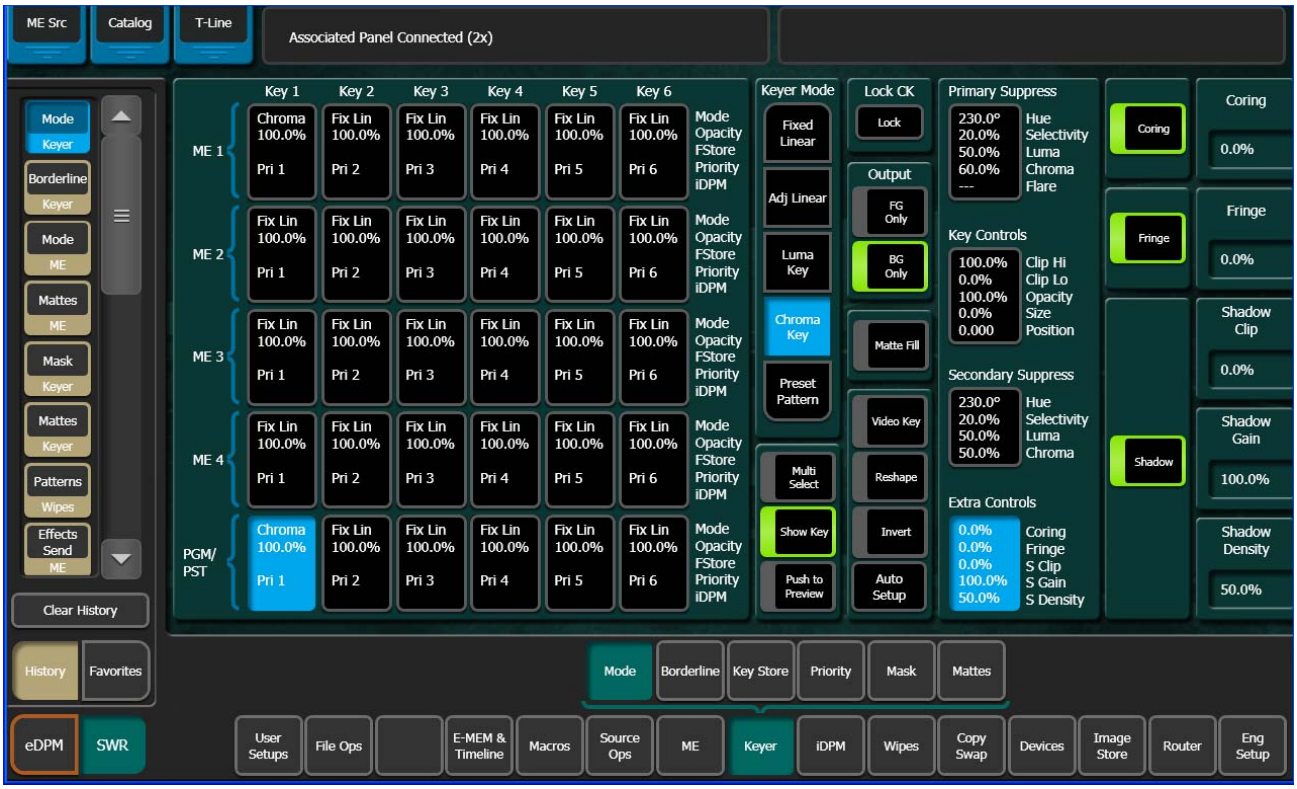
2. Adjust secondary suppression **Hue** and **Selectivity** so that the translucent area is affected, but opaque areas of the foreground are not. The final hue will lie somewhere between the backing color (primary suppression hue) and the uncorrupted foreground color.
   - When making this adjustment, 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 25). Coring, fringe, and shadow controls can be individually activated by touching the labeled buttons.

Figure 25. 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.

Background Mattes

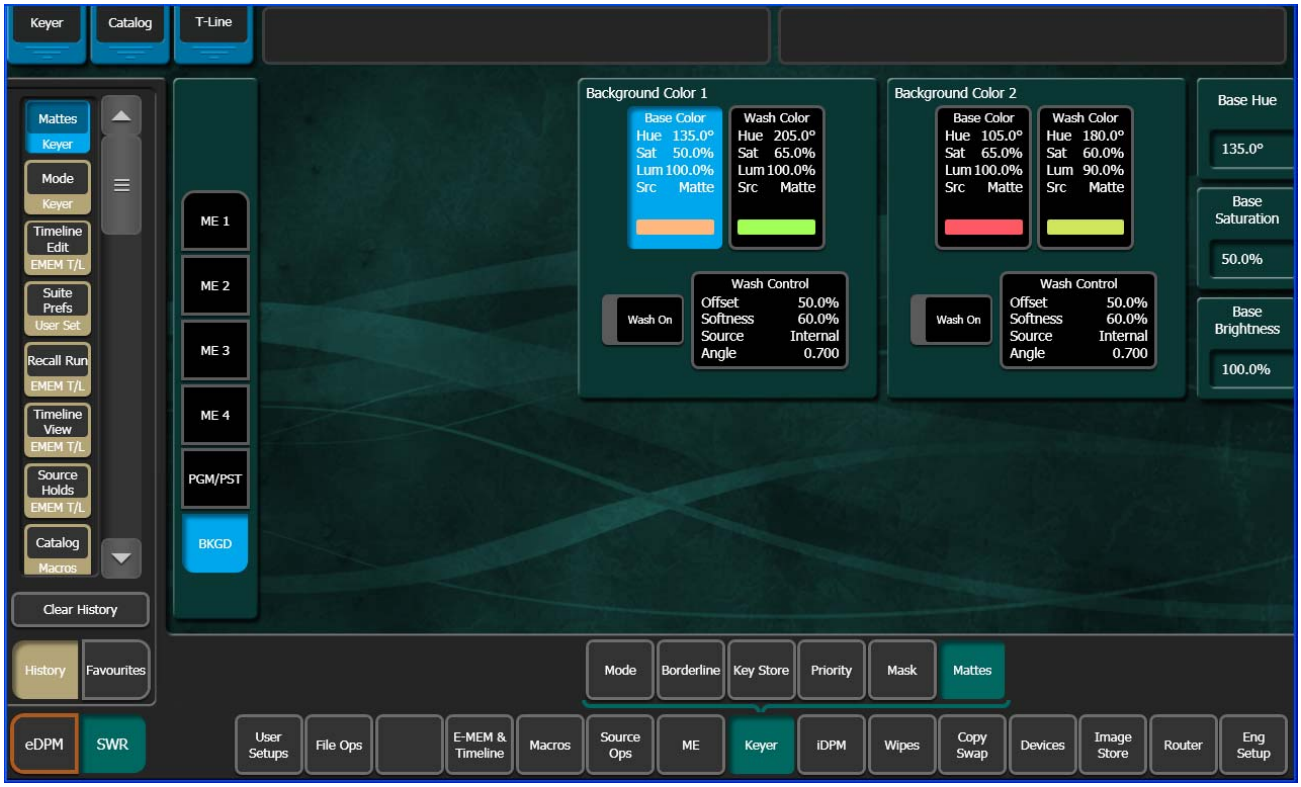
Background matte generators create colors and washes. These can be used, for example, as the backgrounds for keys.

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 area, **Matt** button in the Home menu) and from the Keyer, Matte menu, which provides additional background parameter controls.

1. Go to the Mattes menu by pressing **Keyer**, **Mattes**.
2. Touch the **BKGD** button.
3. 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 26).

Figure 26. Matte Menu, Base Color Selected



4. Touch the **Wash On** button at the bottom so its indicator illuminates to create a wash matte.

5. 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.

6. 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.

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 Karrera system, the source select buses by default tally the key fill signal.

To Perform a Split Key:

1. Touch Source Ops, MEs in the Karrera menu.
2. Touch the Cut signal data pad for the Keyer you wish to split (highlights blue).
3. Select a source from the scrolling Source List (right) and touch that source.

   The ME Status display in the Transition area shows the source names of any key cut signals.

Note Split Key will be shown in the Multi-Function area display.

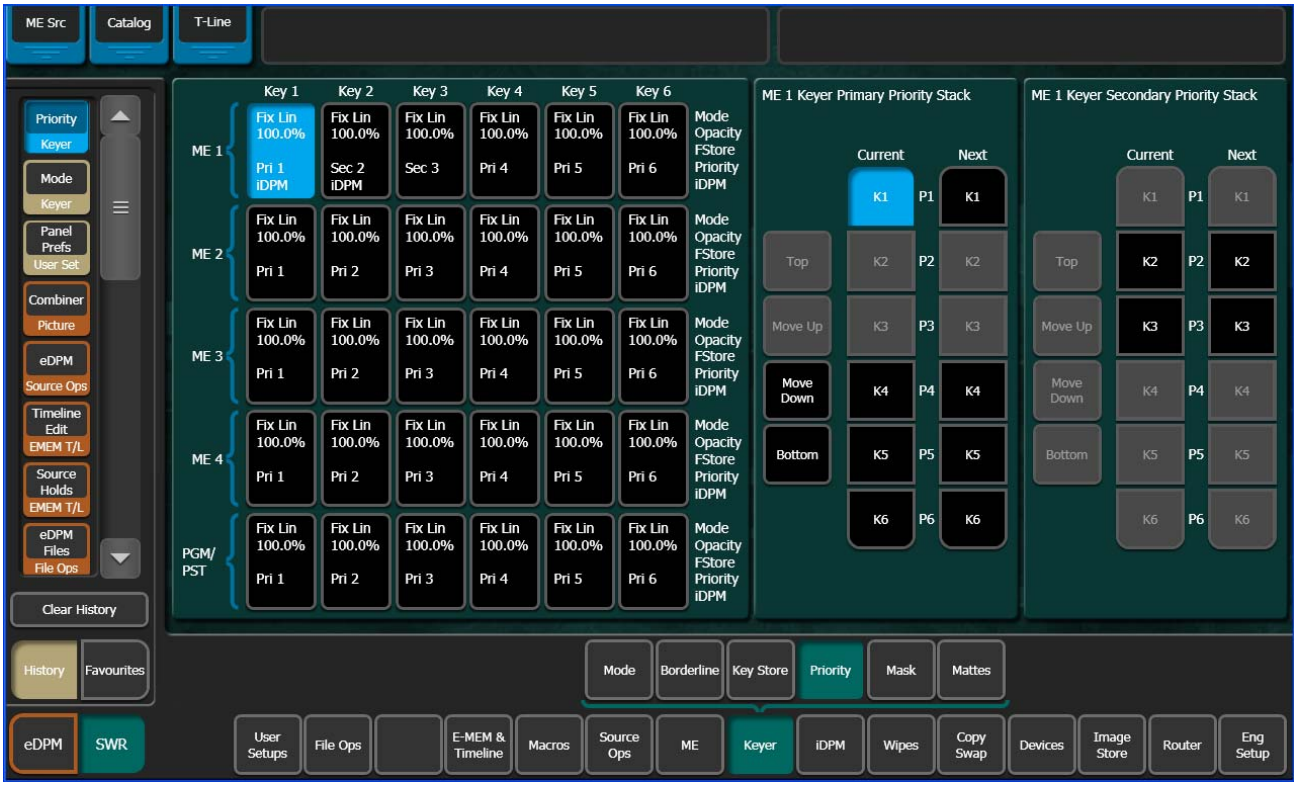
Keyer Priority

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 Karrera 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 27).

Figure 27. 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 area (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.

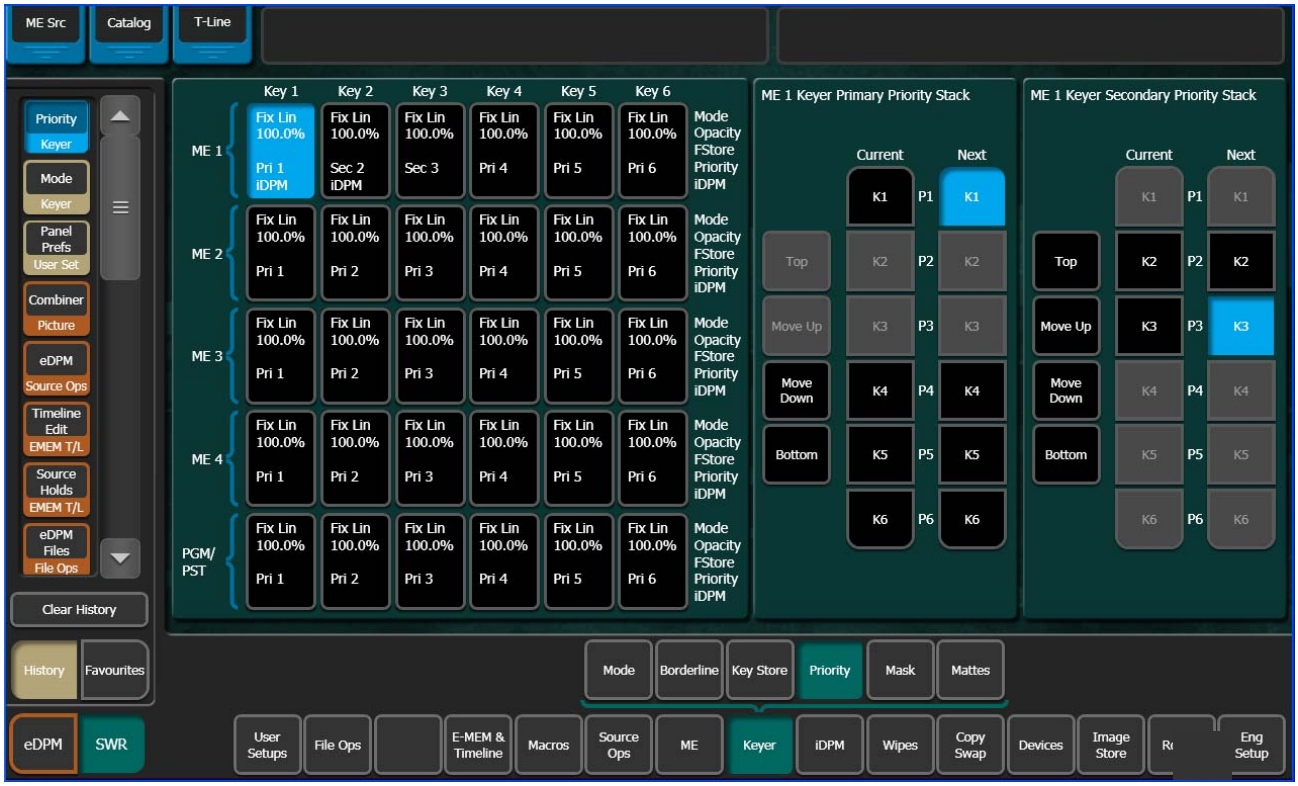
3. Delegate that ME for preview in the Preview button group on the System Bar. This shows the end result of the transition (the Next priority).

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 66.

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 28). The new stack will be visible on the preview monitor.

Figure 28. Keyer Priority Menu, Next Stack Selected



7. Select the type of transition, using the **Mix**, **Wipe 1**, or **Wipe 2** buttons in the Transition area. 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 area 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.

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 29), 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.

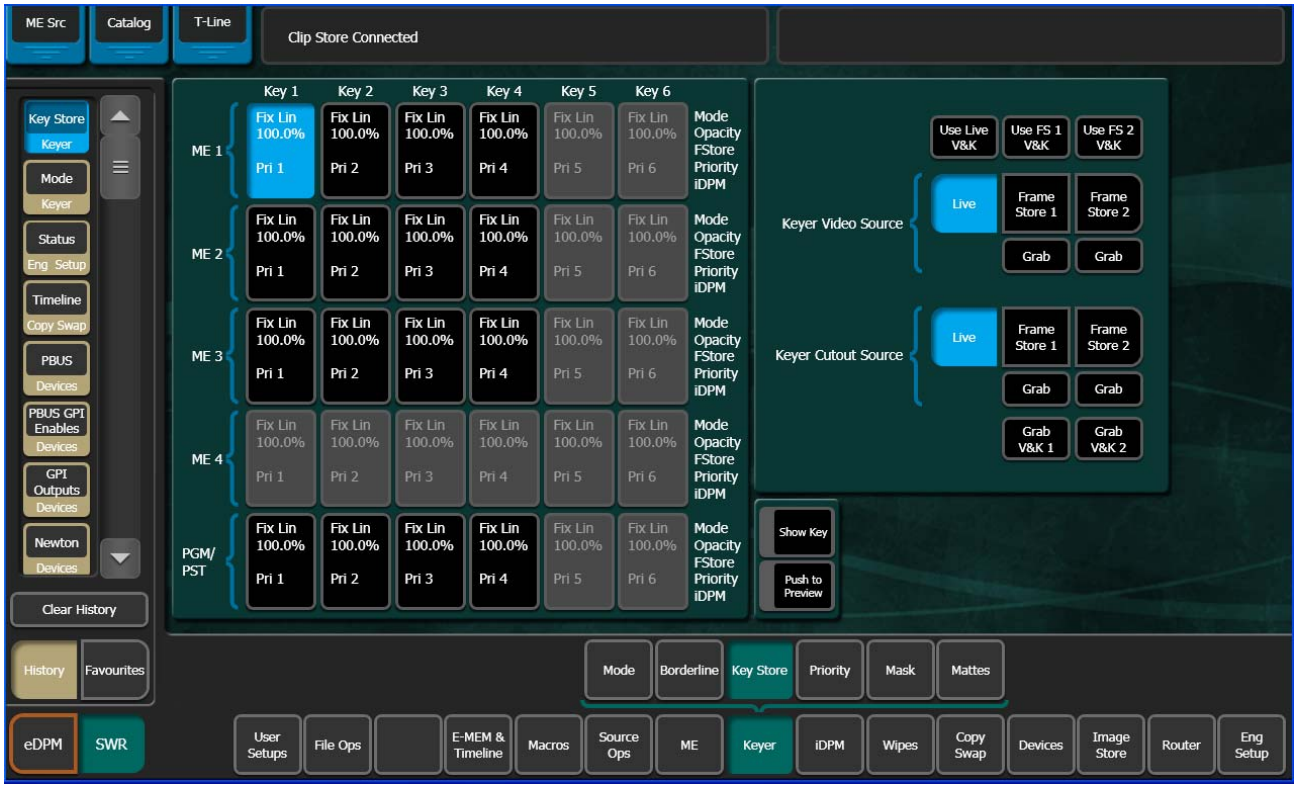
The fill and cut from Live, and Frame Store 1 and Frame Store 2 pages can be used in any combination, for example you can use the fill from Keyer Video Source, Frame Store 1 with the cut from Keyer Cutout Source, Frame Store 2. You can even use the Live video from the Keyer Video Source and the cut from 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 29. 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 29).

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 29, 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 29), 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.

Pattern Mix

The Karrera system can combine the complex wipe pattern generators (**P1** and **P2**), to create a wide variety of customized wipes.

To Create a Pattern Mix on PRI Wipe 1:

1. Double press the **Wipe 1** button in the Transition area. This selects **Wipe 1** as the next transition type, and also opens the Wipes menu with PRI Wipe 1 delegated for control.
2. Select the P1 pattern to be used by touching the **Wipe Pattern** button between the **Pattern Mix** and **Generator/Border** data pads, and then selecting one of the displayed patterns in the Pattern tab on the right.
3. Select the **Pattern Mix** data pad, this switches the Pattern tab on the right to the other generator; in this case P2 (to select the base wipe pattern again, touch the Wipe Pattern button as in Step 2).
4. Touch the **Mix** data pad located below the Pattern tab. 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 area, and move the lever arm part way. This will display the P1 pattern on preview.
7. Touch the delegation button in the Pri Wipe 1 column to delegate the menu to control the Pri 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.

iDPM Operations

Karrera 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 111*).

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 full ME or one keyer on each of the two full 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 Multi-Function area. Most but not all of the functions are common.

Multi-Function Area iDPM Delegation

The Multi-Function area in the Karrera Control Panel can be delegated to activate and control iDPM Channels. The Multi-Function Area can be delegated in any of the following ways:

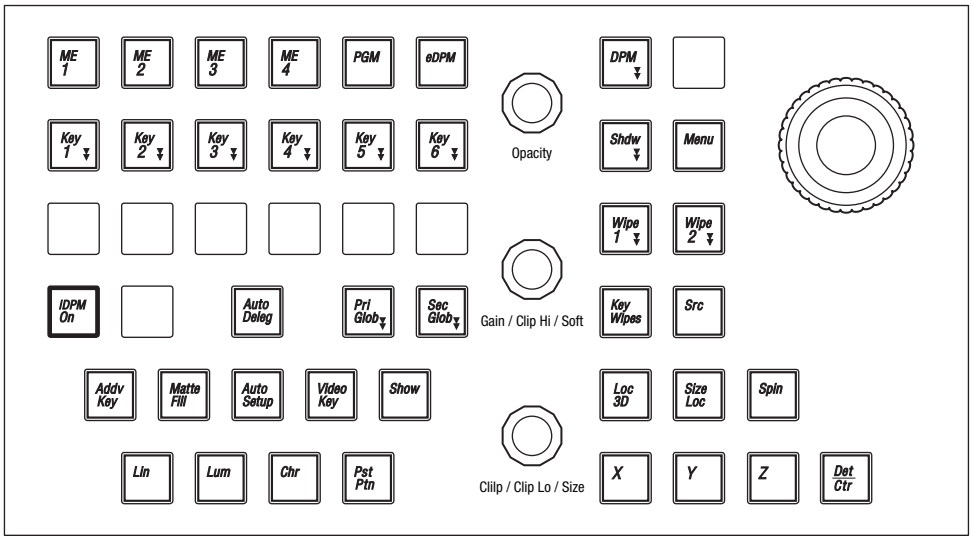
- Press any keyer button in the Source Select area (above the Source Select buttons) of the desired ME,
- Press any keyer button in the Multi-Function Area (second button row from the top), or
- Touch to select the ME in the **ME**, **Mode** menu in the Karrera menu.

Turn on the Keyer iDPM

To turn on the iDPM for one or more keyers in the Multi-Function area, either press a single keyer button (Key 1—Key 4) and then press the **iDPM On** button or press and hold down a keyer button while selecting additional keyer buttons and then press the **iDPM On** button (Figure 30).

Note The **DPM** button will also place the Multi-Function area into DPM mode.

Figure 30. Multi-Function area, iDPM Control Mode



The first time the **iDPM On** button in the Multi-Function area is turned on (or the **DPM** button is pressed), Source space is selected and Locate 3D is enabled. Touch the **Target** tab in the Karrera menu to enable (change to) Target Locate mode.

Source space refers to the key or keys moving along the X, Y, and Z axes of the partition global channel while *Target* space refers to the key or keys moving along the X, Y, and Z axes of the monitor.

Turning on iDPMs From the Menu

You can select the desired keyers (Key 1—Key 4) for which you want to turn on iDPMs in the **Keyer**, **Mode** menu and then press the **iDPM On** button in the Multi-Function area or turn on the iDPM for each full ME keyer in the **iDPM**, **Transform** menu.

Parameter Controls

When any of the Multi-Function area positioning parameter buttons are pressed, the data pads in the menu and the joystick are delegated for control of that parameter.

The following are controlled from the Multi-Function area (other controls are in the Karrera menu):

- **Src** — Toggle: Low tally yellow is Target Space/High tally purple is Source space.
- **Loc 3D**— Locate 3D
- **Size Loc** — Size Locate
- **SPIN** — Spin
- **X**, **Y**, and **Z** — Controls those axis
- **Det Ctr** — Detent Center

The **Pri Glob** (Primary Global) and **Sec Glob** (Secondary Global) buttons available in the iDPM Mode in the Multi-Function area activate keyers delegated to Primary and Secondary Global Channels (iDPM Keyer delegations can only be made in the menu).

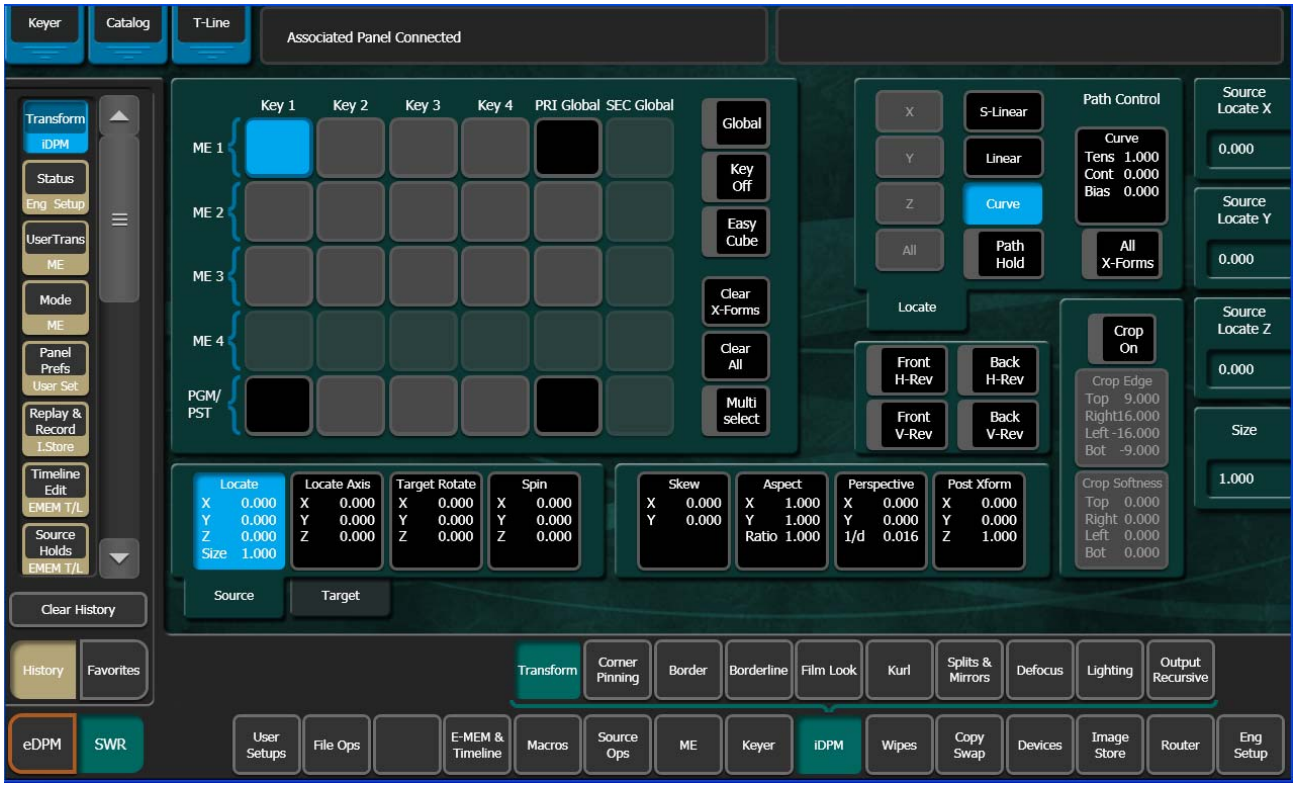
Note The **Sec Glob** button will only be available if the ME has been split.

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 85*).

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 31).

Figure 31. Transform Menu



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 31). 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

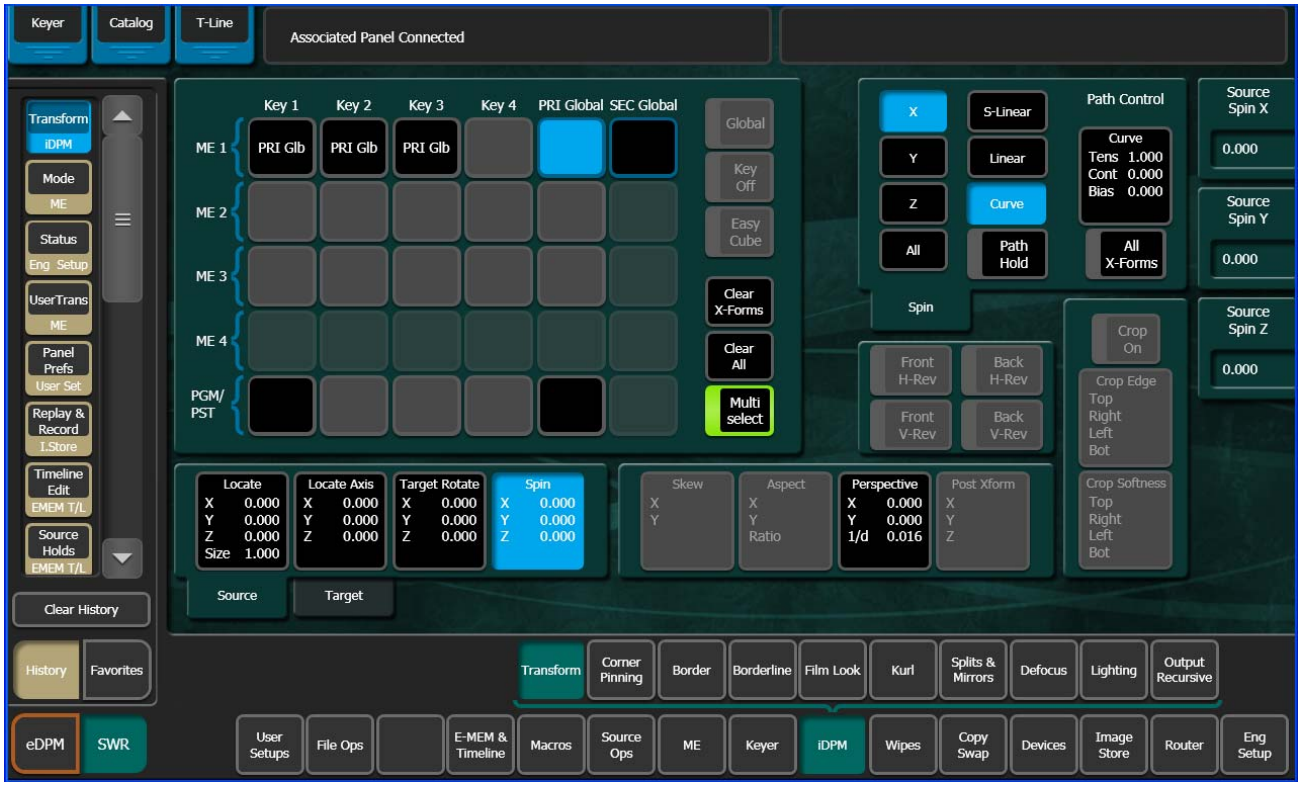
The Primary Global and Secondary Global Channels are assigned in the iDPM, Transform menu, however the Secondary Global channel requires configuration in the ME, Mode menu (see *Secondary Global Channel on page 77*).

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 32). 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 Glb /SEC Glb**).

Figure 32. Transform Menu, Primary Global Assignment

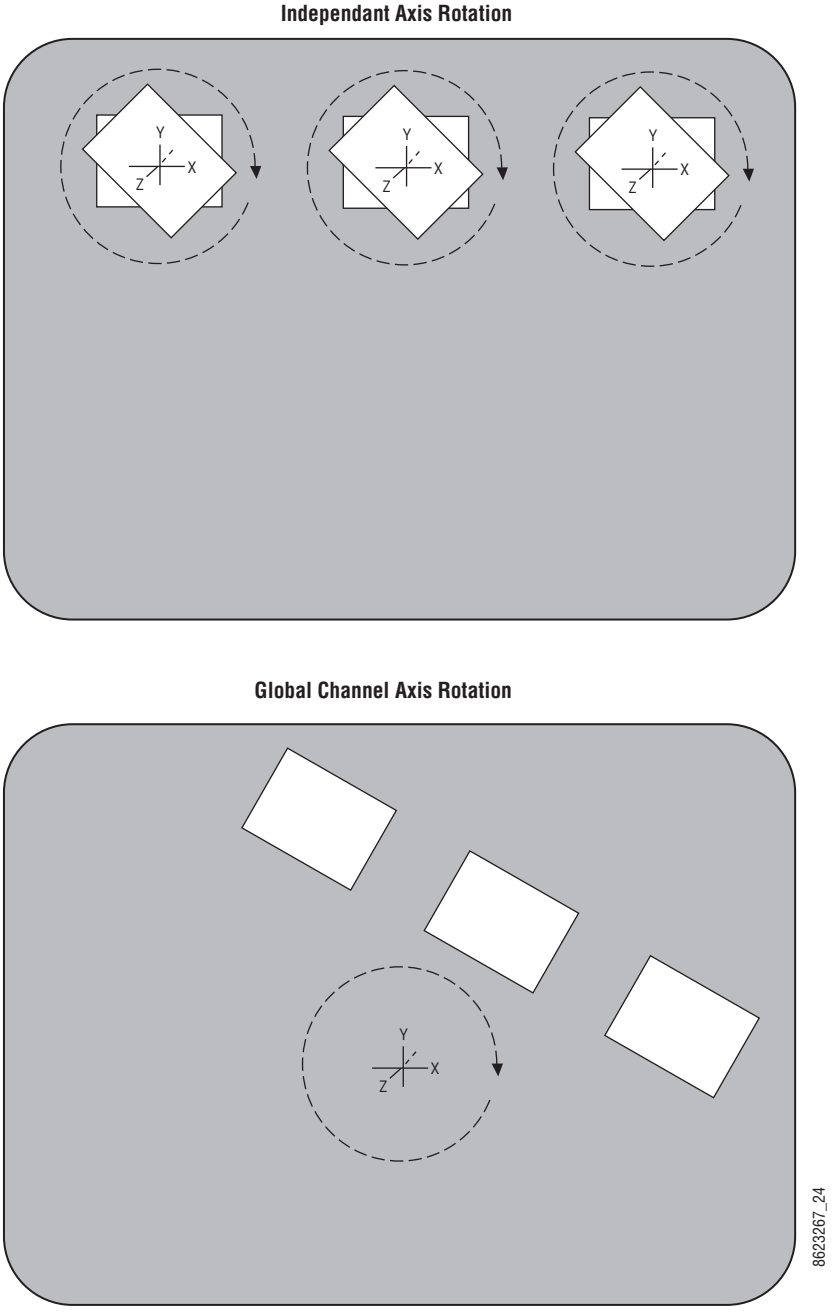


Any transform type is applied across all keyers when they are assigned as global, i.e. Locate, Rotate, Spin, and Perspective.

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 33). 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 33, lower graphic).

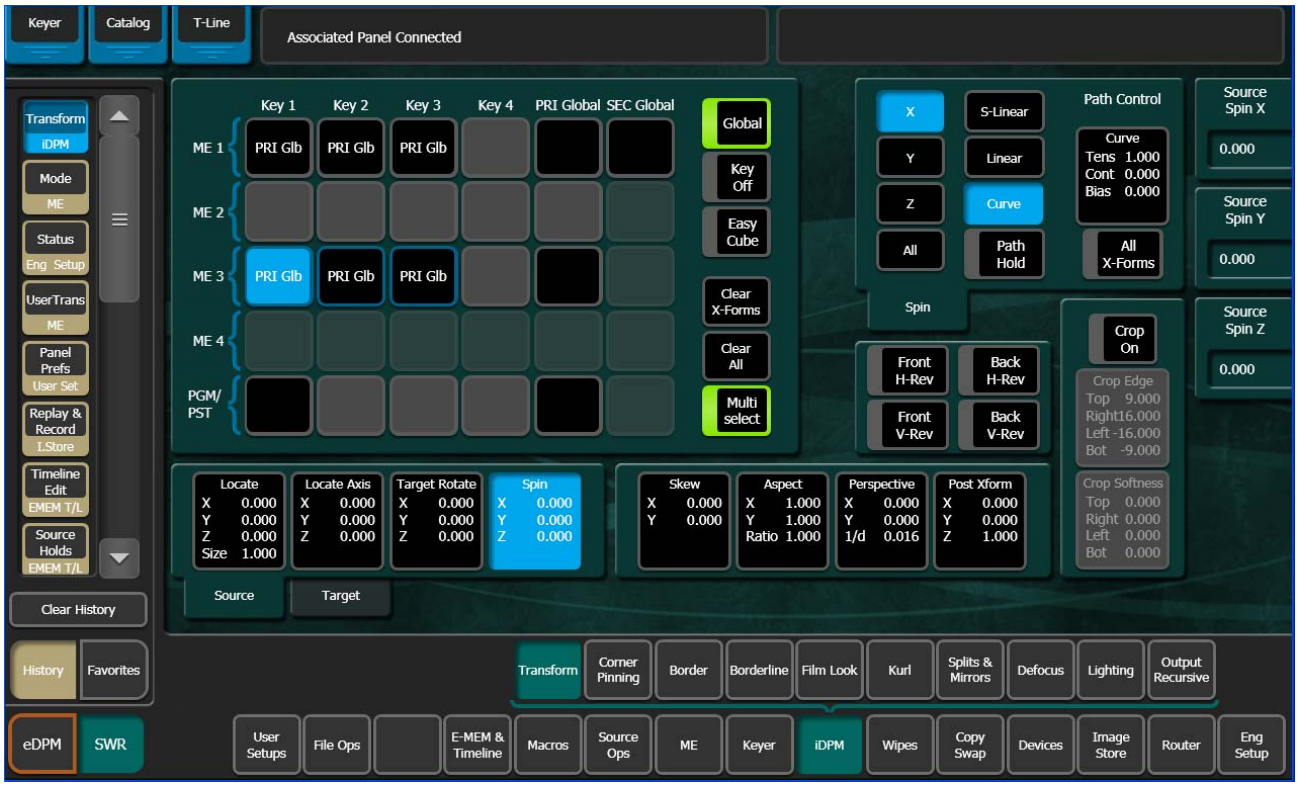
Figure 33. Spin Transform



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 34). All keyers on PGM and ME-3 execute the same transform.

Figure 34. Transform Menu, Multiple ME Global Channel Control

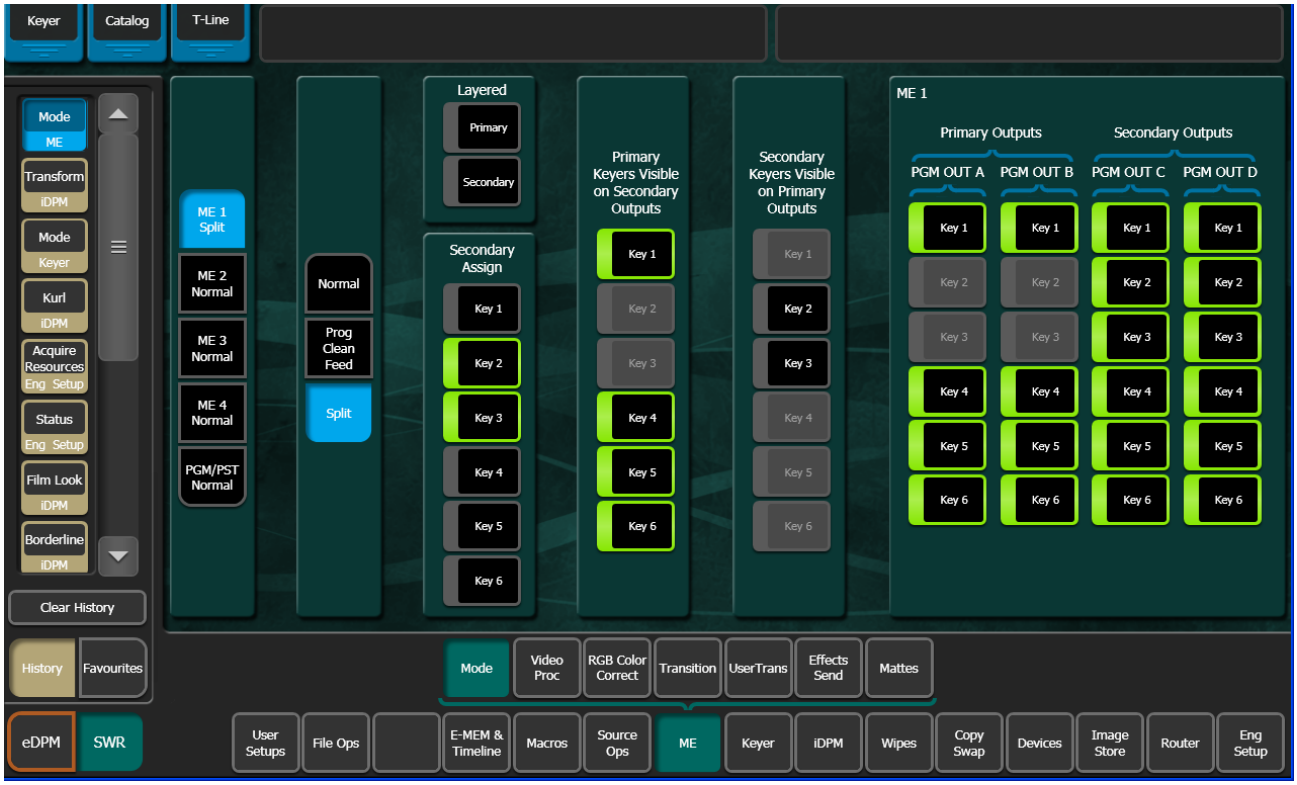


Secondary Global Channel

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 35).

Figure 35. Mode Menu, Secondary Global Assignment Configuration



To split MEs and assign keys to the Secondary Global Channel (Figure 35):

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 34 on page 77) 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 34 on page 77) automatically translates the delegated channel to the visible face of the shape as it is rotated in space.

Keyer Partition Visibility

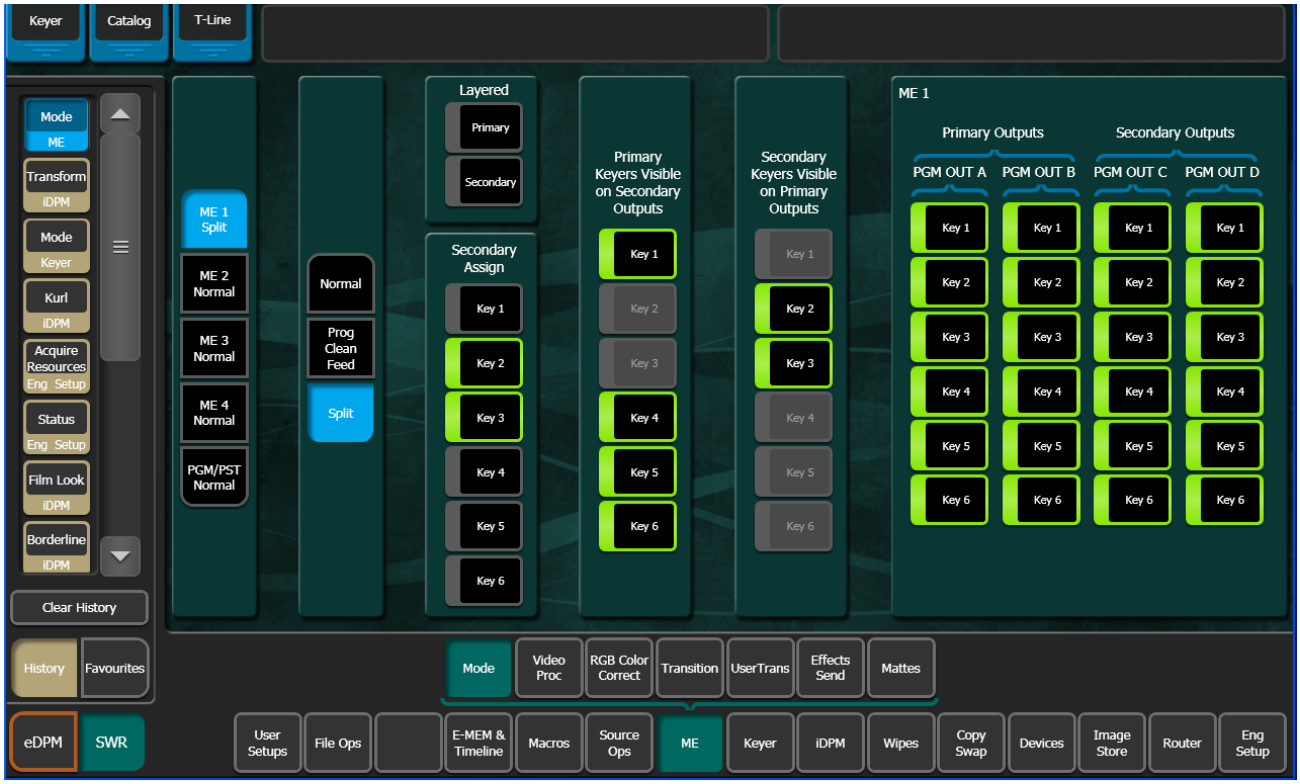
Keyers assigned to the Secondary Partition output can be made visible on the Primary Partition output and vice versa by touching the Key buttons in the Primary Keyers Visible on Primary/Secondary Partition panes.

Assigned key buttons can also be turned on and off in the ME Output pane (far right).

In the example in Figure 36, 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 36. 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 269*.

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.

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.

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.

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 74) 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. Multi-Functions 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.

Note Corner Pinning is a function of i/eDPM and is an advanced operation. For operation information see *Corner Pinning* *on page 279*.

Border Menu

The DPM Border feature provides an independently controlled border for each licensed iDPM/eDPM. The borders are added "outside" of normal blanking. This means that when a border is added it does not crop into the original image so a border can be added to a full-sized image and it will not be visible until the image size is slightly reduced.

The following controls are provided from the menu for each DPM:

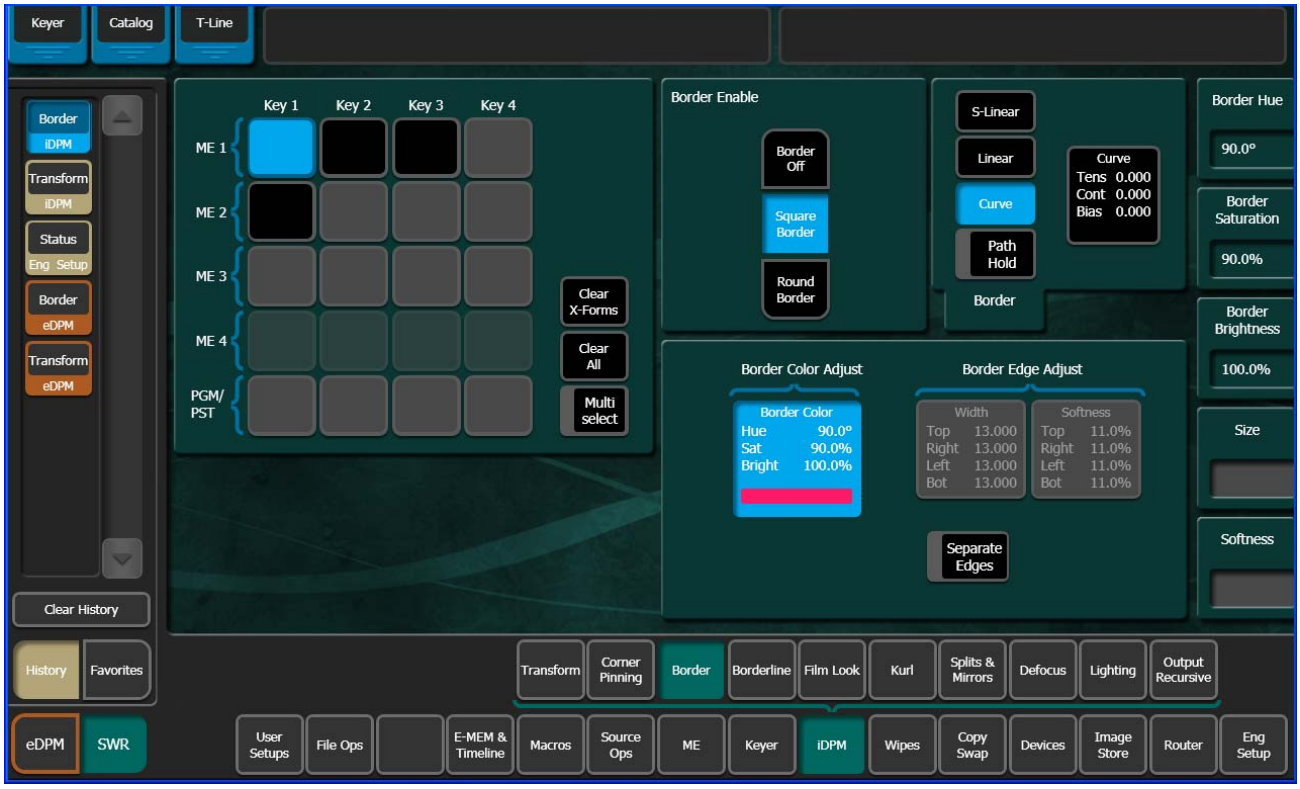
- Width and softness for border top, bottom, left and right side can be controlled independently or all together,
- Color (hue, saturation, and brightness),
- Choice of square or rounded border corners (including control of the curve tension, continuity, and bias), and
- S-Linear, Linear, Curve, and Path Hold.

Border Edge Adjustments

To adjust the border edges together, perform the following.

1. Access the Borders Menu by touching **iDPM**, **Borders** (Figure 37).

Figure 37. DPM Border Menu



2. Touch to select an ME/Keyer data pad on the left side of the menu (or use the **Multi select** button for multiple keyers).

Note DPMs selected for borders using the **Multi select** button will each have the same border values.

3. Turn on DPM Borders by touching either the **Square Border** or **Round Border** button in the **Border Enable** menu pane (Figure 37).

4. Select a path type by touching the **S-Linear**, **Linear**, or **Curve** data pads in the Border menu pane (Figure 37).

   a. If Curve is selected, the Tension, Continuity, and Bias can be adjusted using the soft knobs or pop-up keypads.

5. Touch the **Width** or **Softness** data pads and use the **Size** or **Softness** soft knobs or pop-up keypads to adjust those values (Figure 37).

Border Color

Adjust the border color by touching the **Border Color Adjust** data pad (the color value is displayed in the data pad) and then turning the **Border Hue**, **Border Saturation**, or **Border Brightness** soft knobs or using the pop-up keypads to adjust those values (Figure 37).

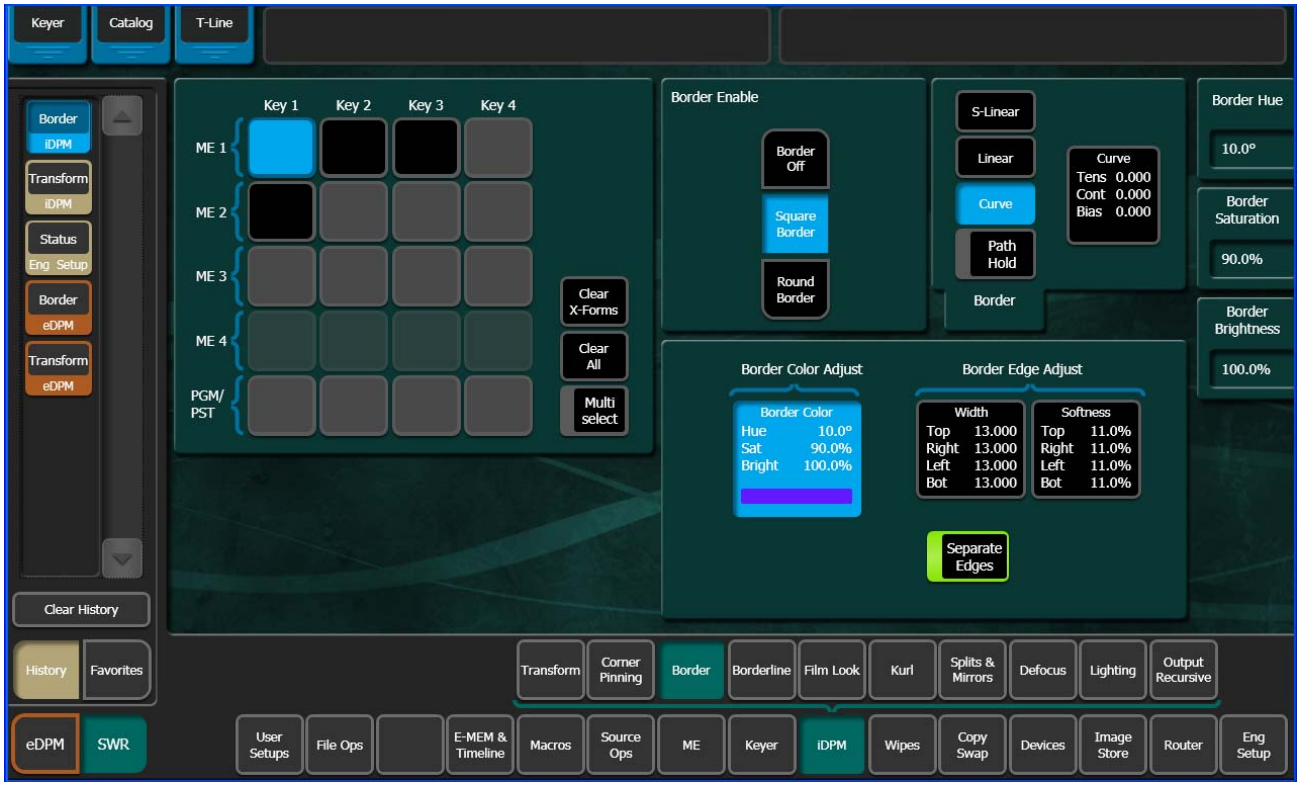
Note Color is applied to the entire border, there is no independent control.

Separate Edges

The width and softness of DPM Borders can be adjusted for each edge independently, using the soft knobs or pop-up keypads (Figure 38).

1. Access the Borders Menu by touching **iDPM**, **Borders**.
2. In the iDPM (or eDPM in eDPM mode), Border menu, touch the **Square Border** or **Round Border** button to enable Borders (Figure 38).

Figure 38. DPM Border Menu, Separate Edges



3. Touch the **Separate Edges** button to enable the function.
4. Touch the **Width** or **Softness** data pad to select it.
5. Use the **Border Size/Softness Top**, **Right**, **All**, **Left**, or **Bottom** soft knobs or pop-up keypads to adjust the edges independently of the others.

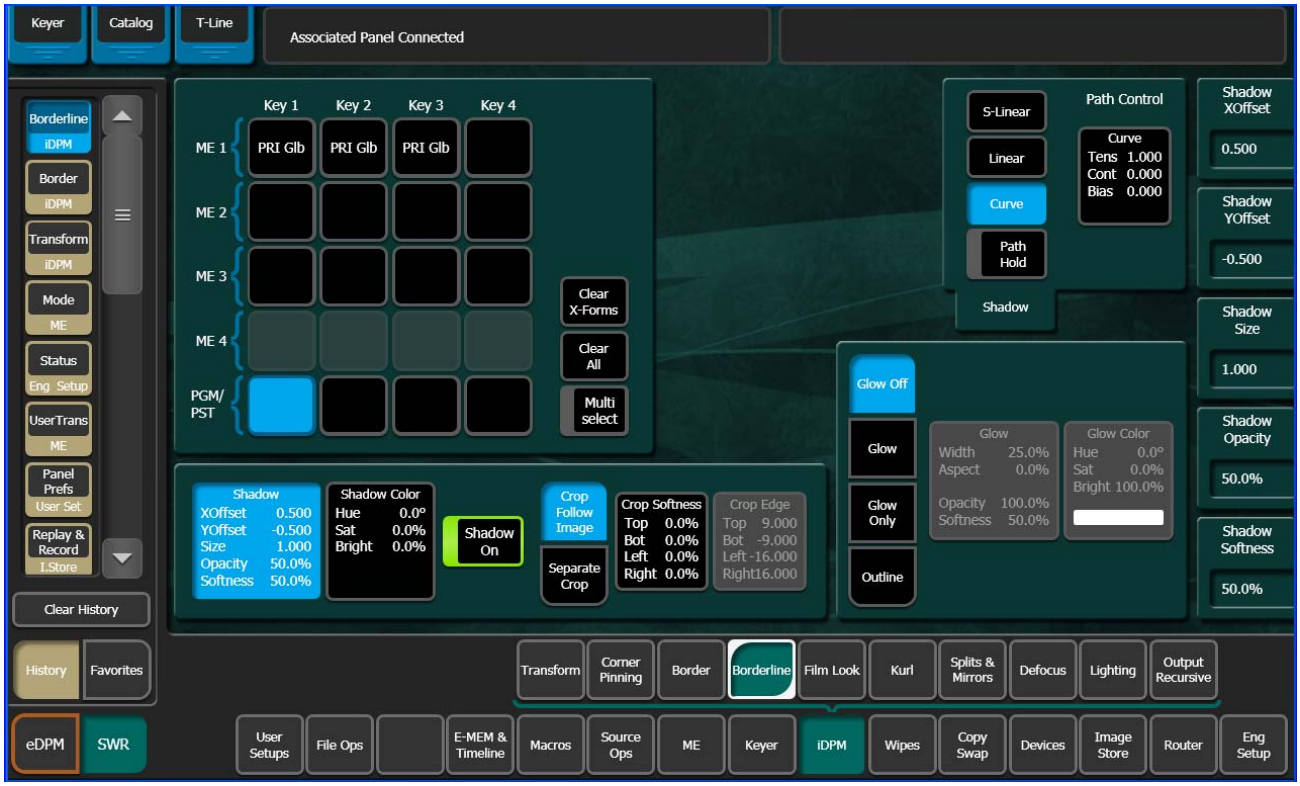
Note The **Border Size All/Softness All** data pads allow you to adjust the relative values for size or softness of all edges simultaneously.

Borderline Menu

The Borderline menu is accessed by touching **iDPM**, **Borderline** (Figure 39).

Note The Borderline menu is also available in the Keyer, Borderline menu which you would use if you did not have iDPM licenses.

Figure 39. 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.

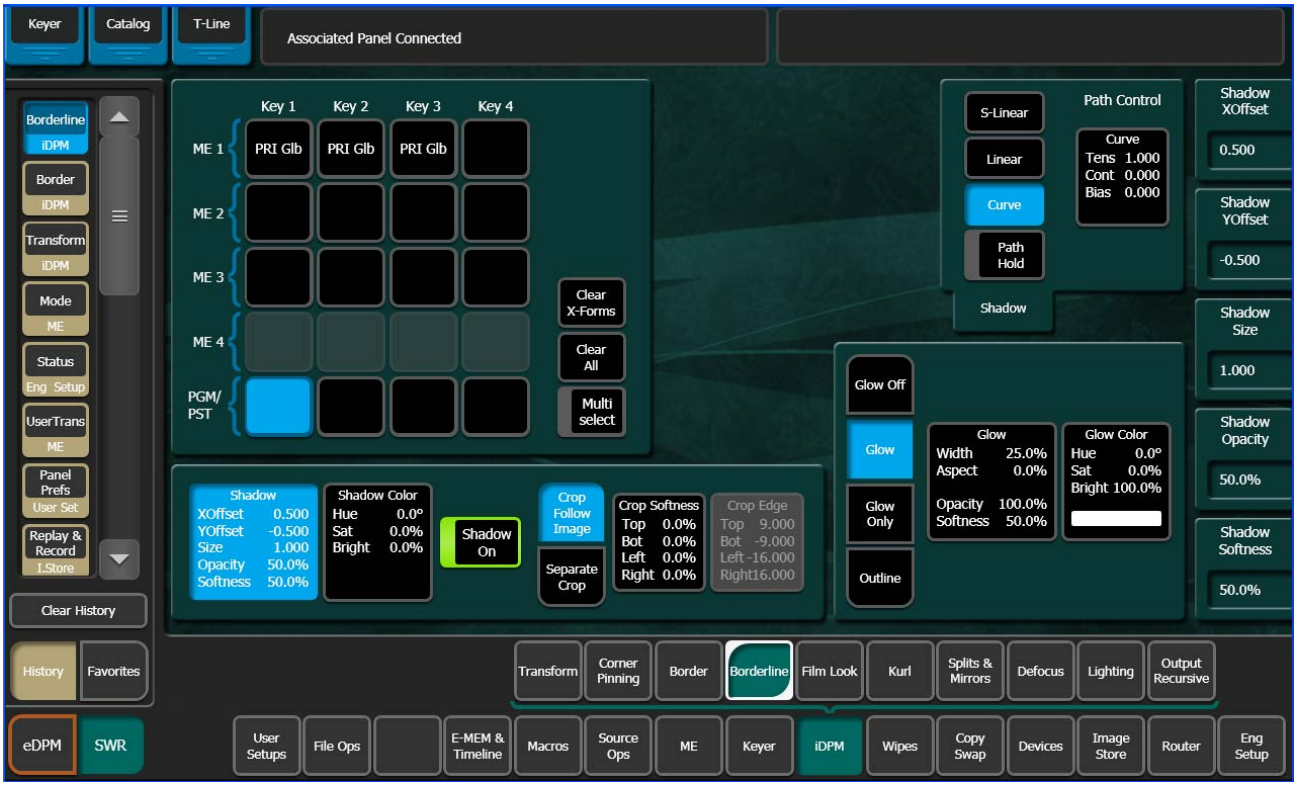
When **Separate Crop** is selected, the edges of the shadow can be given crop values different from the primary image. Touching the **Crop Edge** data pad delegates the soft knobs to control shadow edge cropping (Top, Bottom, Left, and Right).

Glow Pane

The Glow controls on the menu affect the delegated keyers. Touch the **Glow** data pad button to access the Glow controls (Figure 40).

Note Glow is provided without the iDPM option in the Keyer, Borderline menu.

Figure 40. 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 Karrera 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

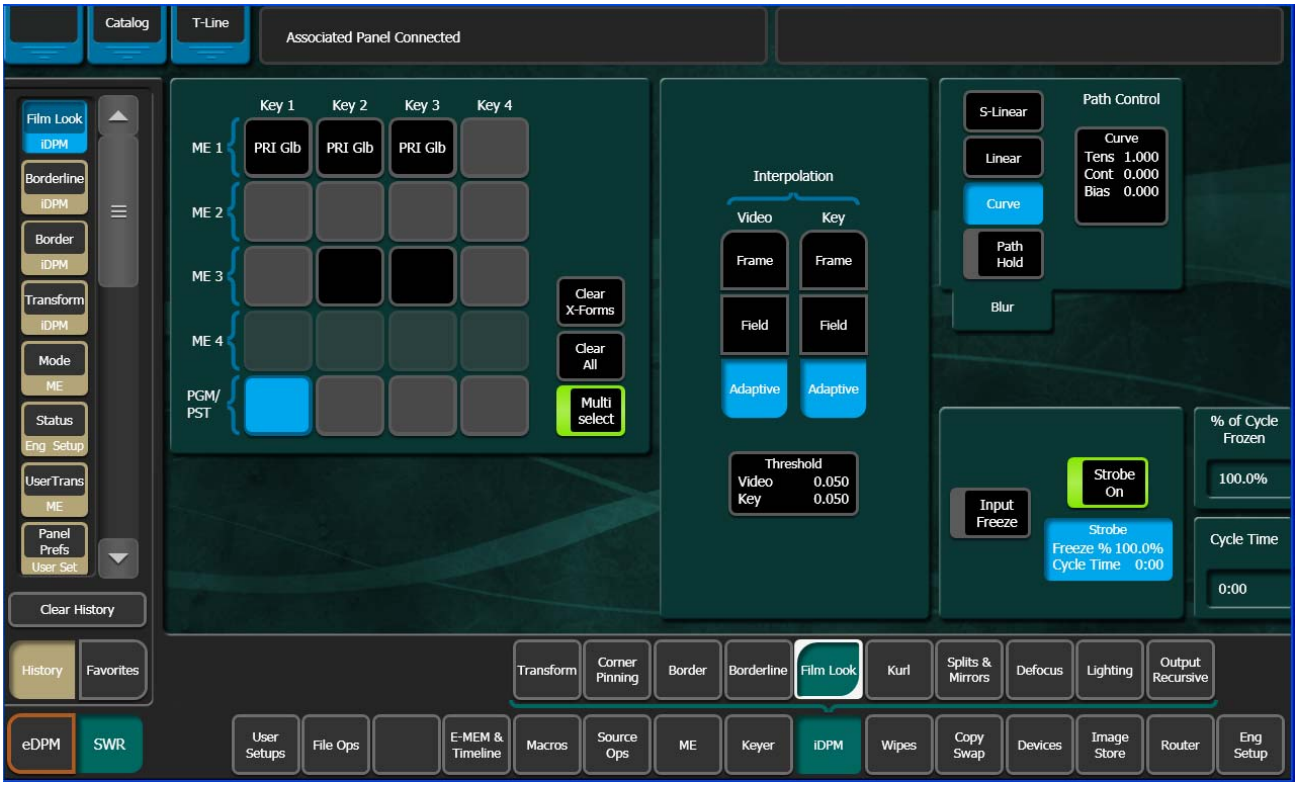
Controls for glow path, using the standard **Hold**, **S Linear**, **Linear**, and **Curve** parameters, are applied when the Glow feature is activated.

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 41).

Figure 41. 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 42).

The Kurl modes are:

- Position/Size Modulation,
- Page Turn/Roll,
- Ripple,
- Slits, and
- Sphere.

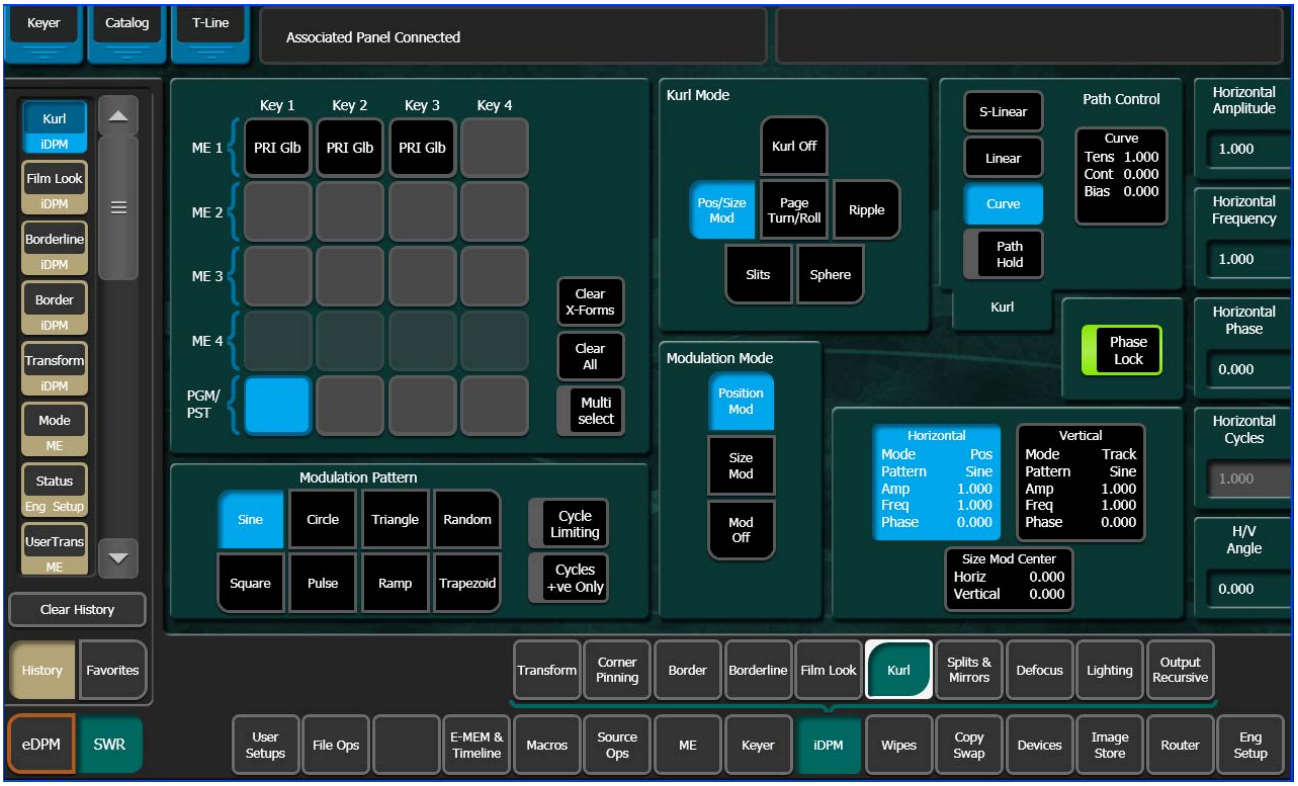
An iDPM can apply only one set of Kurl mode parameters at a time. If you wish to use more than one mode of Kurl effects simultaneously on the same video (for example, size modulation of an effect), use multiple iDPMs with re-entry.

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 42).

Figure 42. 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.

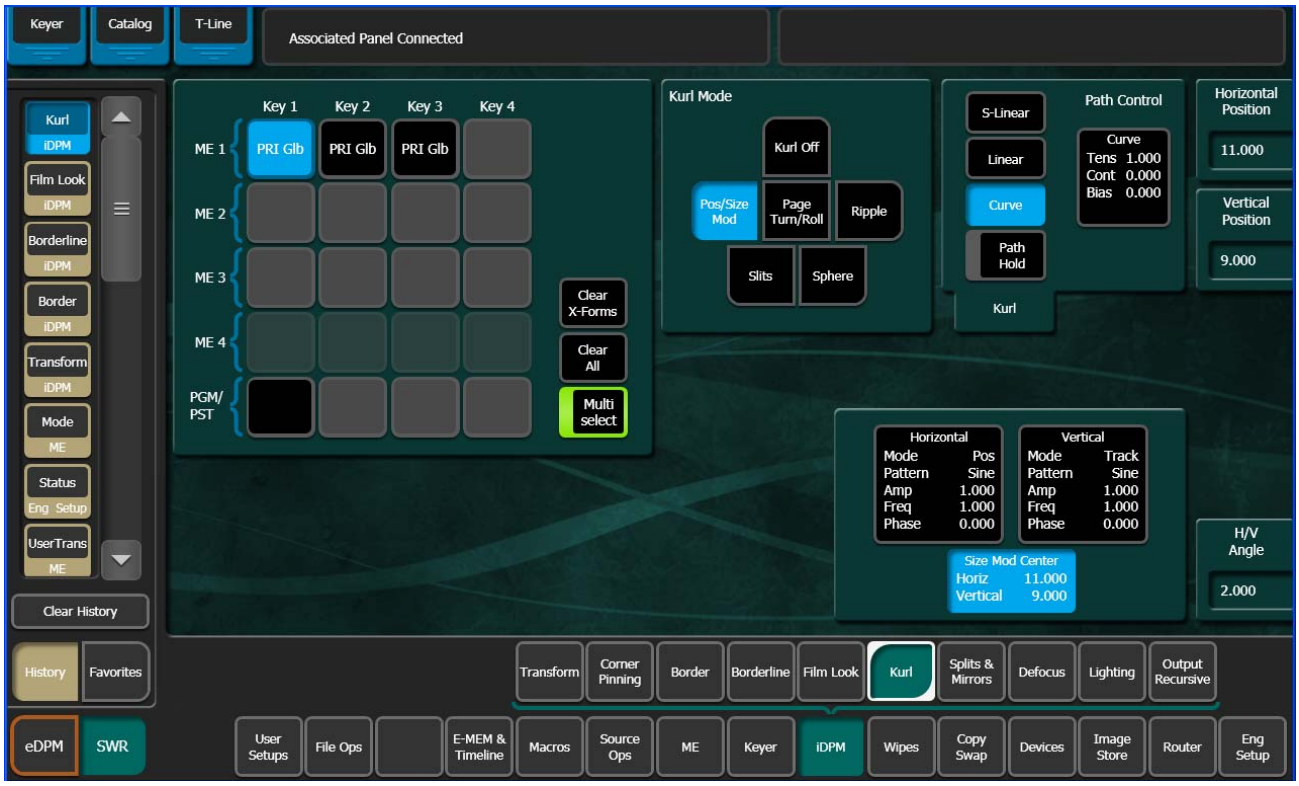
H/V Angle — defines the angle of the Position Modulation with respect to the source X and Y axes.

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 43).

Figure 43. Kurl Menu, Size Mod Center



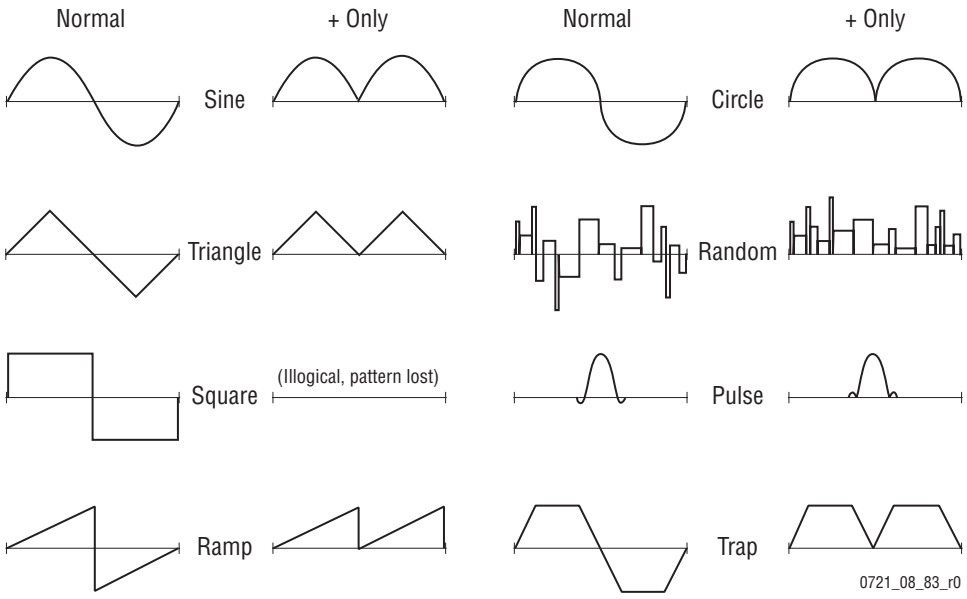
Pattern Pane

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 44.

Figure 44. Available Wave Patterns

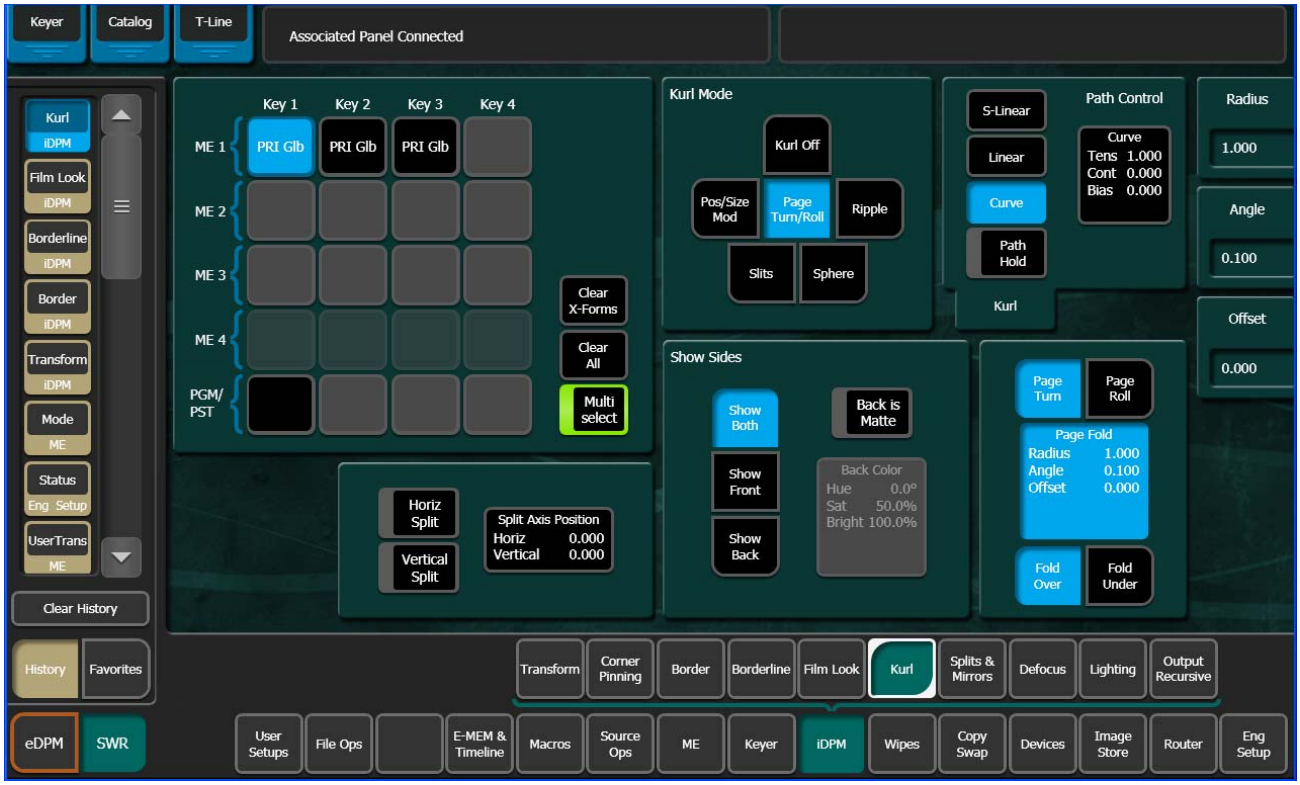


Page Turn/Roll Mode

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 45).

Figure 45. 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 45).

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 45). 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.

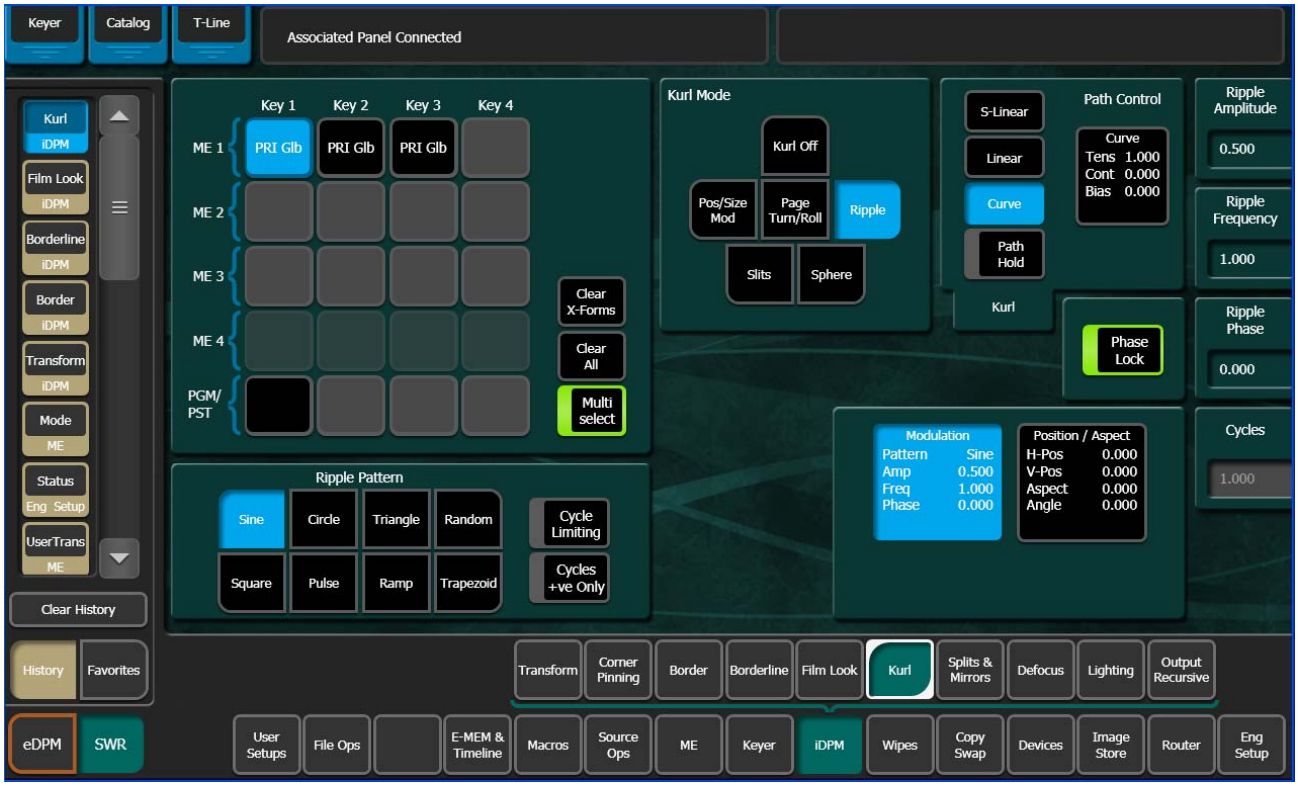
Ripple Mode

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.

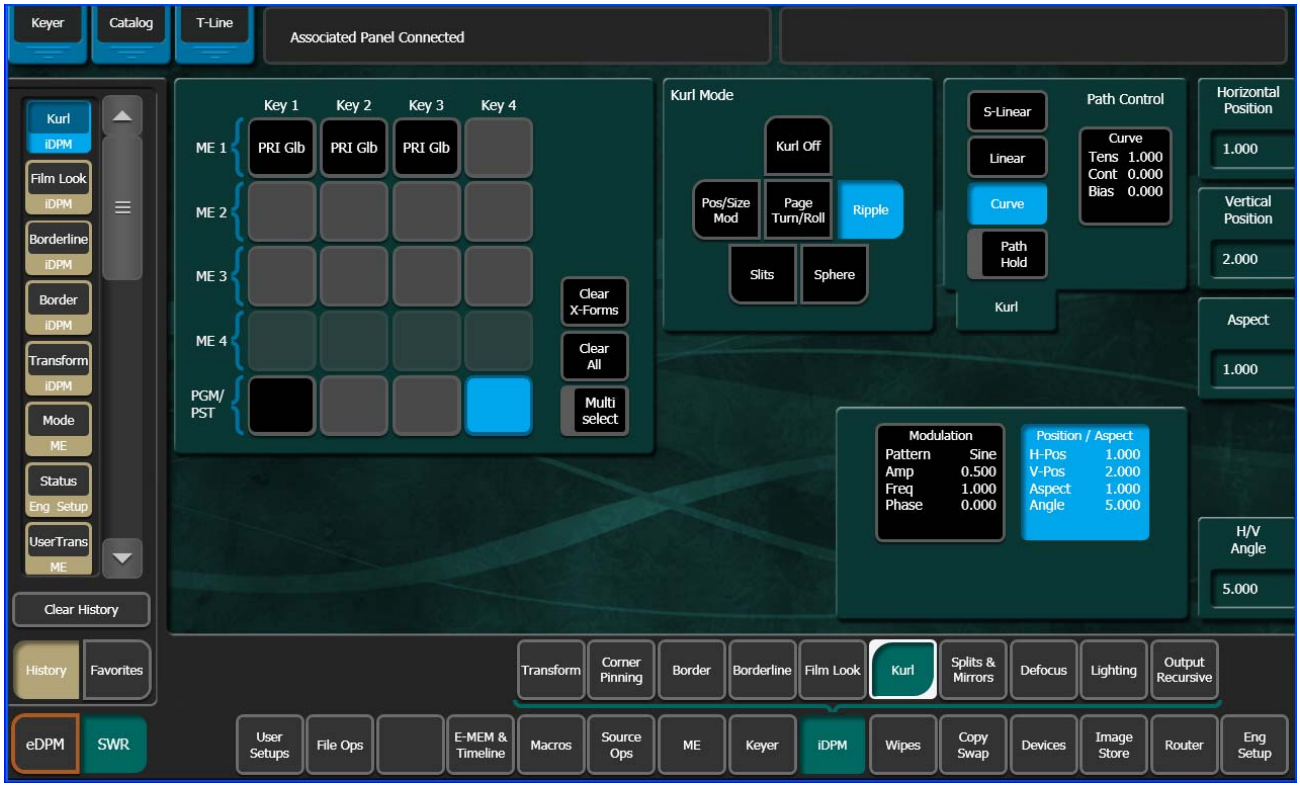
When the Modulation data pad is selected in the Ripple pane appears (lower left, Figure 46).

Figure 46. 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 89* and Figure 44 on page 91).

Figure 47. Kurl Menu, Ripple



Position/Aspect Data Pad—Soft knob controls are provided to control various attributes of the Ripple pattern (Figure 47):

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.

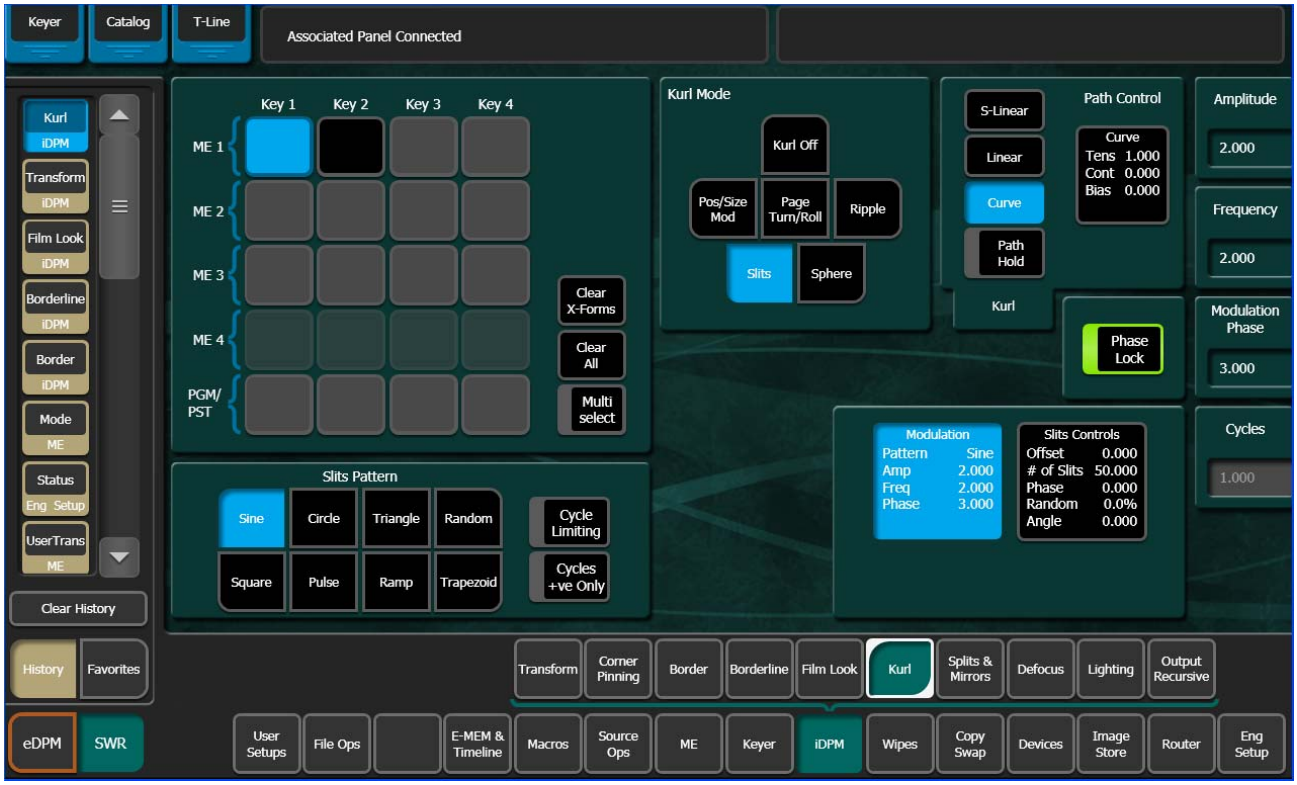
H/V Angle — adjusts the angle of the ripple, horizontally and vertically.

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 48).

Figure 48. Kurl Menu, Slits Modulation



The Slits modulation soft knob controls and wave patterns are the same as Position/Size (see *Modulation Pane on page 89* and Figure 44 on page 91).

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.

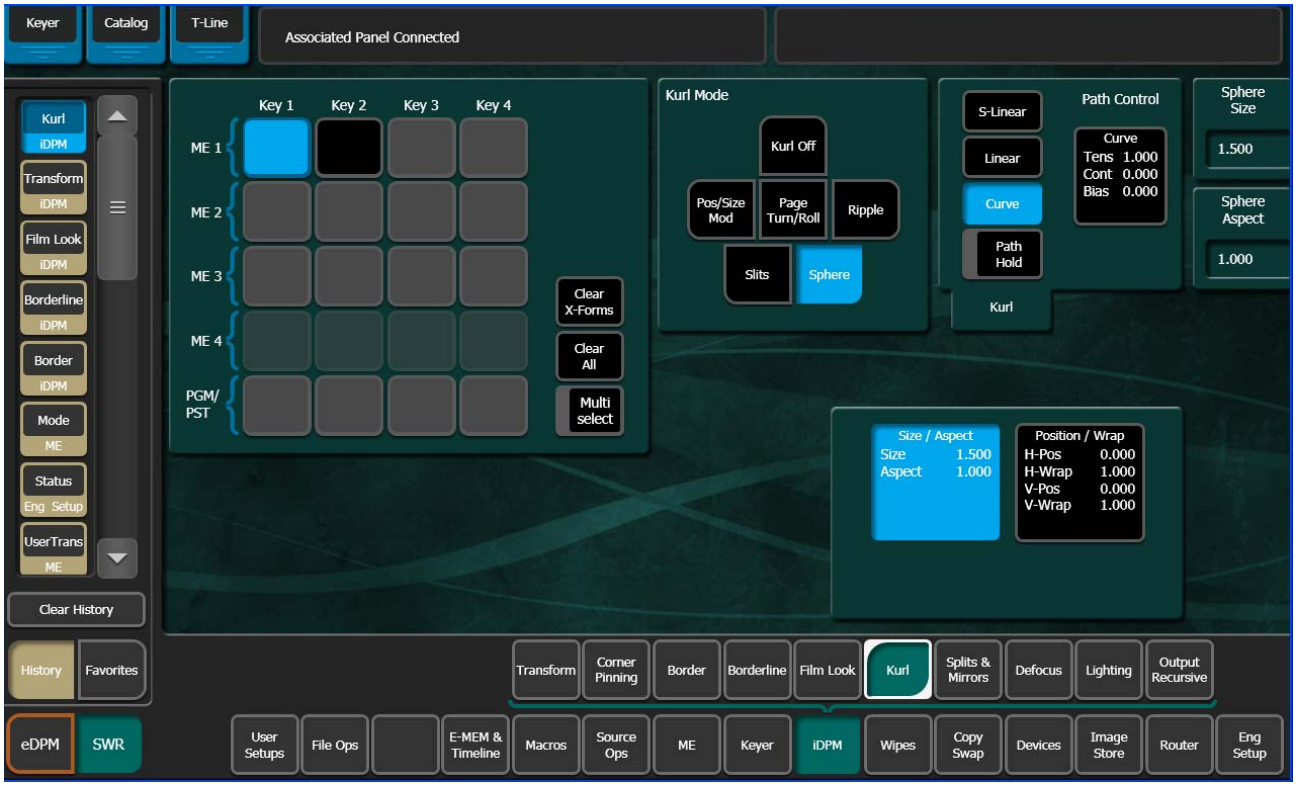
Angle — defines the angle of the slits with respect to the source X and Y axes.

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 49).

Figure 49. 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.

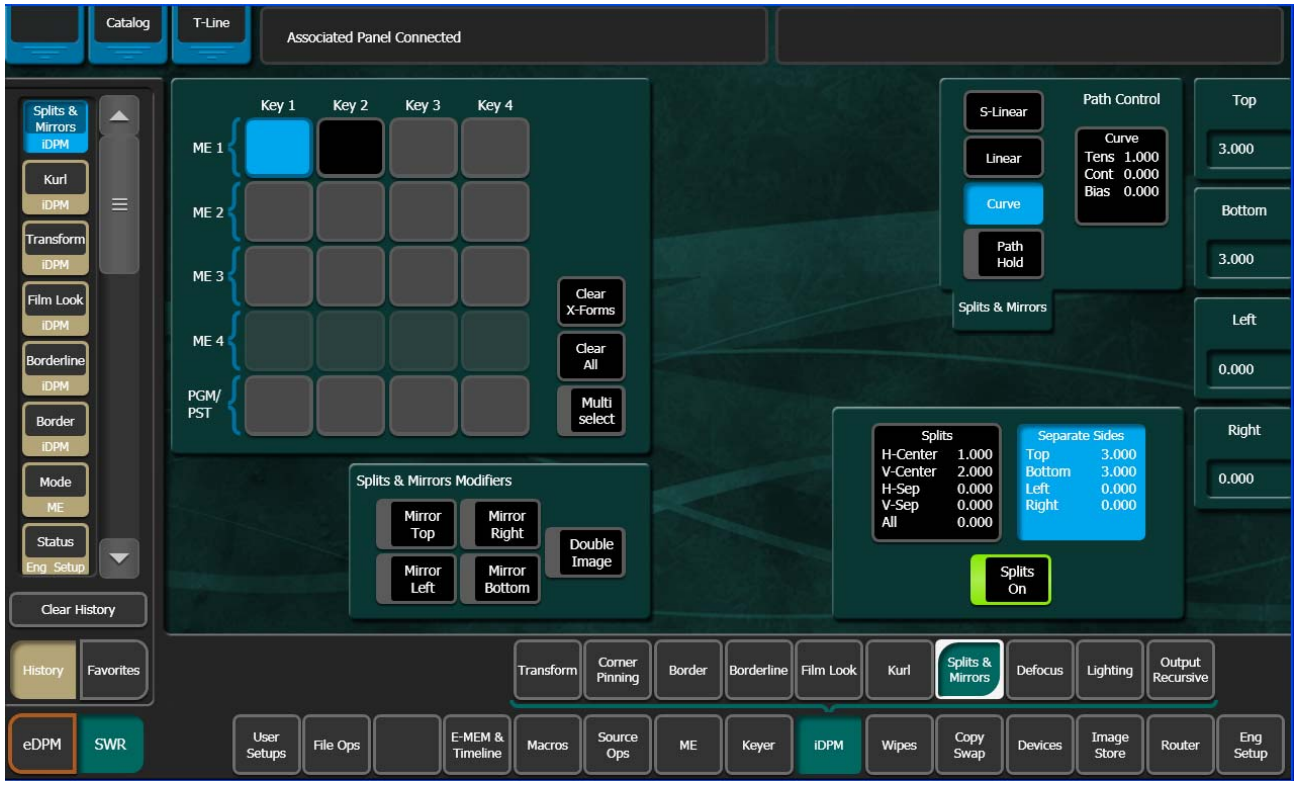
Vertical Position — controls where the image is mapped onto the sphere by moving the image vertically on the sphere's surface.

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 50).

Figure 50. 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.

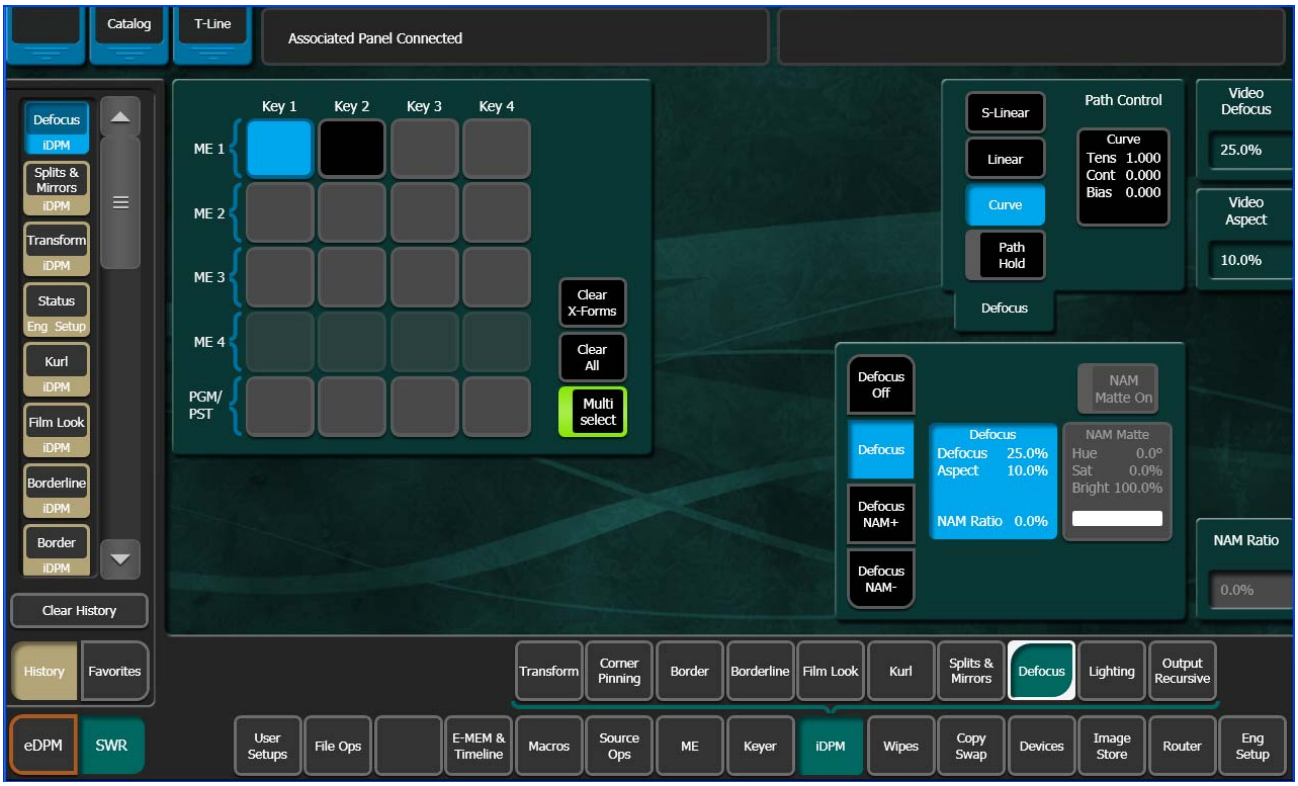
The mirror buttons replicate the side of a picture about the axis location to the opposite side. Mirror orientation is based on the picture's source space. It is possible to simultaneously reflect multiple sides by turning on the **Mirror Top**, **Mirror Right**, **Mirror Left** and **Mirror Bottom** 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 51).

Figure 51. 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.

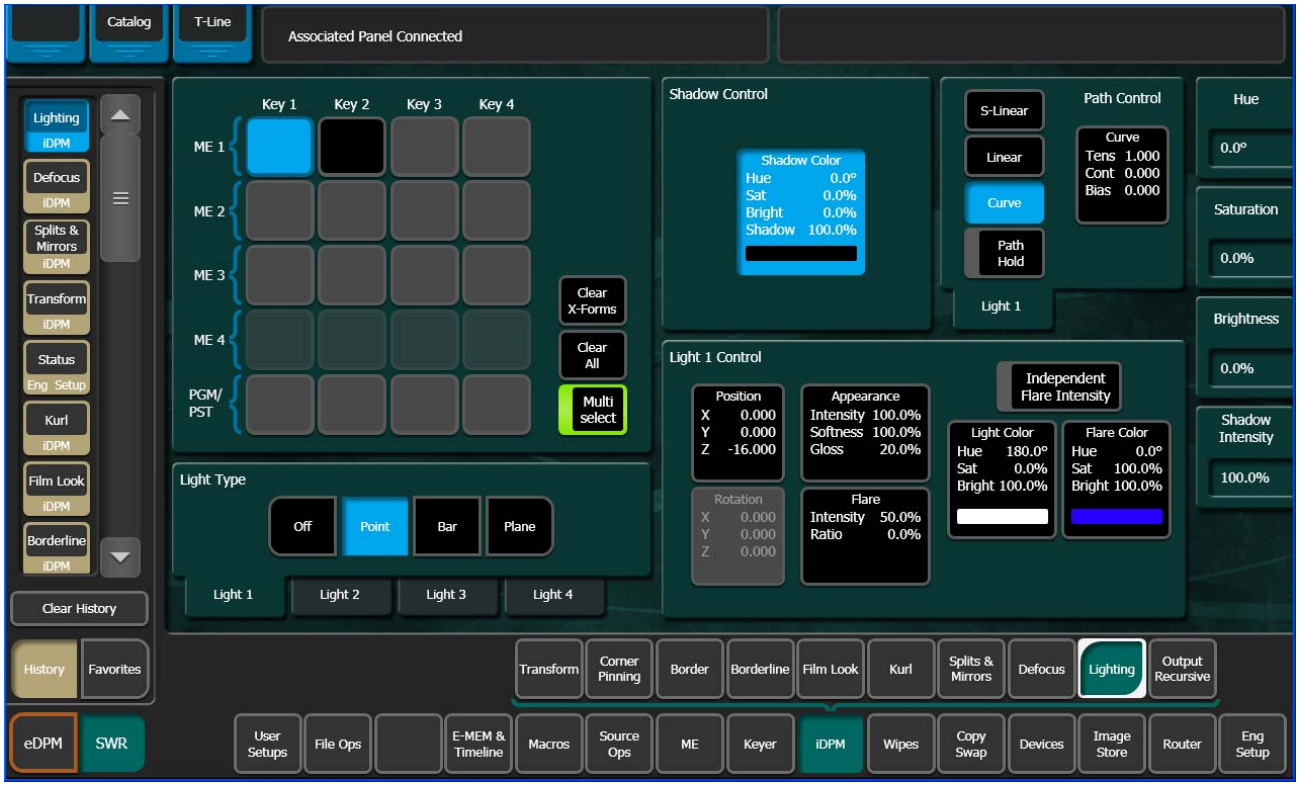
Lighting Menu

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 52).

Figure 52. Lighting Menu



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 four tabs (**Light 1-4**) in the Light Type pane delegate the menu to a particular light source.

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

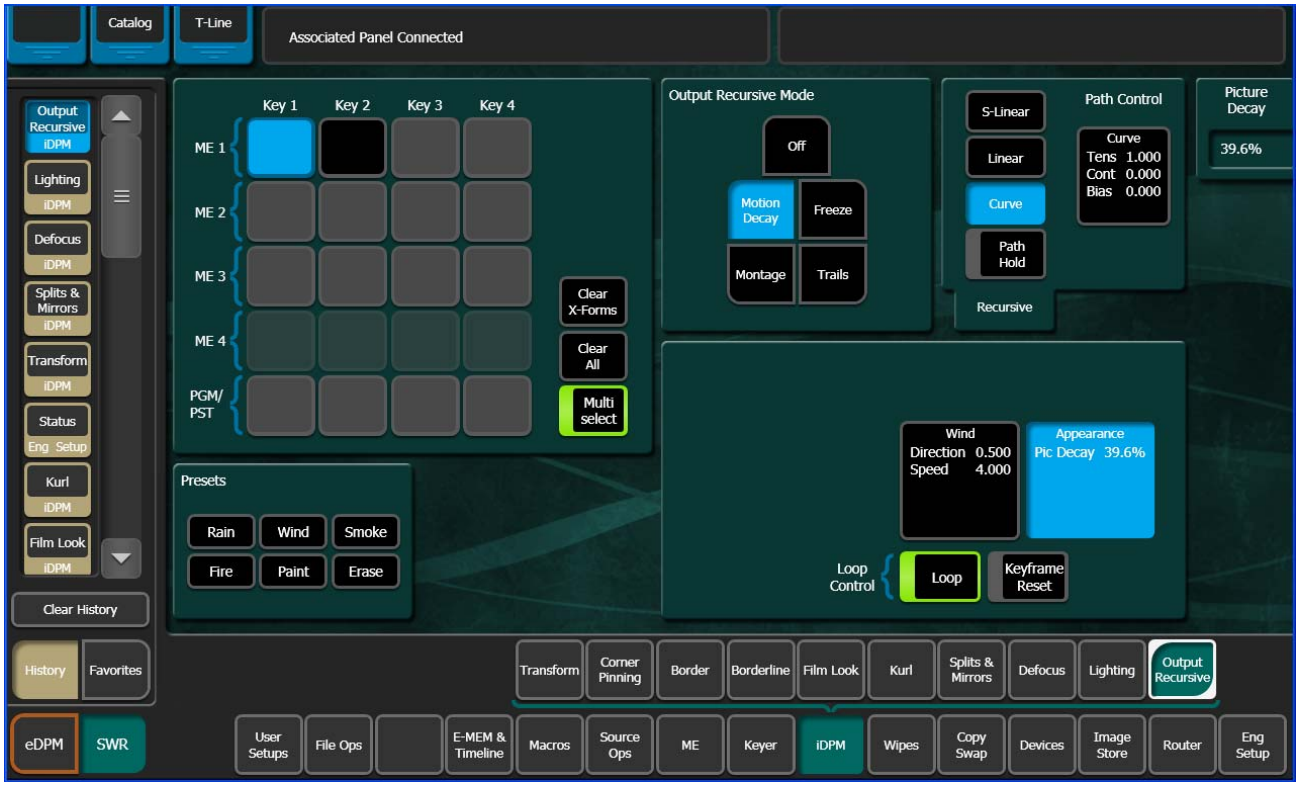
The 3-D perspective of a lighting effect is not ignored for Post Transform moves. Lighting effects are not fixed to the surface of the Post Transform manipulated plane, but will shift during the move, just like an X or Y Locate move.

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 53).

Figure 53. Output Recursive Menu

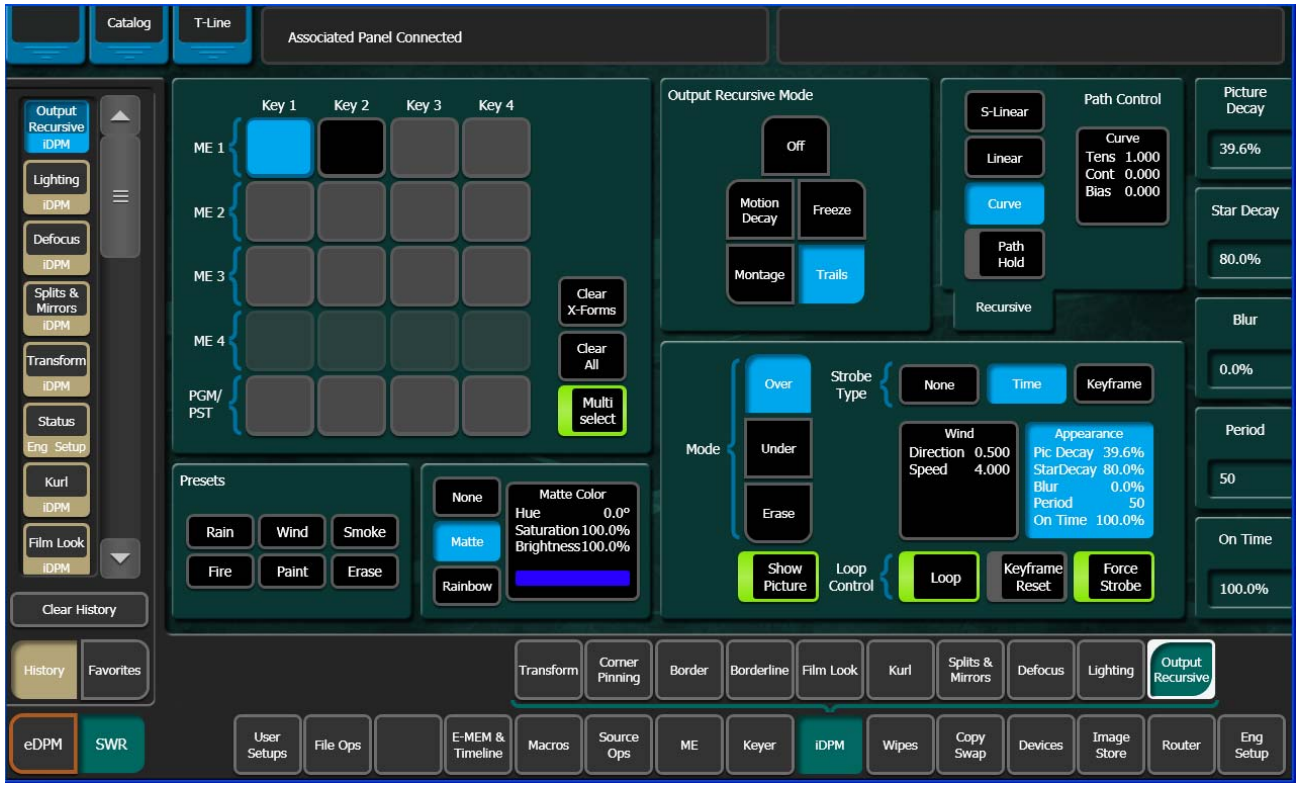


Output Recursive Presets

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 54.

Figure 54. 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 54 on page 105).

Motion Decay Mode

Causes motion in the image to leave a blurred remnant in the area from which it was removed (Figure 54 on page 105).

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 54 on page 105).

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 54 on page 105).

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 54 on page 105).

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 Karrera 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 Karrera 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.

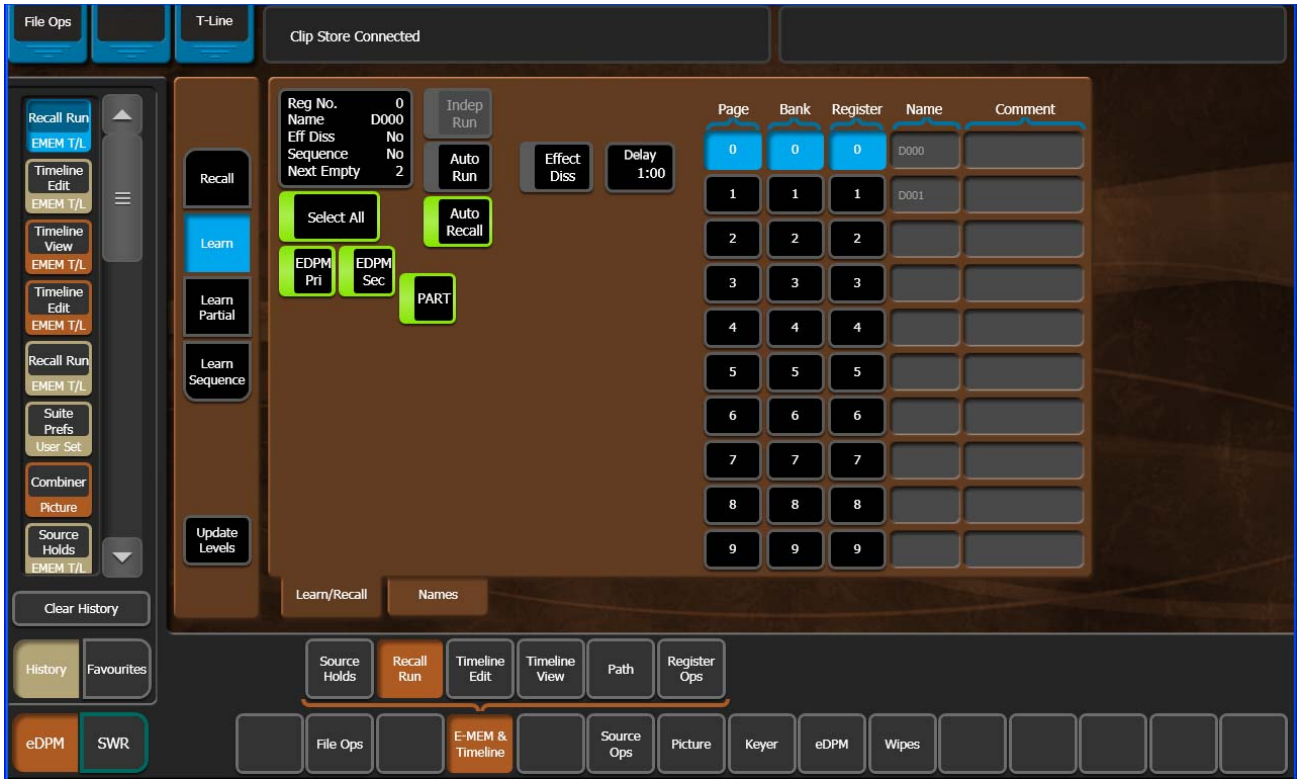
- When running an eDPM timeline from the Master E-MEM timeline, pauses on the eDPM side are ignored.
- Start delays on the Master (Switcher) side are executed before eDPM timeline.

eDPM Partitioning

The eDPM partition boundary is a sub-level in the eDPM Primary partition. Figure 55 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 55. eDPM Partitions



In the Control Panel, the eDPM Primary and Secondary partitions are available via the **eDPM Pri**/**eDPM Sec** buttons in the Master E-MEM area.

Note The **PART** button is provided in the E-MEM & Timeline menu 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 *Define E-MEM* *on page 242* for information about defining/assigning E-MEM sub-levels).

The example in Figure 56 shows the two defined eDPM sub-levels in the Master E-MEM Timeline for ME 3.

Figure 56. eDPM Sub-levels in the E-MEM Master Timeline

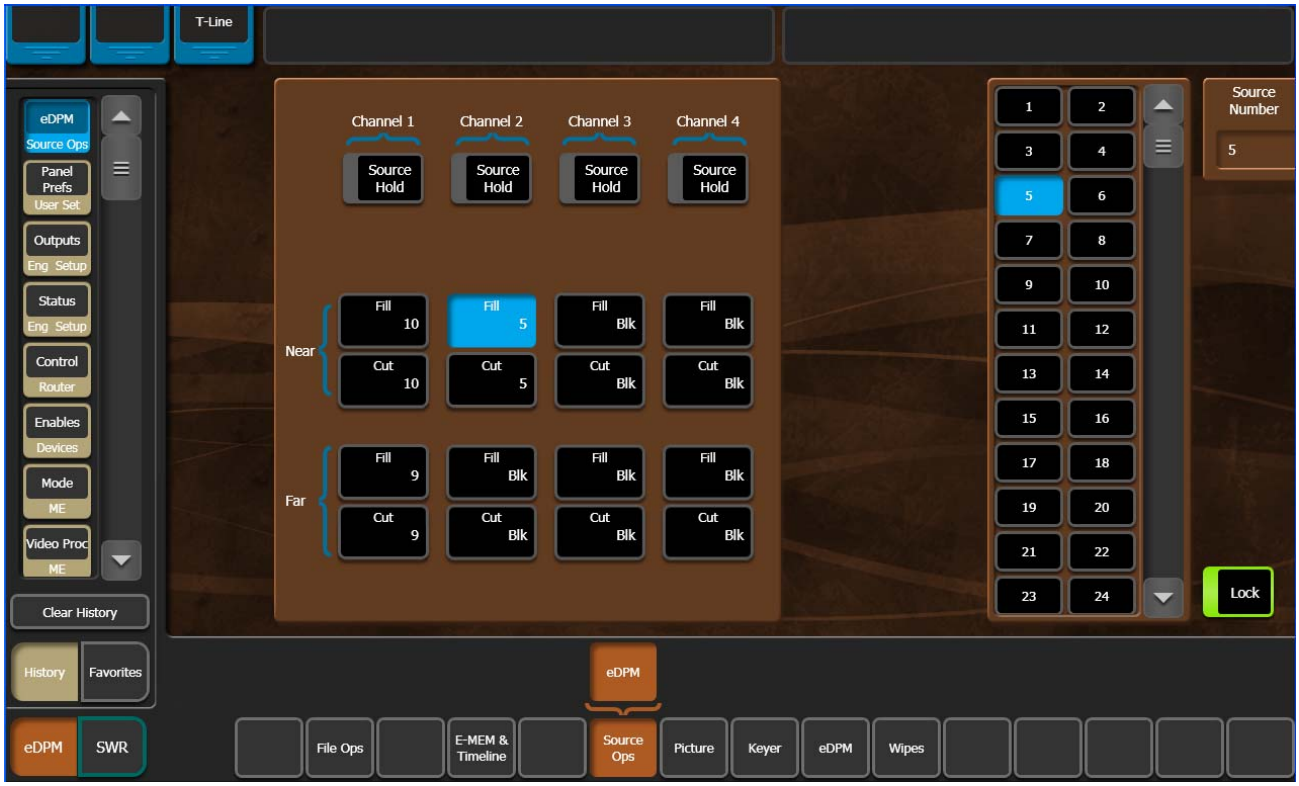
Using definable sub-Levels allows for the recall of eDPM effects from Local E-MEM. For example, effects created for ME 1 can have the eDPM definable sub-levels and will then run eDPM effects.

Assigning Sources

Assigning sources for eDPM transform is done in the eDPM Mode Source Ops, eDPM menu.

To access the eDPM menu, touch **Source Ops**, **eDPM.**

Figure 57. 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 57, 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 (split key).

3. Repeat Steps 1 and 2 for up to four input sources for each eDPM channel.

Button Mapping eDPMs to an ME

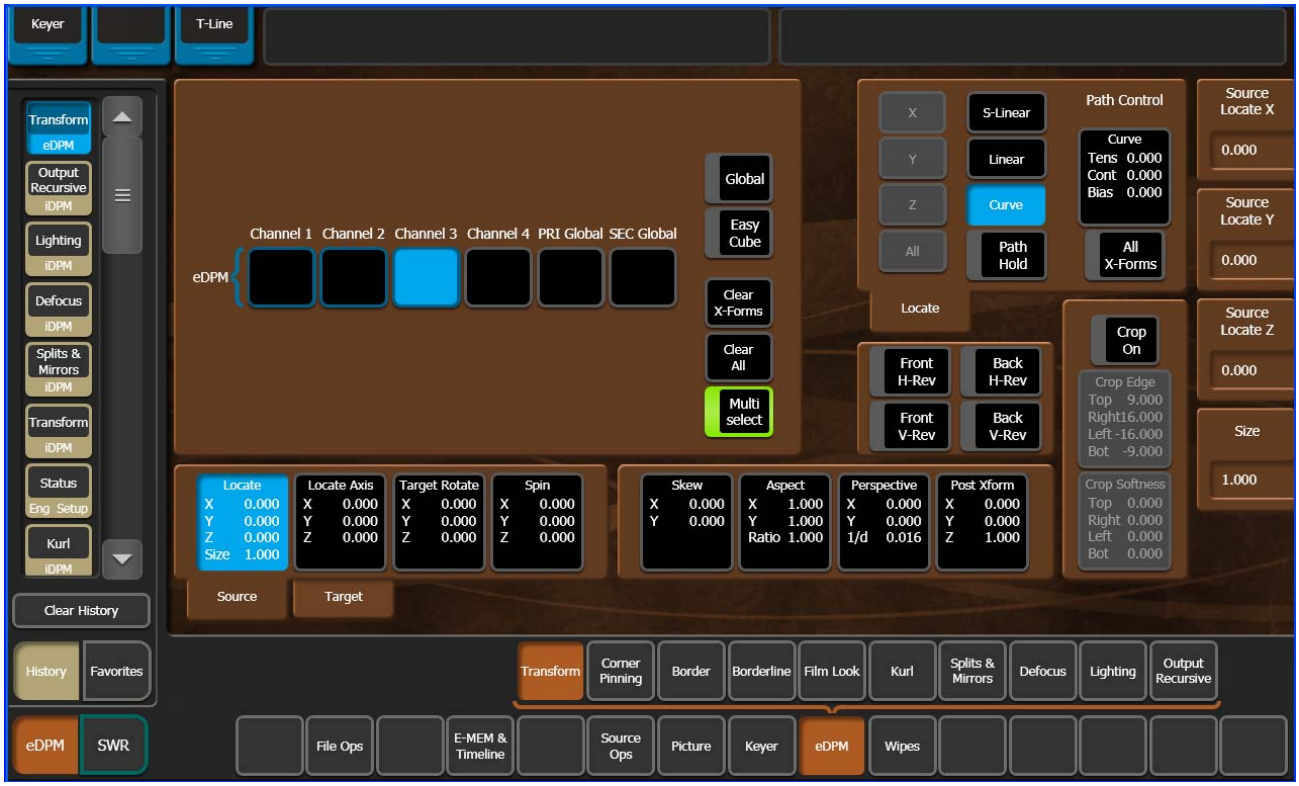
Map the eDPM outputs to the source select buttons on the MEs in the User Setups, Panel Prefs, Button Mapping menu (see *Button Mapping* *on page 23*).

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.

eDPM Mode Menus

Touching the **eDPM Mode** button (bottom left) changes the menu to the eDPM Mode (Figure 58).

Figure 58. eDPM Mode & Menus



eDPM Effects Menus

The eDPM Transform menu is identical to the iDPM Transform menu (*Transform Menu on page 73*) in all ways except the ME/Keyer selection matrix (upper left pane) is replaced with the four channels of the eDPM (Figure 58), 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 85*),
- Film Look (*Film Look Menu* *on page 87*),
- Kurl (*Kurl Menu* *on page 88*),
- Splits & Mirrors (*Splits Mirrors Menu* *on page 97*),
- Lighting (*Lighting Menu* *on page 100*), and
- Output Recursives (*Output Recursive Menu* *on page 104*).

eDPM Category Menus

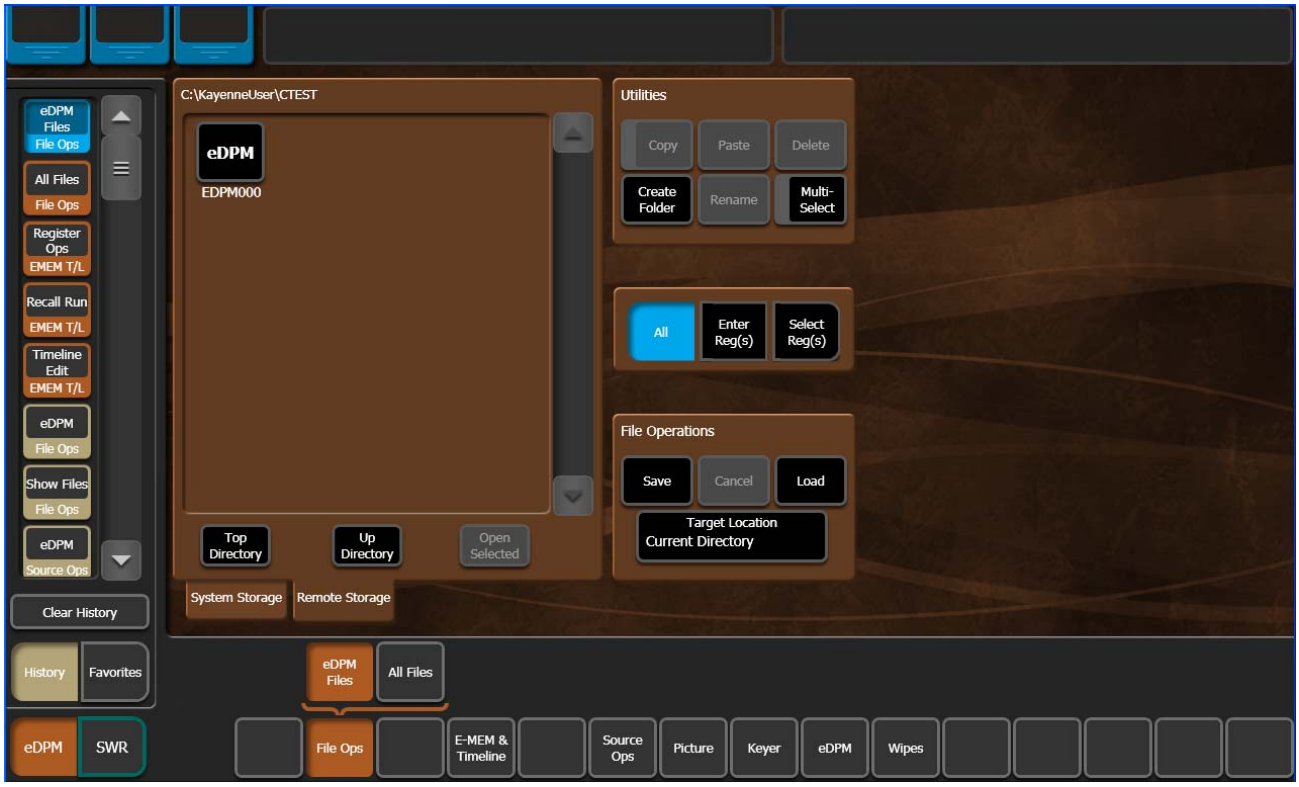
The eDPM Mode category menus for the Karrera eDPM option operate independently from the Switcher Mode (there is access to eDPM menus in the Switcher Mode for convenience).

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 39*).

Figure 59. eDPM File Ops, eDPM Files Menu



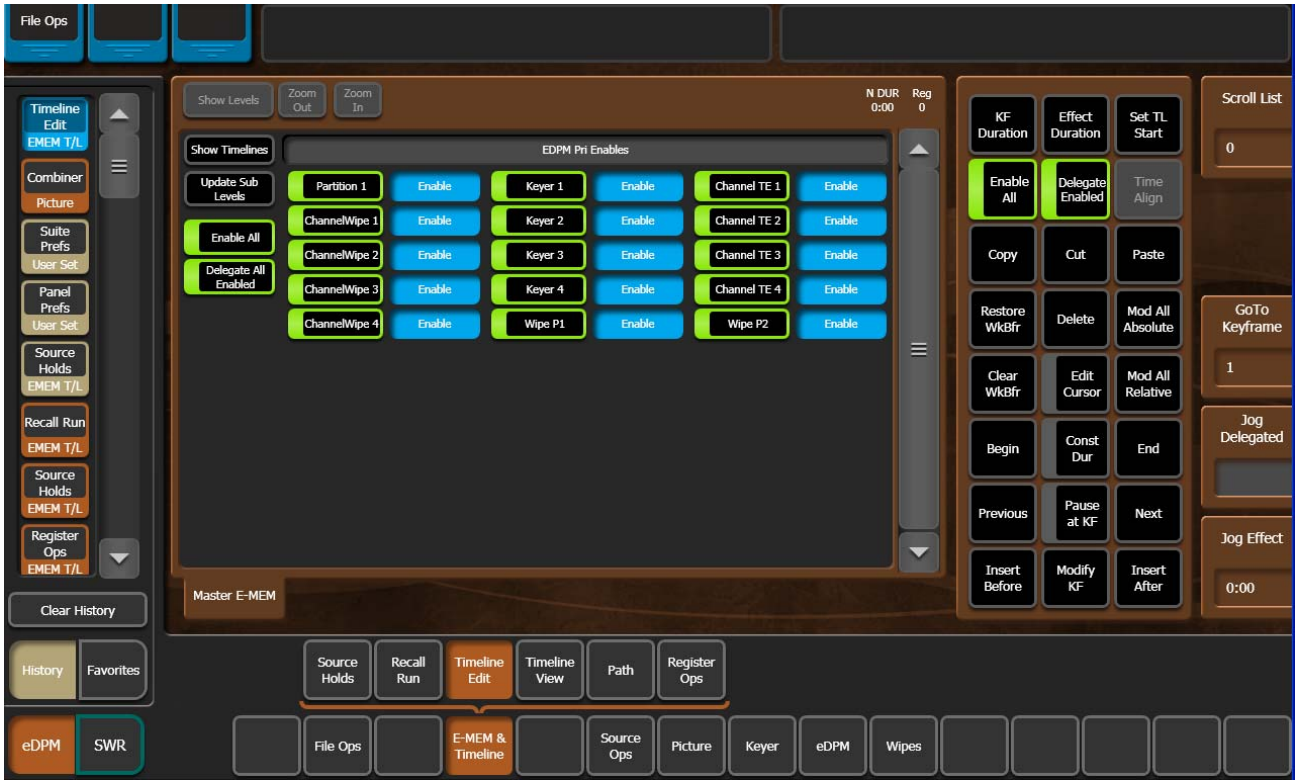
E-MEM & Timeline Menu

The eDPM E-MEM & Timeline menu controls are identical to that of the Switcher Mode (*Basic E-MEM Operations on page 127*), including the advanced Partial Keyframing and Define E-MEM features (*E-MEM & Timeline Operation on page 217*).

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 60).

Figure 60. E-MEM & Timeline, Timeline Edit Menu



eDPM output channels have their own timelines, independent of the Switcher Mode.

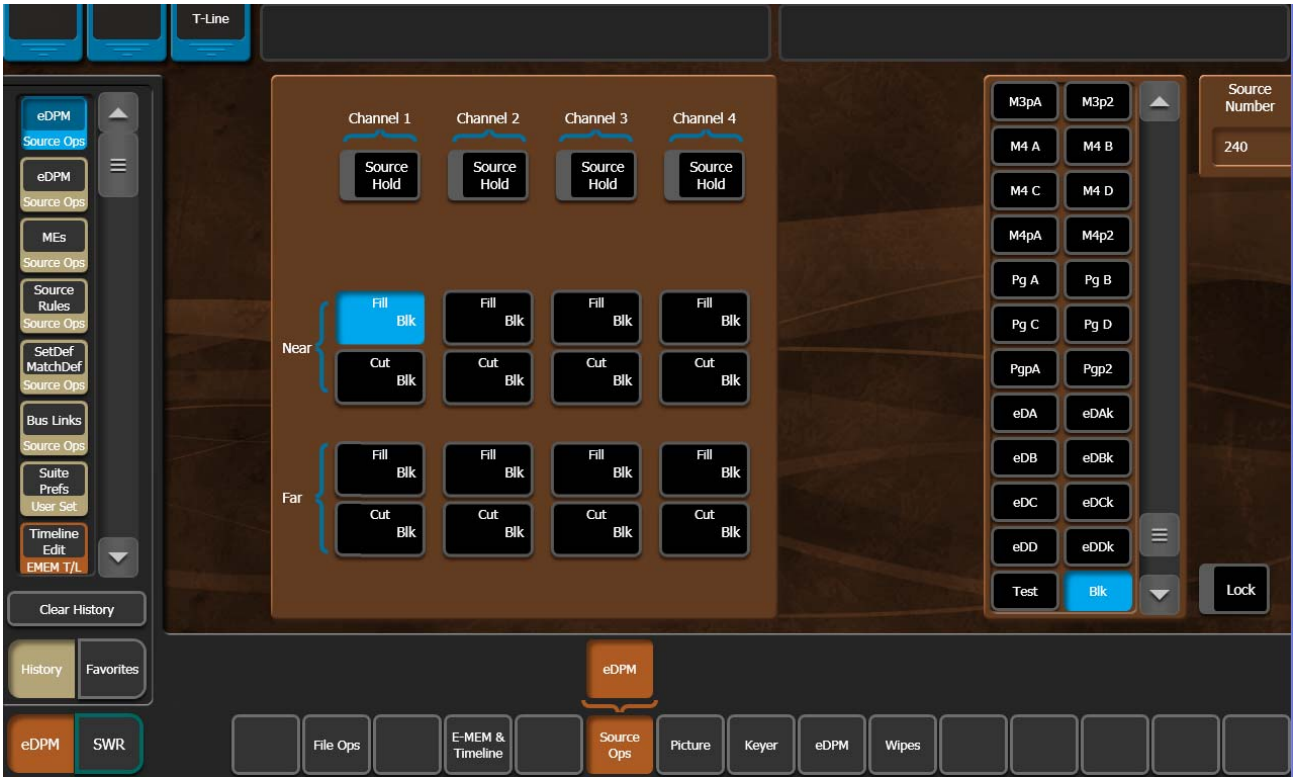
Note Editing (insert, modify keyframes, etc.) can only be performed in the eDPM Mode menus. You can only view the eDPM timelines in the Switcher Mode.

Source Ops Menu

The eDPM **Source Ops** menu provides Source Holds (*Source Holds in Effects on page 233*) and Near and Far side 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 61).

Figure 61. 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 79*).

To access the eDPM Combiner menu, touch **eDPM**, **Combiner**.

Figure 62. 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 74*).

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 116*.

Wipes Menu

The eDPM Wipes menu controls function identically to those in the Switcher Mode (*Transitions* *on page 208*) for eDPM Channel Key Wipes 1-4.

SetDef MatchDef

The SetDef and MatchDef options permit line rate signal format conversion of selected Karrera 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.

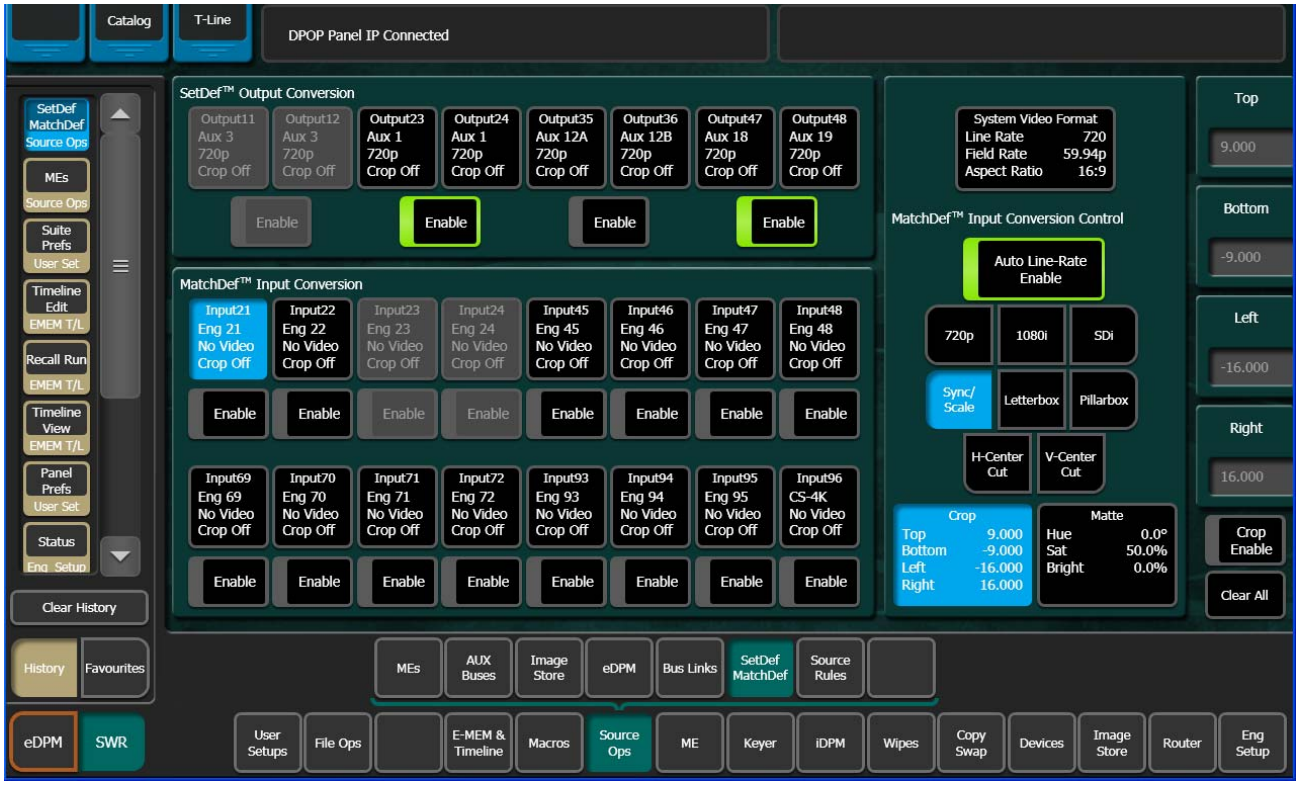
SetDef and MatchDef are E-MEMable, see *E-MEM Control of SetDef MatchDef* *on page 245*.

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 63).

Note MatchDef does not perform frame/rate conversion.

Figure 63. 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 Karrera 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 Karrera 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 paired outputs.

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.

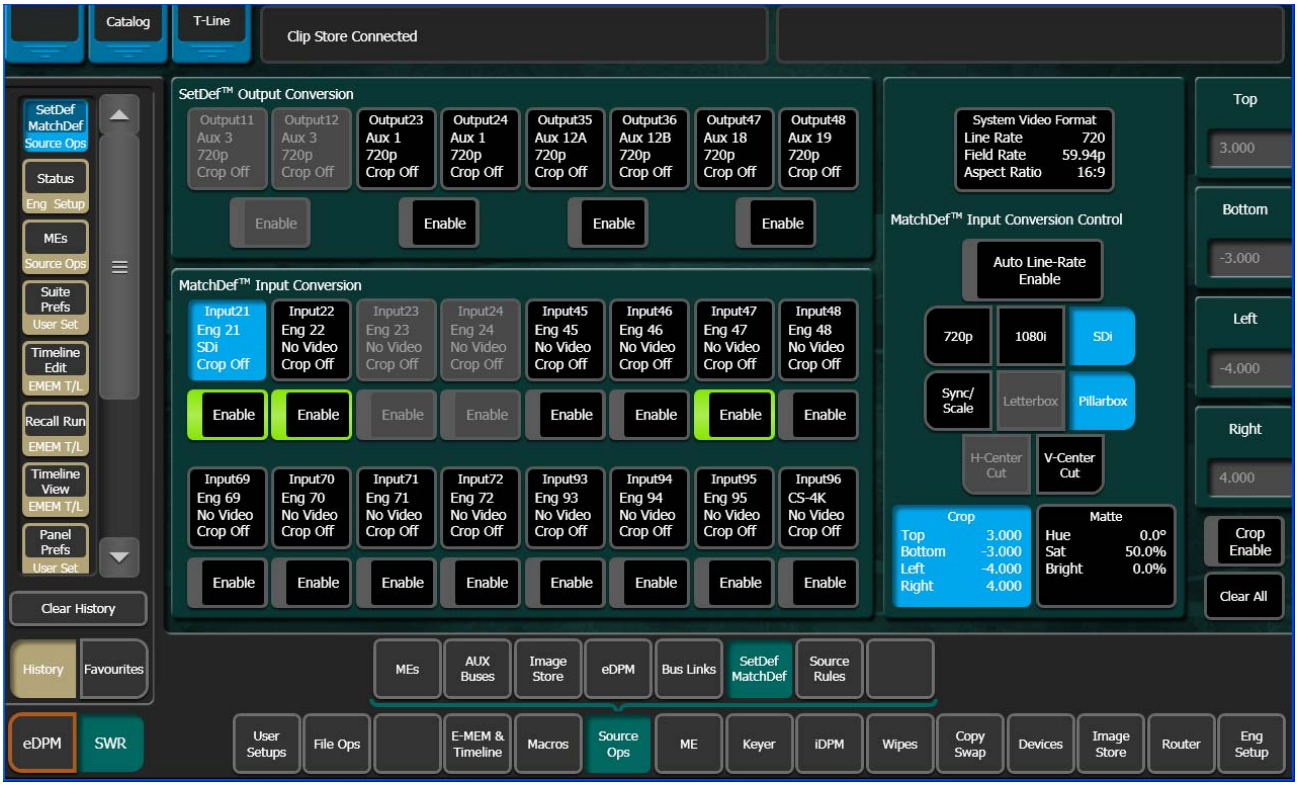
The **Crop** button, when selected, displays Top, Bottom, Left, and Right crop data pads. Crop values can be entered and activated by touching the **Crop Enable** button.

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 64. 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 Karrera 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 Karrera 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 has a noisy signal, choosing the correct line 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 123).

Section 4

Switcher Control

Introduction

This section provides information and operating instructions for systems used to automate control of the switcher. These systems are designed to help you manage your workload and create effects that can be recalled with the single push of a button.

Note Commands displayed in the OLEDs, for example “Enter”, are executed by pressing the hard button below the command name.

Basic 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.

The Karrera 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 from the menu or in the Local and Master E-MEM areas.

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

Time Value Entry

Time values are input on the Karrera Control Panel Local E-MEM and Master E-MEM areas in seconds, frames, odd field format, using the • button the separator (indicated below as “•”**)** and pressing the hard button below “Enter” in the display 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 • button first resets the effect duration to the Natural duration.

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

Decimal values for other non-time parameters are also input in the Master E-MEM area with the numeric keys, the • 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 Karrera menu Panel also provides a touch activated keypad for entering values directly into menus, using similar procedures.

Learning Registers

Note The following procedure will affect any Partial Keyframing advanced effects, including button color. See *Partial Keyframing* *on page 239* for more information.

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 to a Different Bank

1. Create the effect.
2. Press the **Lrn** button.
3. Press the **Page** button (if necessary).
4. Press the button for the desired page: 0, 100-900.
5. Press the **Bank** button.
6. Press the button of the desired bank.
7. 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 area.

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 in the Master E-MEM area.
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 **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 in the Master E-MEM area.
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 **Enter**.

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

Recalling Registers

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

Note If recalling effects from the Master E-MEM area 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 area 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 (alternatively, you can use the **Bk0/4** - **Bk3/7** buttons on the right).
3. Press the **Bank** 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 **Rate** and entering a time value.
3. Press **Enter**.

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.

Press the same page, bank, and register button a second time.

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 Karrera 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 Karrera 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 Karrera 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 Karrera 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.

Macros are low tally when a macro has been recorded and OFF when no content exists. When a macro is executed, the button turns high tally orange

while playing with the macro button then remaining high tally to indicate it was the last macro run.

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 8.

Table 8. 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.

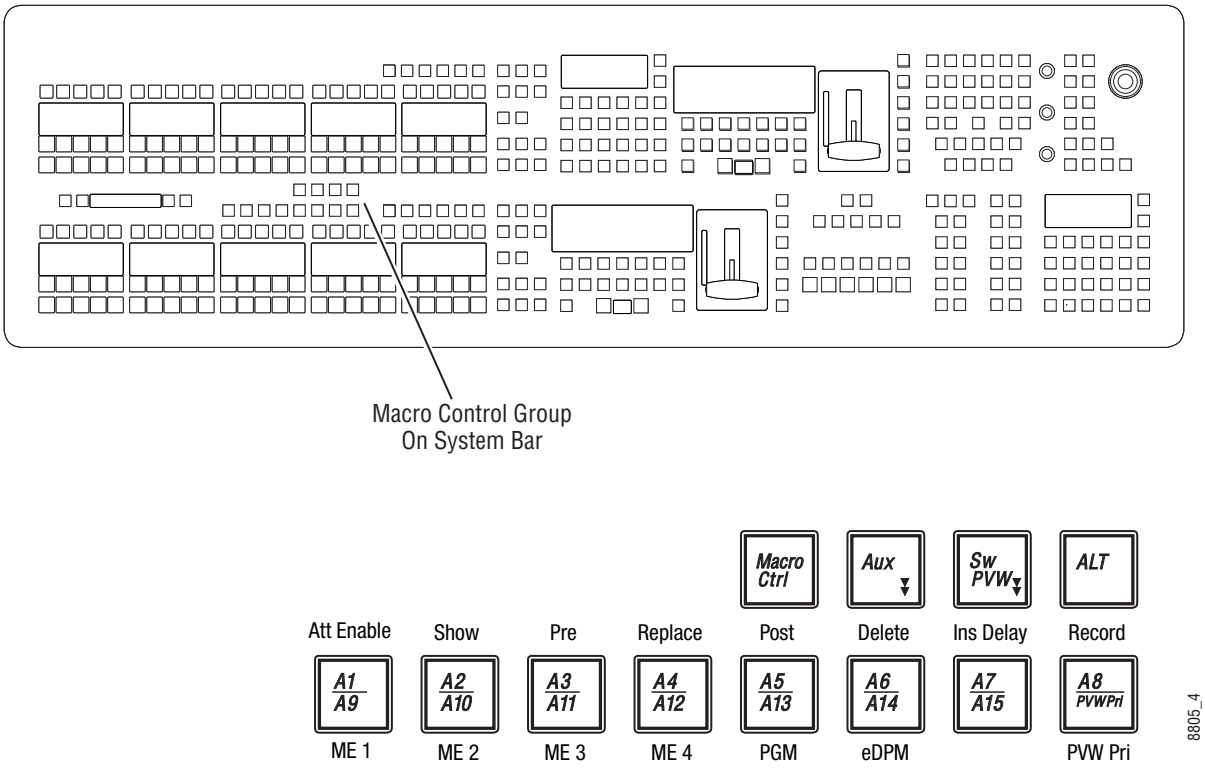
Macro Control Button Group

The Macro Control Button group on the System Bar area has eight buttons. These controls are located above the PGM PST stripe, at the far right of the System Bar area, as shown in (Figure 65). Pressing the **Macro Ctrl** (Control)

button delegates the buttons for macros. The eight buttons are from left to right:

- **Att Enable**—Attach Enable
- **Show**—Show Attached Macros
- **Pre**—Pre-Attach Macro
- **Replace**—Replace Macro
- **Post**—Post-Attach Macro
- **Delete**—Delete Macro
- **Ins Delay**—Insert Delay in Macro
- **Record**—Record Macro

Figure 65. Macro Buttons



Macro Button Function Summary

The **Macro** button on the Control Panel, (one per Source Select area) 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).

For information about the Pre-Attached (**Pre** button), Post-Attached (**Post** button), and Replacing (**Replace** button) attached macros, see *Macro Attachments on page 134*.

The **Att 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.

The **Show (Attach**) button activates a mode that low tally blinks Control Panel buttons that have macros attached.

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 **Replace** 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.

During a macro recording, time delays can be inserted into macros. The **Ins 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 **Record** 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 **Record** button again or pressing the newly recorded macro register button.

Macro Menus

The Macro menus provide access to many, but not all, Karrera 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 Karrera 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 **Record** 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 **Record** button, or pressing the keyer row macro button.

Recording a Macro with the Menu Panel

Access the Macros menu be touching **Macros**.

Figure 66. 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 66), for entering a Panel Name (four characters maximum). Karrera displays that name in place of the Macro Register Number in the Local E-MEM area (when the Macro menu is delegated by pressing the **Macro** button in that ME).

Inserting a Delay

While recording a macro, press the **Ins 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 65 on page 135).
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** is turned off).

Post-Attach a Macro

1. Delegate the bus rows to Macro by pressing the **Macro** button (see Figure 65 on page 135).
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** 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 area has been delegated to control.

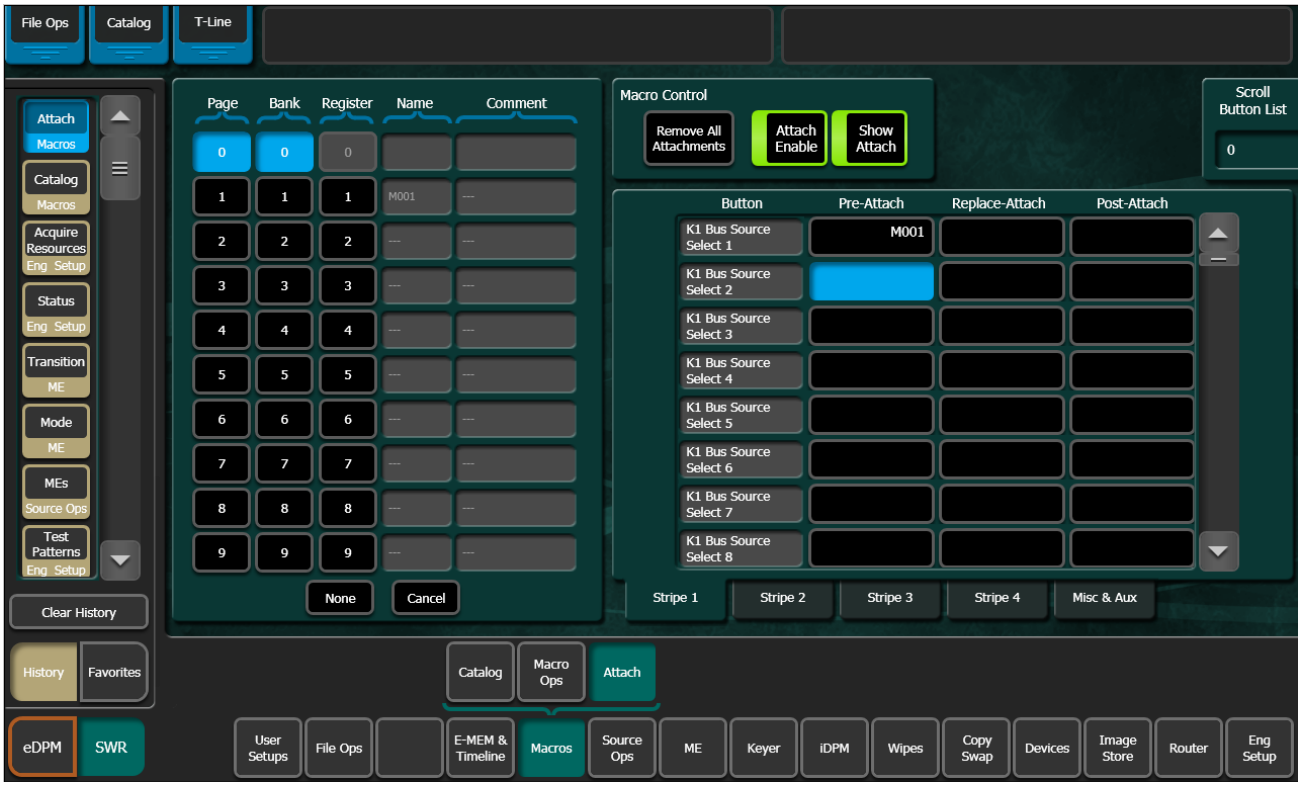
To attach multiple macros to the same button, select another attach mode, then select the macro register of the additional macro, then touch the button

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 67.

Figure 67. 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 **Att 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** 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** 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 **Record** 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 **Record** 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 Karrera 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 and E-MEMs* *on page 143* for related information.

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 Karrera 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 Karrera 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.

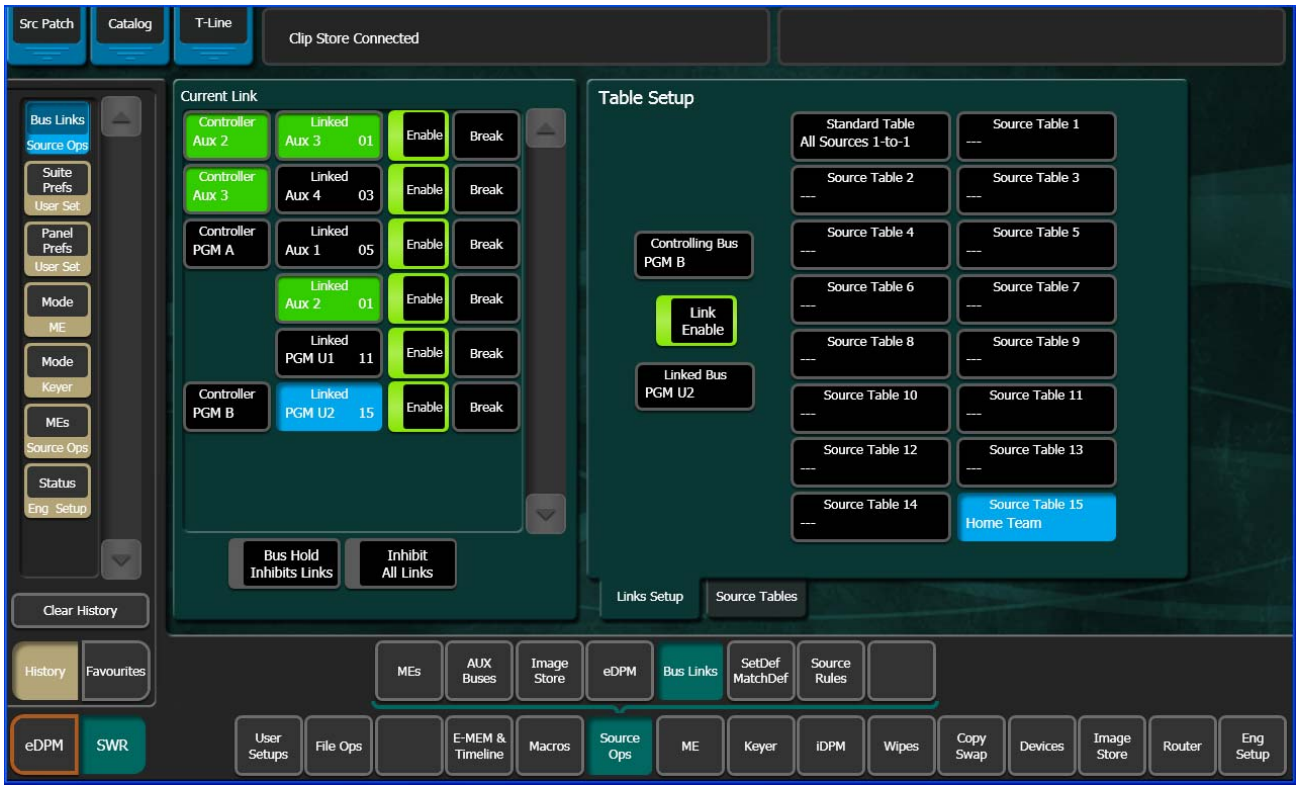
Bus Linking Menu

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 68, left) and the Table Setup menu (Figure 68, 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 68. Multiple Bus Links

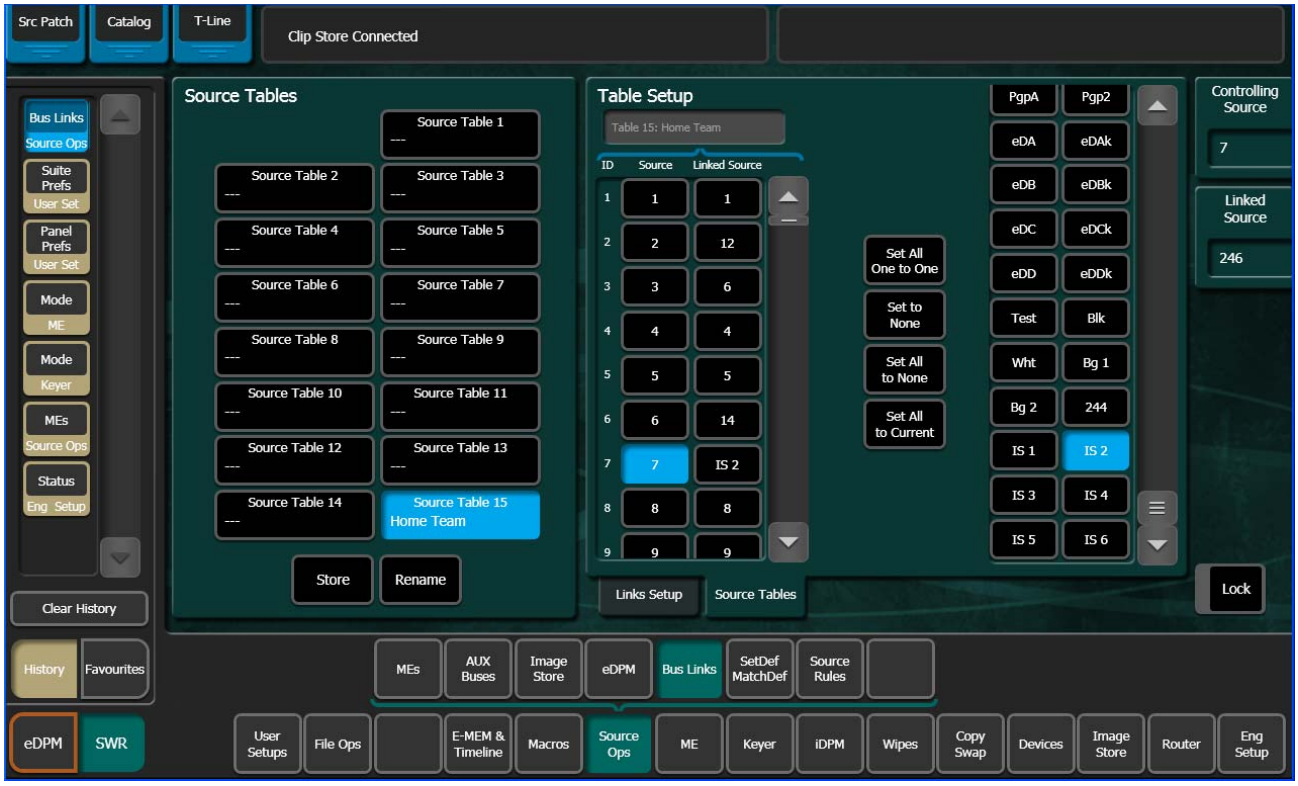


Selected **Controller** bus and **Linked** bus buttons turn blue when selected in the Current Link pane. In the example in Figure 68, the Linked bus button **PGM U2** is the selected button.

The Source Tables menu has the Source Tables pane (Figure 69, left) and the Table Setup pane (Figure 69, 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 69. 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 70).

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).

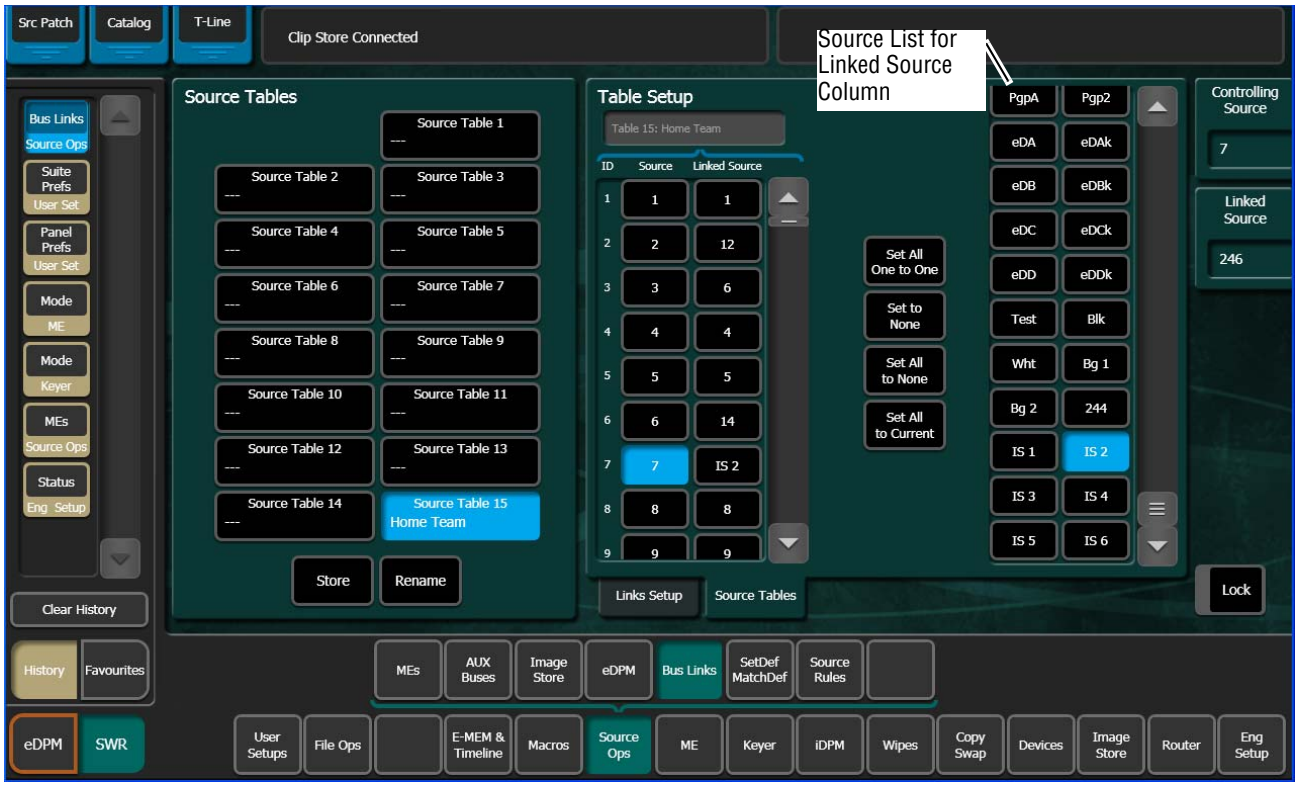
Set All to Current—Sets all Linked Sources to the currently selected Source (including none if defined).

Store button—Allows the current source table to be stored (copied) to another source table.

Configuring Source Tables

In the example in Figure 70, 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 68).

Figure 70. 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 68), 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 70). Use the Linked Source buttons for faster configuration (see *Table Setup, Linked Source Buttons* *on page 146*).

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 70, 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 70, 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 Karrera 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 39*.

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*.

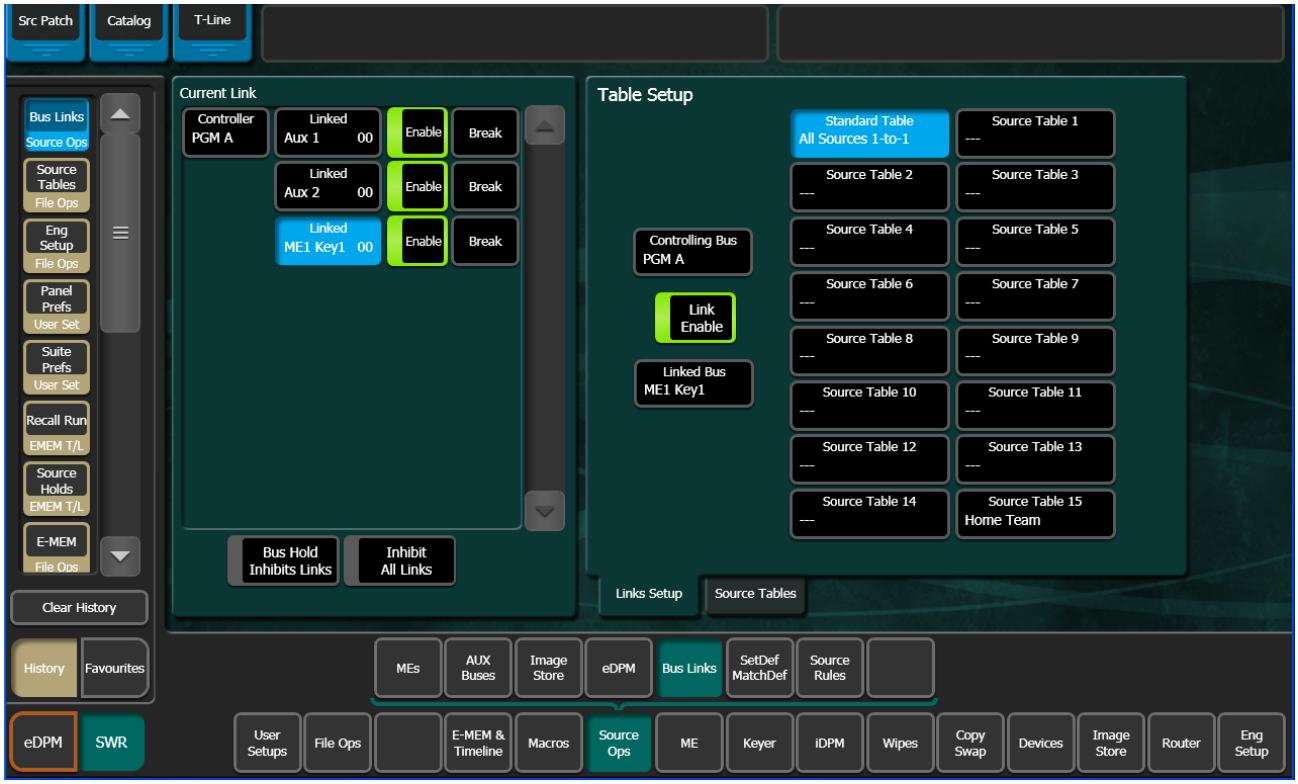
Touching the **Controlling Bus** or **Linked Bus** data pads in the Bus Links, Links Setup menu displays the Bus Picker pop-up menu for each, from which to choose busses for the link (Figure 71).

Figure 71. 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 72, PGM A is the controlling bus and Aux 1, Aux 2, and ME1 Key1, are all linked in parallel to PGM A.

Figure 72. 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 72, 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 72, **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

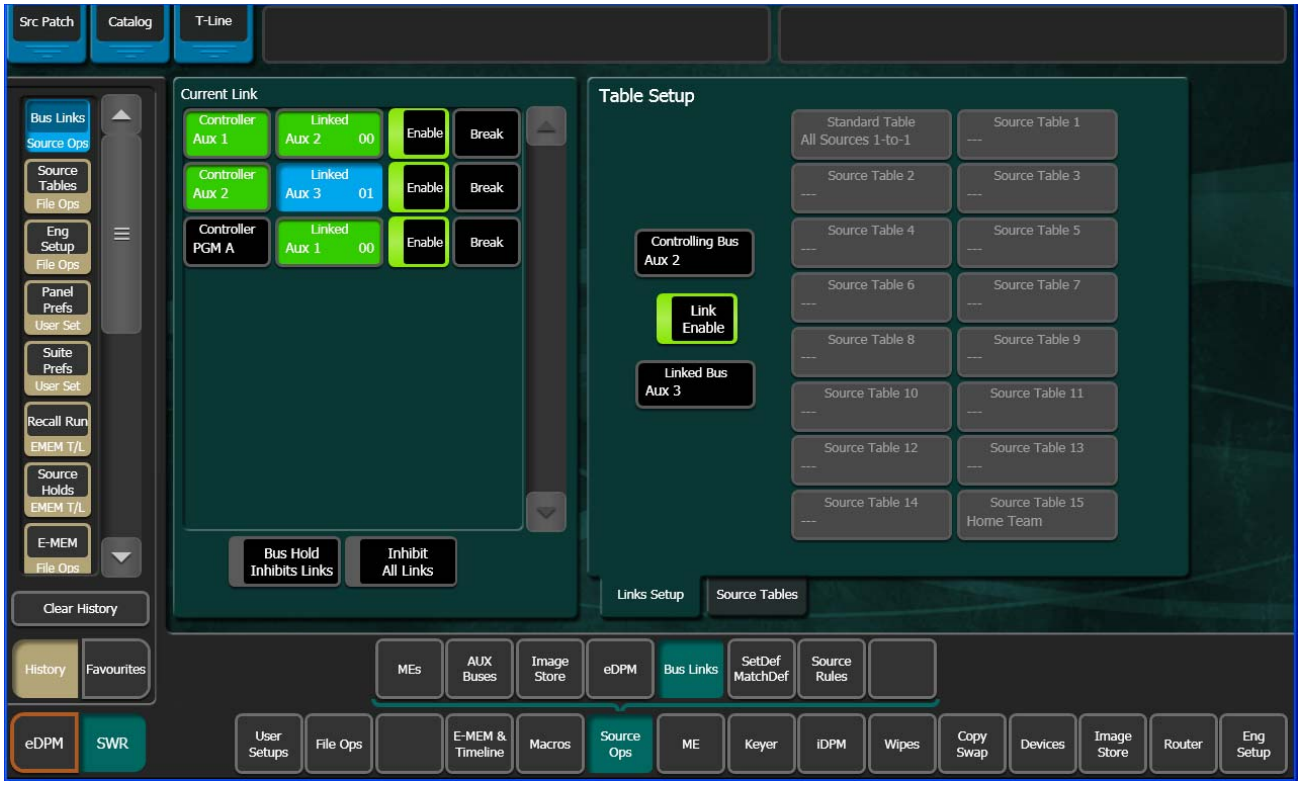
In *Cascading Links*, a controlling bus (A) has a linked bus (B) which in turn acts as the controlling bus for another linked bus (C), and so on. Changing a source on the controlling bus (A) will cause a change on both linked busses (B and C).

In the example in Figure 73, 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 73:

- **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 73. 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 73, 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

Karrera 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.

Section 5

Device Control

Introduction

The Karrera system can control devices like DDRs, VTRs, character generators, etc., and can also control the Image Store clips and stills and GPIs to any external device. Karrera device control only supports devices that have been associated with Karrera sources.

Note External Devices are configured for control in the Ports & Devices, External Devices menu. See the *Karrera Installation & Service Manual* for more information.

The following provide device control operations from the Karrera system:

- Device Control Groups on the Control Panel,
- Menu Panel,
- Karrera Menu on a PC, and
- The Switcher Soft Panel (KSP).

Device Control Operations

Control Groups

Device control from the Device Control Groups (one for a 2-ME Karrera system and two for a 3-ME), which consists of a 16 character Status Display (displays the current clip) and Play, Cue/Load, Next Clip, and Previous Clip buttons.

For the one group on the 2-ME Karrera, the Device Control Group can be assigned to a button row, on a 3-ME the right-most group can be assigned to a device associated with a source select button.

Note **Off Air Advance** and **Auto Start** buttons are accessed from the Karrera menu.

Figure 74. Karrera Control Panel Device Control Group

For the left-most Device Control Group (on a 3-ME system), you can associate (or marry) a source button *row* to the group by holding down the PREV and NEXT buttons together and then select any button in the row.

For the other Device Control Group on a 3-ME, you can associate a device to the group by holding 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.

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 External device control utilizes *events*. External device events are different from other parameters in the Karrera 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 Karrera 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 Karrera system issues a play command and then lets the device manage its own playback. This means that if the Karrera 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

Karrera 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 DEV** level. 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**.

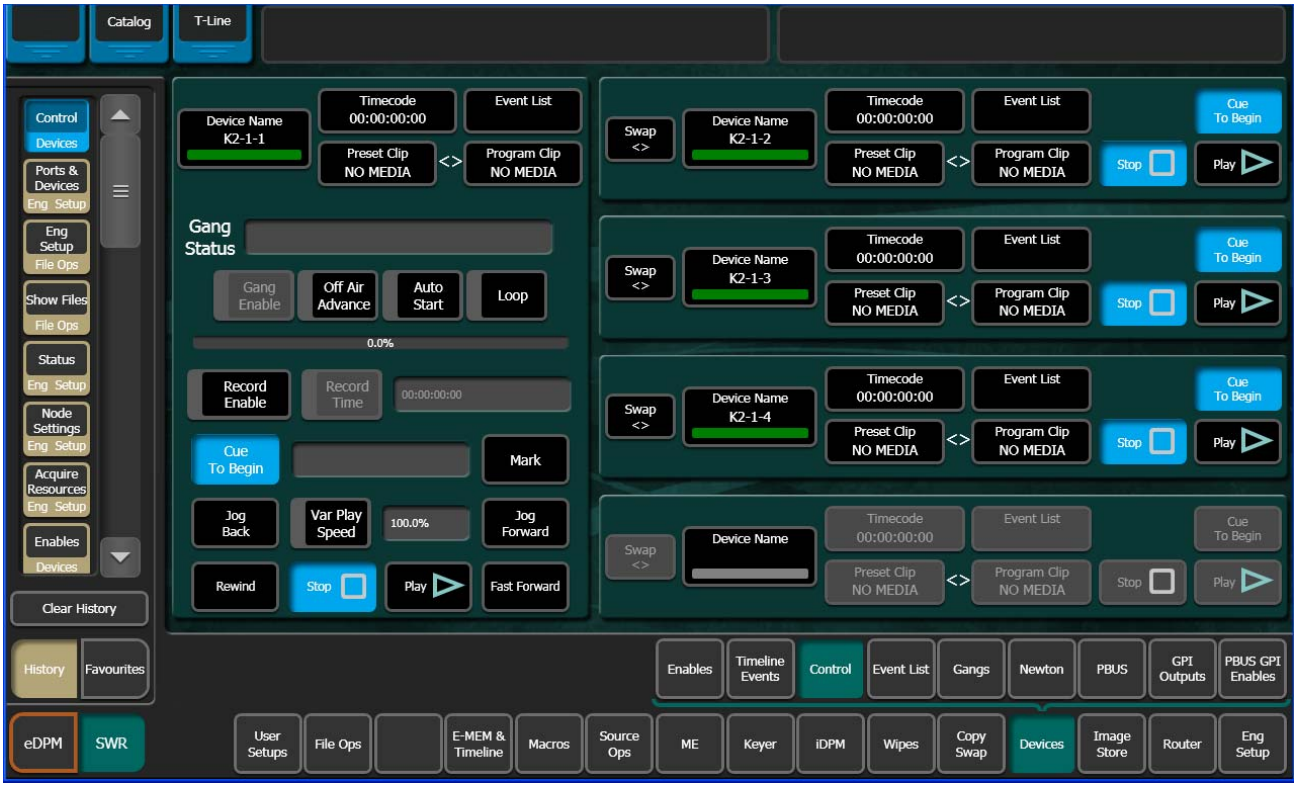
Multiple Events on the Same Keyframe

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 75).

Figure 75. 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 76). A similar menu is used with the Clip Browser on the Devices Event List menu, and for loading clips in the Timeline Events menu.

If you change a clip locally on the Summit/Solo server, that clip name will be updated on the Karrera 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 76. 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 time-

line 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

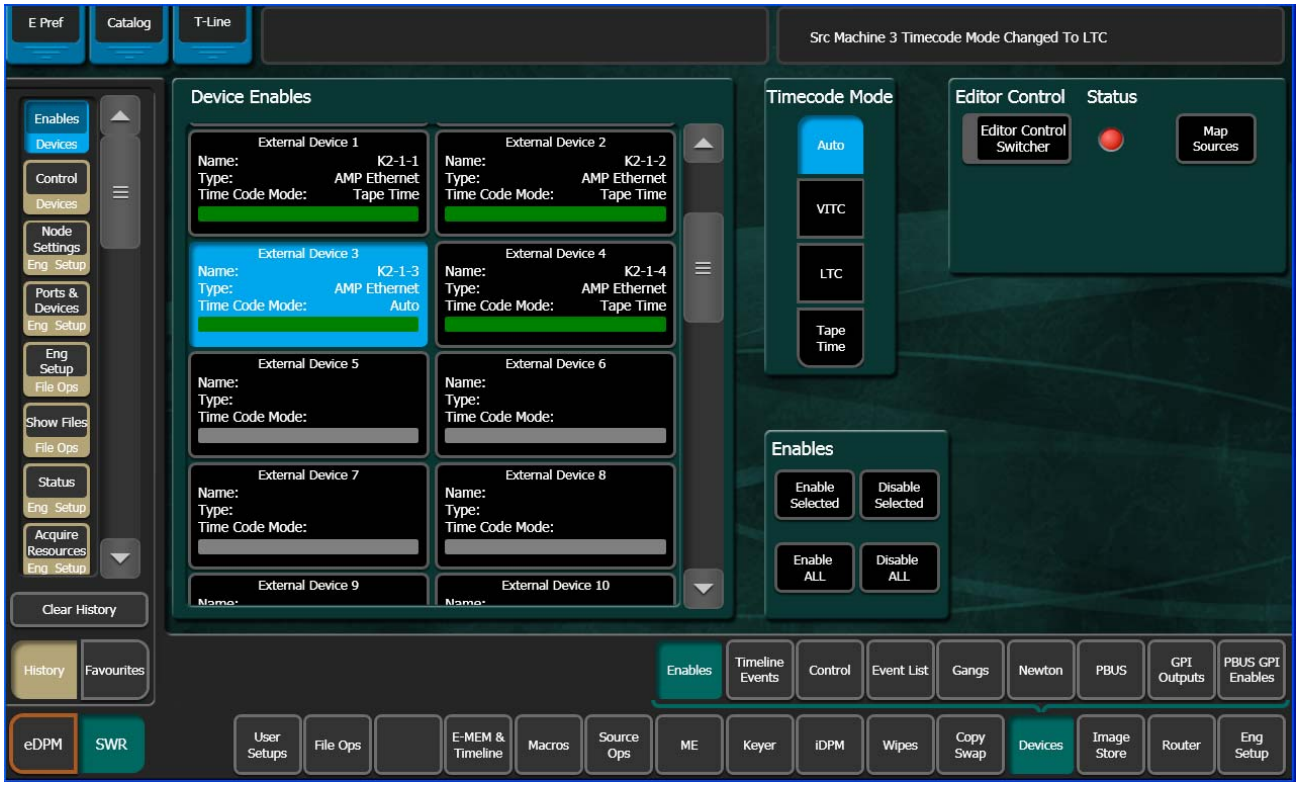
Preparation for Control

1. Turn on the **EXT DEV** button in the E-MEM & Timeline, Recall Run menu (or whichever button your machine control device has been associated with) and press the **EMEM Edit** button in the Master E-MEM area.

Note Devices can be assigned to any level, including 1-8 which are provided as hard buttons in the Master E-MEM area, in the User Setups, Suite Prefs, E-MEM Prefs, Name Misc. Levels menu.

2. Go to the Devices, Enables menu, and touch the device you wish 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 77).

Figure 77. External Device Enables Menu



3. Go to the Timeline Events menu Figure 78), 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 78).

Figure 78. 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 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 163.
2. Besides **EXT DEV** (or whichever button your machine control device has been associated with), make sure **PGM PST** level is also enabled in the Master E-MEM area.
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 163.
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 **Auto Start** is on in the Devices, Control 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 it is stopped.

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 Karrera 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 in the Menu Panel.

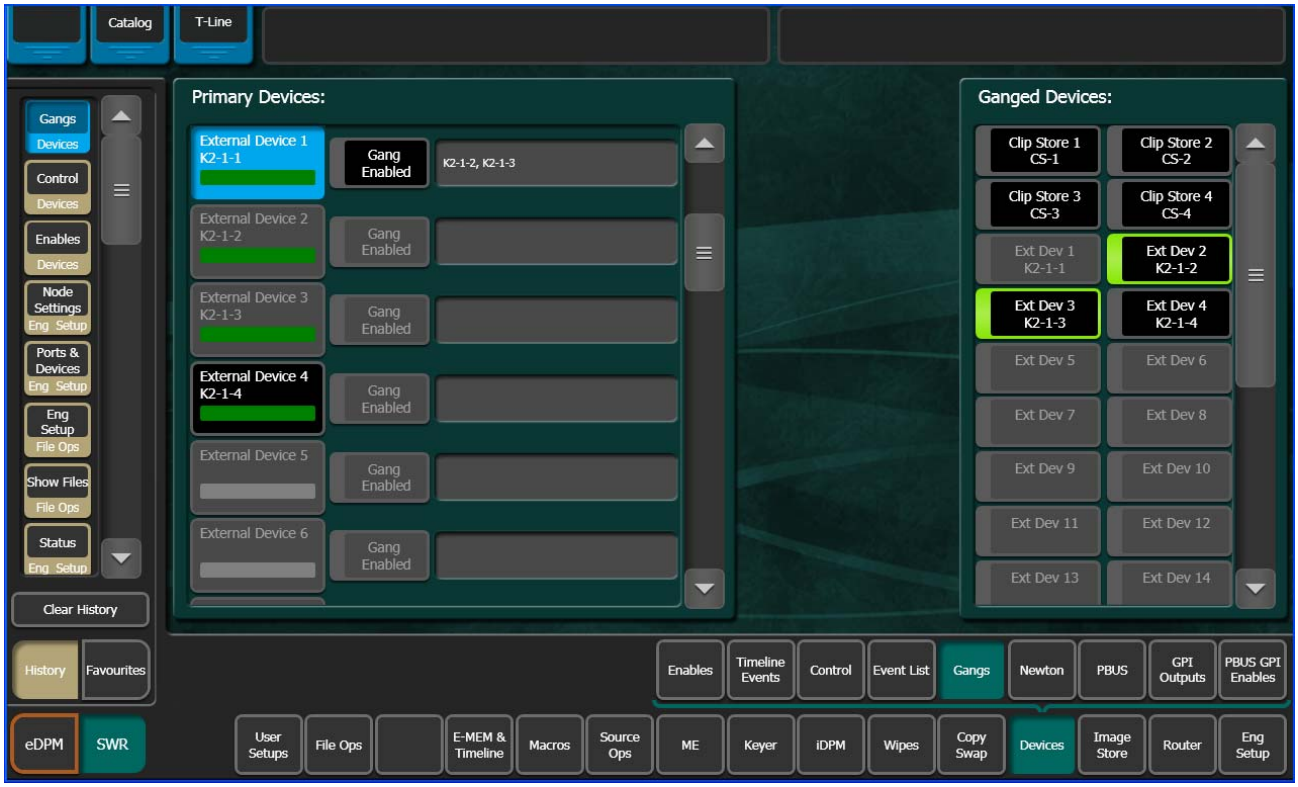
Karrera supports two types of ganging:

- 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 79).

Figure 79. External Device Gangs Menu



The Devices, Gangs menu has two panes with scrolling lists, each listing the devices setup for Karrera 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.

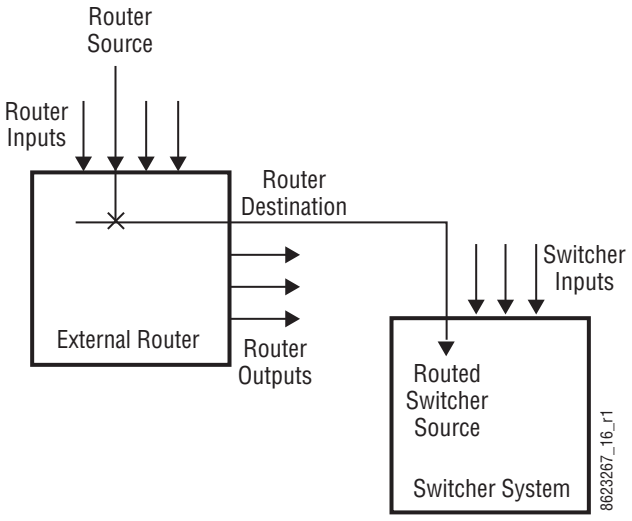
- Event List clips can be played in random order. With **Auto Load** on, touching a clip in the Event List immediately loads that clip for playback. When that clip finishes, the next one in the list loads normally.
- Clips in an event list can be reordered quickly. The **Move Up** and **Move Down** buttons 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.

Router Interface Operation

Introduction

The Karrera 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 Karrera input and be configured as a *routed Karrera source* (called *switcher source* in this discussion and in the Karrera menus). The router acts as a preselector for the switcher source, and so increases the number of inputs available to a button on a Karrera system bus (Figure 80).

Figure 80. Router Source, Router Destination, and Routed Karrera 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 Karrera 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 Karrera system can be considered a type of router control panel, and so the Karrera system can protect router destinations. Karrera system router protect commands are applied to all router levels.

The names of router sources appear on the Karrera system source name displays. These names originate from the router system, and their text cannot be changed from the Karrera system. If a routed Karrera 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

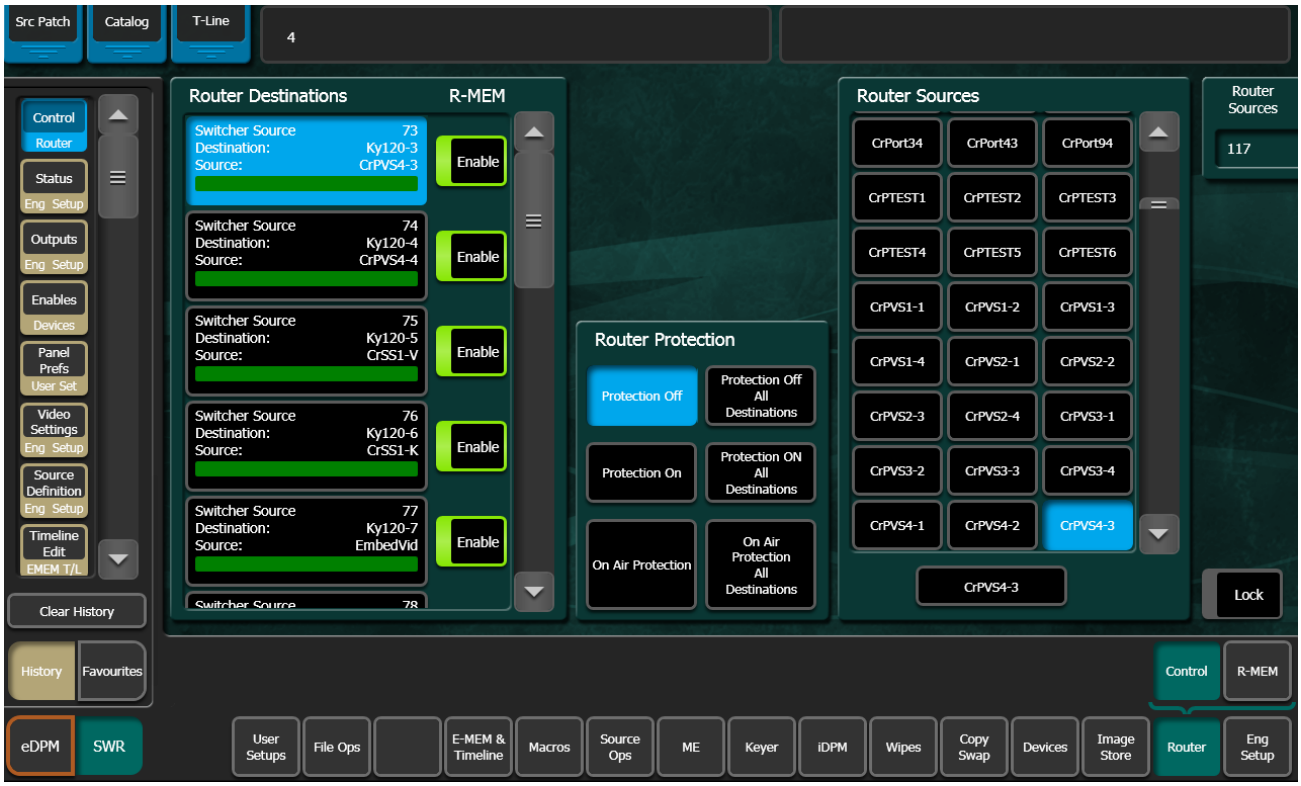
- Interfaces to the Grass Valley SMS 7000 routing system.
- Karrera system configuration of routed Karrera sources.
- Names of router sources are shown on Karrera panel source name displays.
- Router source selection control via the Control Panel, and Menu Panel.
- Protection types (None, Protect, Protect All, and On Air).
- R-MEM control.

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 81).

Note Router interface operation becomes available after the Karrera system and the external router have been properly configured. See the *Karrera Installation & Service Manual* for additional information.

Figure 81. Router Control Menu



The Router Destination pane on the left is a scrolling list of switcher sources (only sources configured as routed Karrera 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 Karrera 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 Karrera 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 Karrera 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 Karrera 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.

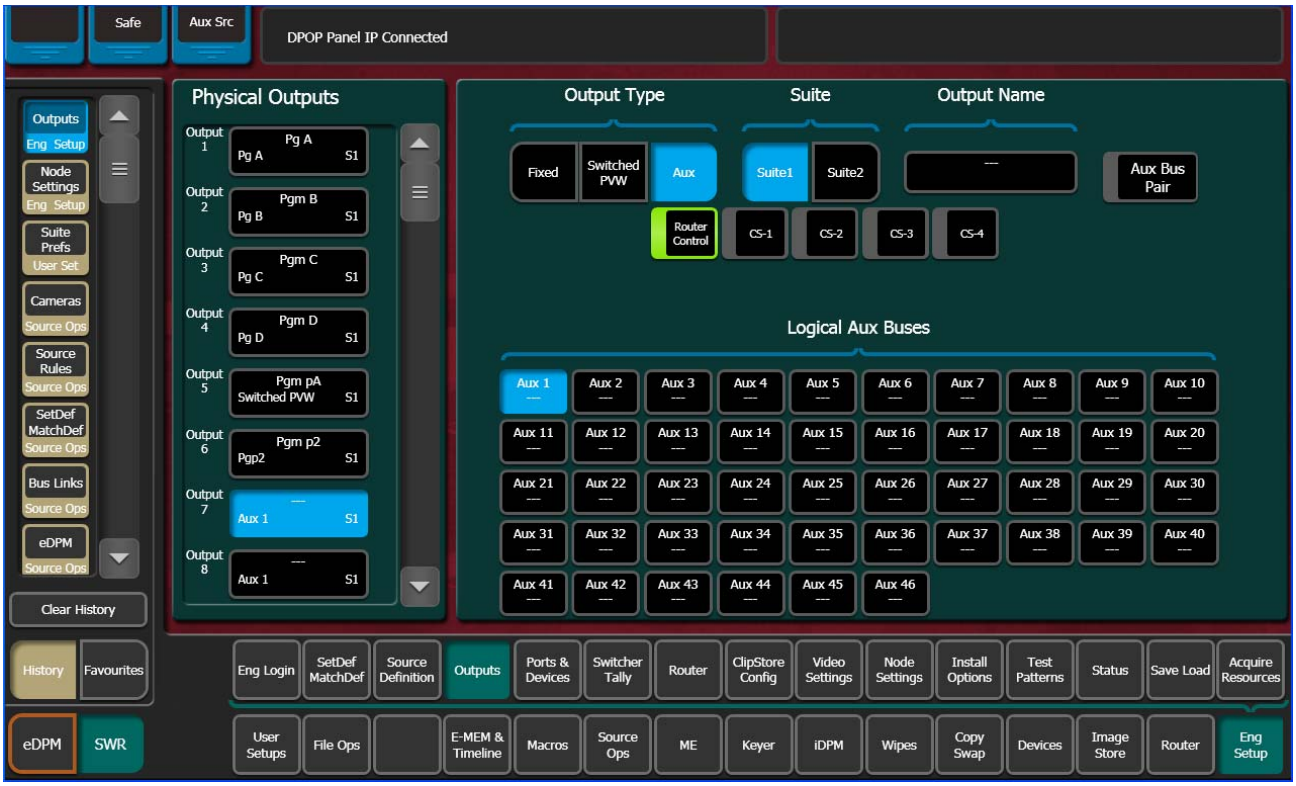
If an Aux bus is enabled for router control, then the source can be changed by a configured Router Control Panel.

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 82).

Figure 82. Eng Setup, Outputs Menu, Router Control of Aux Busses



Enable the Aux Busses for router control (Figure 82):

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 Karrera sources on Aux Busses from the external router.

Note A Prelude router can communicate directly with the Karrera switcher.

R-MEM

Introduction

R-MEM stands for router memory. With R-MEM you can use the Karrera 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 179*).

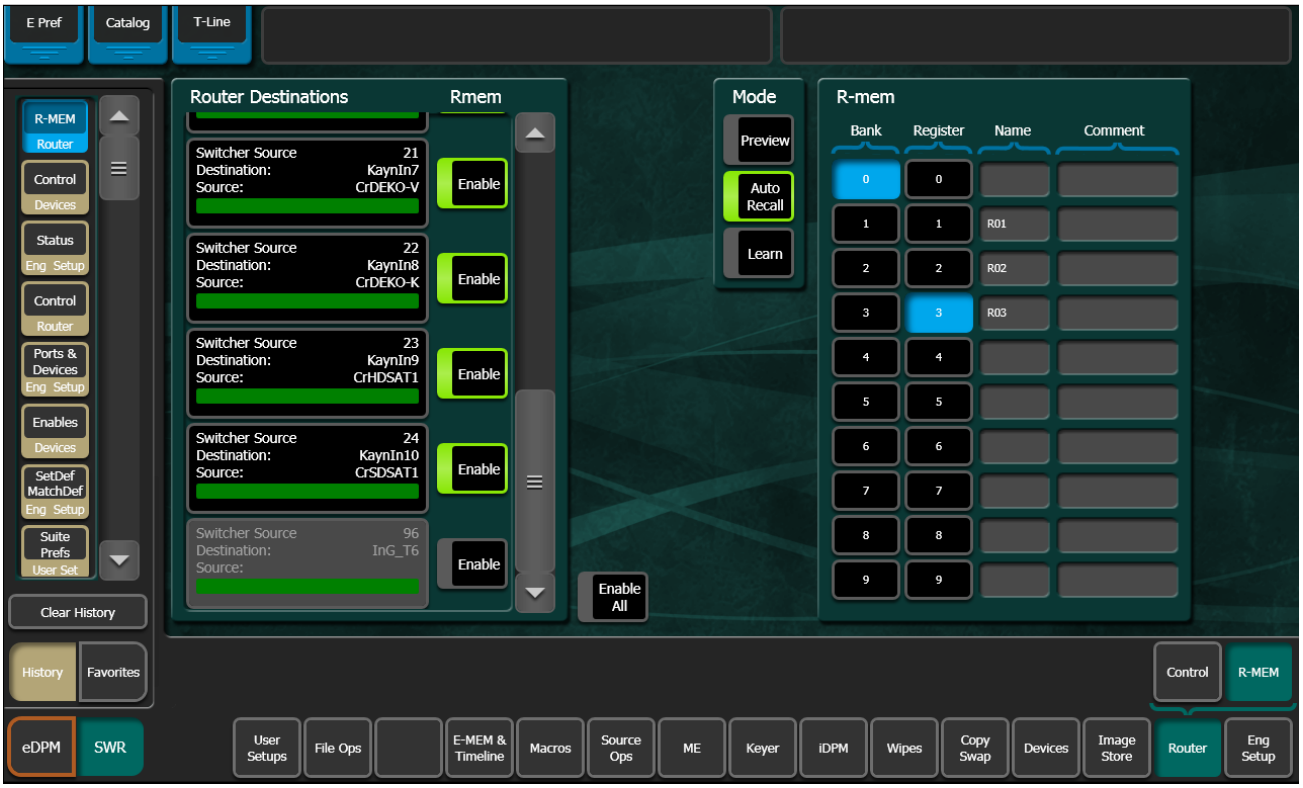
Features

- 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 83).

Figure 83. 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 Karrera 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 Karrera 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 in the Control Panel Master E-MEM area 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 in the User Setups, Suite Prefs, E-MEM Prefs menu), 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 in the Master E-MEM area will recall that same number R-MEM register. Learning an E-MEM register in the Master E-MEM area 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.

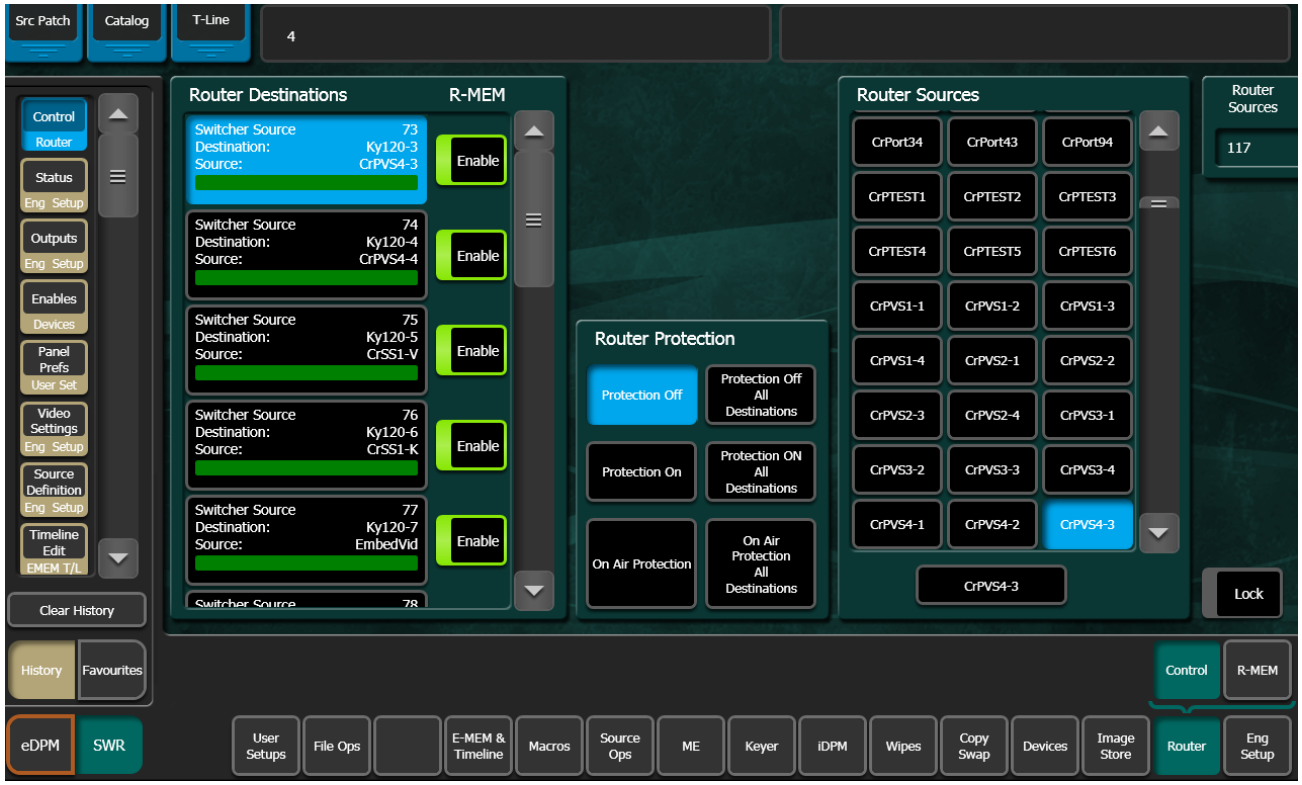
Learning R-MEMs on the Control Panel

When R-MEM has been assigned to an E-MEM Enable button (**Misc 1**—**Misc 8**), 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. In the Master E-MEM area, select the Enable button (**Misc 1**—**Misc 8**) 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 84. Control Menu



3. Press the **LRN** button in the Control Panel Master E-MEM area, 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. In the Master E-MEM area, recall the E-MEM register you wish to change.
2. In the Master E-MEM area, 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. In the Master E-MEM area, press **Lrn**. 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.

Camera Control with Ethernet Tally

Karrera Camera Integration provides the ability to place cameras into a usable but not fully shaded setup/rehearsal mode. The Karrera 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 *Karrera Installation & Service Manual*.

Switcher camera control is provided in the menu.

Camera control from the Karrera 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.

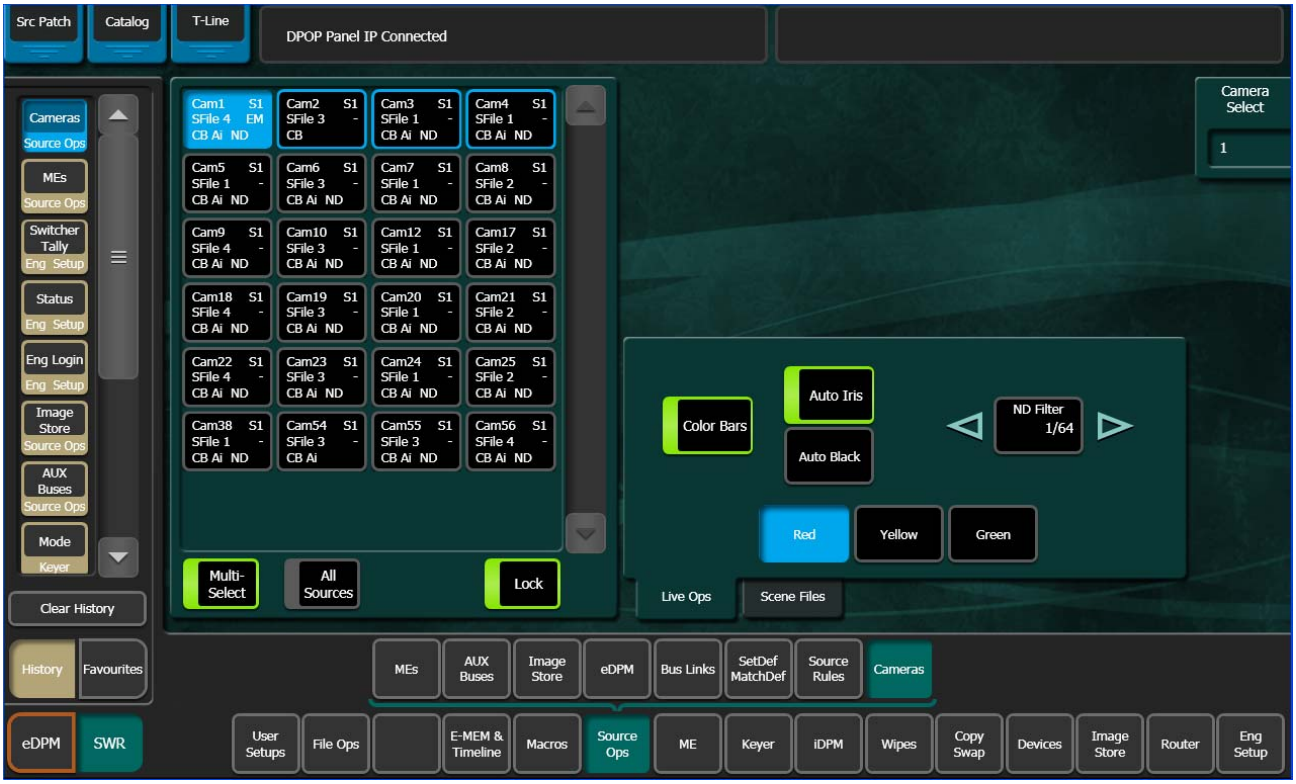
Camera Operations

Camera control from the Karrera 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 85).

Figure 85. Source Ops, Cameras, Live Ops Menu



Live Ops

Karrera 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 85):

- **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 85) 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 Karrera switcher sends tally over Ethernet to cameras. This is described in the *Karrera Installation & Service Manual*. In addition, the **Red**, **Yellow**, and **Green** buttons in the Source Ops,

Cameras menu (Figure 85) allow you to test the camera tally colors and/or send a call to the camera operator.

Scene Files

Up to four Scene Files can be saved and 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 86).

Figure 86. 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 86).

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.

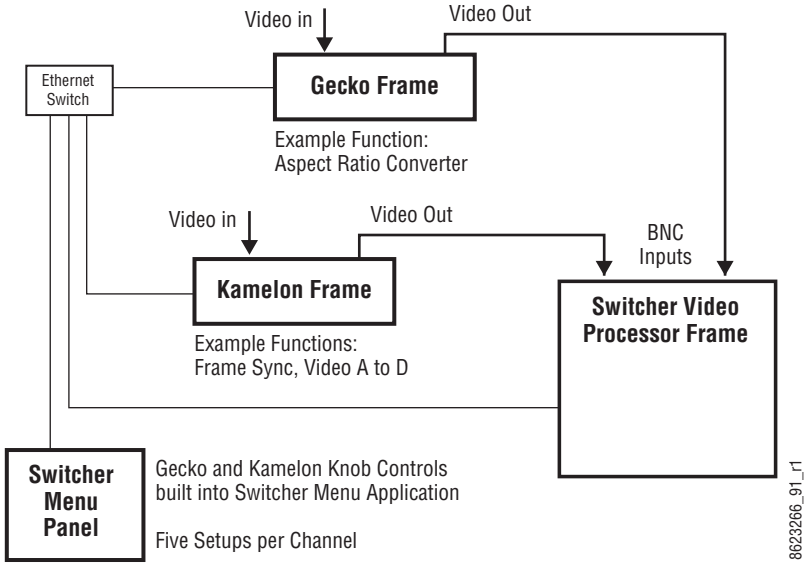
   The enabled Scene File will be recalled for the selected cameras.

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 Karrera Menu Application. This makes it possible to control Grass Valley Gecko and Kameleon frame modular products from a Karrera Menu panel or PC running the Karrera Menu Application. The modular frames must reside on the same subnet as the Karrera system (Figure 87).

Figure 87. Newton Modular Control Diagram



Installation on Karrera

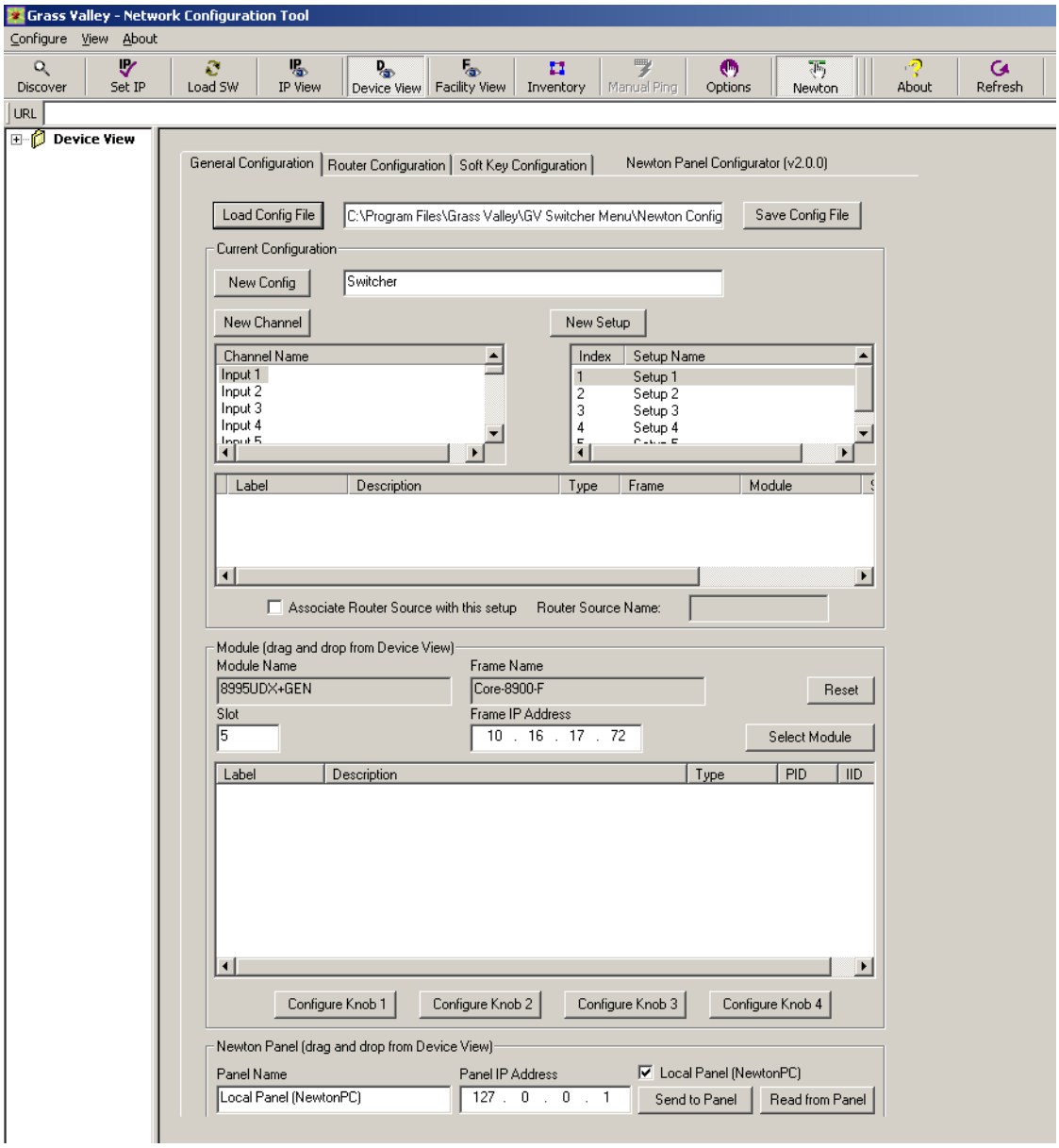
Karrera's Newton interface is installed during the standard Karrera Menu Application installation procedure. The Newton menu (Figure 89 on page 189) is available on all Karrera systems running 1.5.2 or newer software. However, a Newton system must be available on the Karrera network, and configuration steps will be required before this menu becomes functional.

Selecting the NetConfig installation option from the Karrera Installer program will install a compatible version of NetConfig with the NetConfig Newton Configurator plug-in.

Newton Controls Configuration

Newton functionality within Karrera can be configured using any PC on the Karrera network, provided the configuration tools are installed onto that PC. Select the **NetConfig** option in the Karrera 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 88).

Figure 88. 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

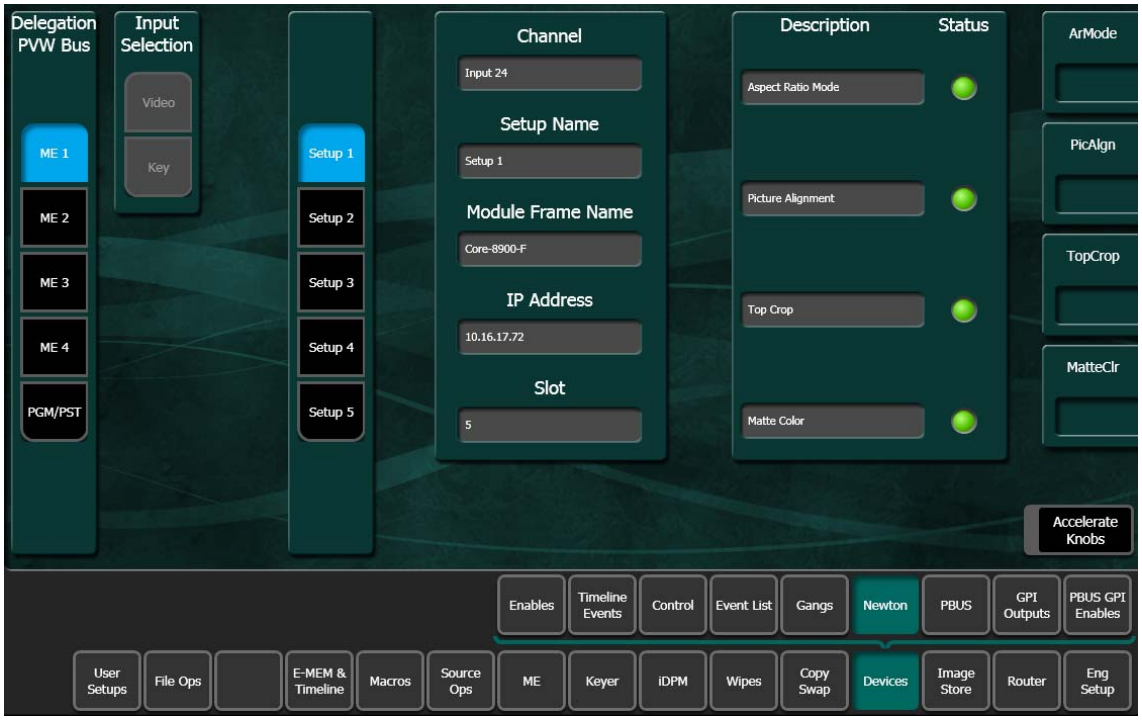
establishes a one-to-one relationship of Newton channels to Karrera physical inputs (BNC connectors on the Video Processor Frame). Each Karrera input/Newton channel can have up to five different setups defined. A default Newton configuration file with 96 channels (inputs) is provided with five empty 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 Karrera Menu Panel knobs. The user is then able to control those modules directly from the Karrera 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 Karrera Newton menu, which is accessed by touching **Devices**, **Newton** (Figure 89).

Figure 89. External Device Newton Menu



Selection of a module parameter to control is mediated though the Karrera source selection mechanism. By selecting a source on the currently delegated Preview bus of the Karrera's Main panel, the source's physical input, and that input's associated Newton channel controls are activated on the Karrera'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 Karrera 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.

Section 6

Switching Basics

Introduction

A basic Karrera system may be equipped with a:

- Control Panel and Menu Panel,
- Control Panel and PC, or
- A KSP Soft Panel.

These separate control components make up a Karrera *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.

Control Panels are organized into ME "Stripes". An ME Stripe consists of an area for Source Selection, Transition, and individual E-MEM control. Master E-MEM, Multi-Function, and System Bar areas are added to complete the control surface functionality.

The basic Karrera system is operated using button, knob, and lever controls on the Control Panel and Aux panels, touch screen and knob controls on the Menu Panel, keyboard on a touch screen (optional for KSP). 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 Karrera Video Production Center is an extremely powerful and flexible production tool, but also provides basic operations available on a typical production switcher.

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.

Panel Delegation from the Local E-MEM Area

Pressing **Menu**, **Stripe Delg** in any Local E-MEM area puts it into Panel Delegation mode and will display any selected MEs (**ME1**, **ME2**, **PGM PST**, etc.) 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 physical MEs have been assigned to the suite are displayed in Delegation mode in the Local E-MEM area.

If the Control Panel has fewer than three Stripes, then only MEs for those Stripes present will be shown.

Automatic Delegation

With the **Auto Deleg** button toggled on in the Multi-Function area, when an operator activates any object on a Stripe, the Multi-Function area will automatically delegate to control the specific object involved. For example, selecting a key for the next transition, automatically delegates the other areas in that Stripe, and the Multi-Function area 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 in the Multi-Function area by toggling the **Auto Deleg** button to off.

Multiple Keyer Delegations

The ME Keyer Delegation buttons in the Multi-Function area can delegate the Keyers to more than one keyer. If the Multi-Function area's controls have been delegated to multiple keyers, the Multi-Function area delegation buttons will go off, to indicate a single keyer is not being controlled. The

remaining Multi-Function area 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 area 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 area, 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 area.

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 9 and Table 10.

Table 9. DPOP Buttons

DPOP Button	Area	Menu Displayed
Key 1, 2, 3, 4, 5, 6	Source Select /Multi-Function	Keyer Mode Menu selected keyer delegated
Macro	Source Select /System Bar	Macro Catalog
Aux		Aux Delegation
Pri	Source Select	ME Mode
Sec		ME Mode
Row 1, 2, 3		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

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

Table 10. SPOP Buttons

SPOP Button	Area	Menu Displayed
K1-K6	Source Select	All Keyer
A		MEs (Source Ops menu), Video Proc and RGB Color Correct (ME menu)
B		
U1		
U2		
K1-K6	Transition	All Keyer
ME 1-4, PGM	Multi-Function	All ME
K1-6		All Keyer
All Buttons	Control Panel	Macros, Attach

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 the right side edge of the panel and two on the back for keyboard and mouse (wired or wireless are supported)).

Touch Screen

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

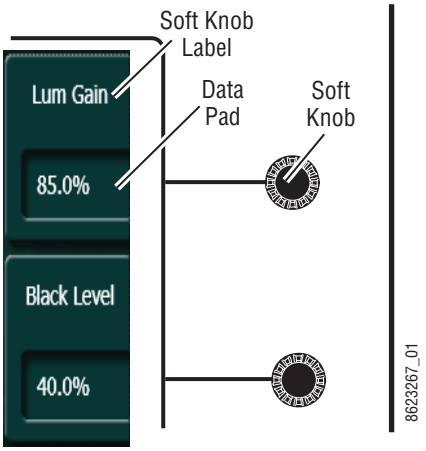
The Menu Panel touch screen allows direct interaction with menu controls displayed on the screen. The screen is designed to work with a finger or other soft object. The touch screen is sensitive to a single pressure location only, so only one touch surface control can be adjusted at a time.

Menu Selection

Various Karrera 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 90. 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 90, 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

Karrera 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 91 and Figure 92.

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

- Navigation and
- Content and Messaging

Figure 91. Keyer Mode Navigation Menu Example

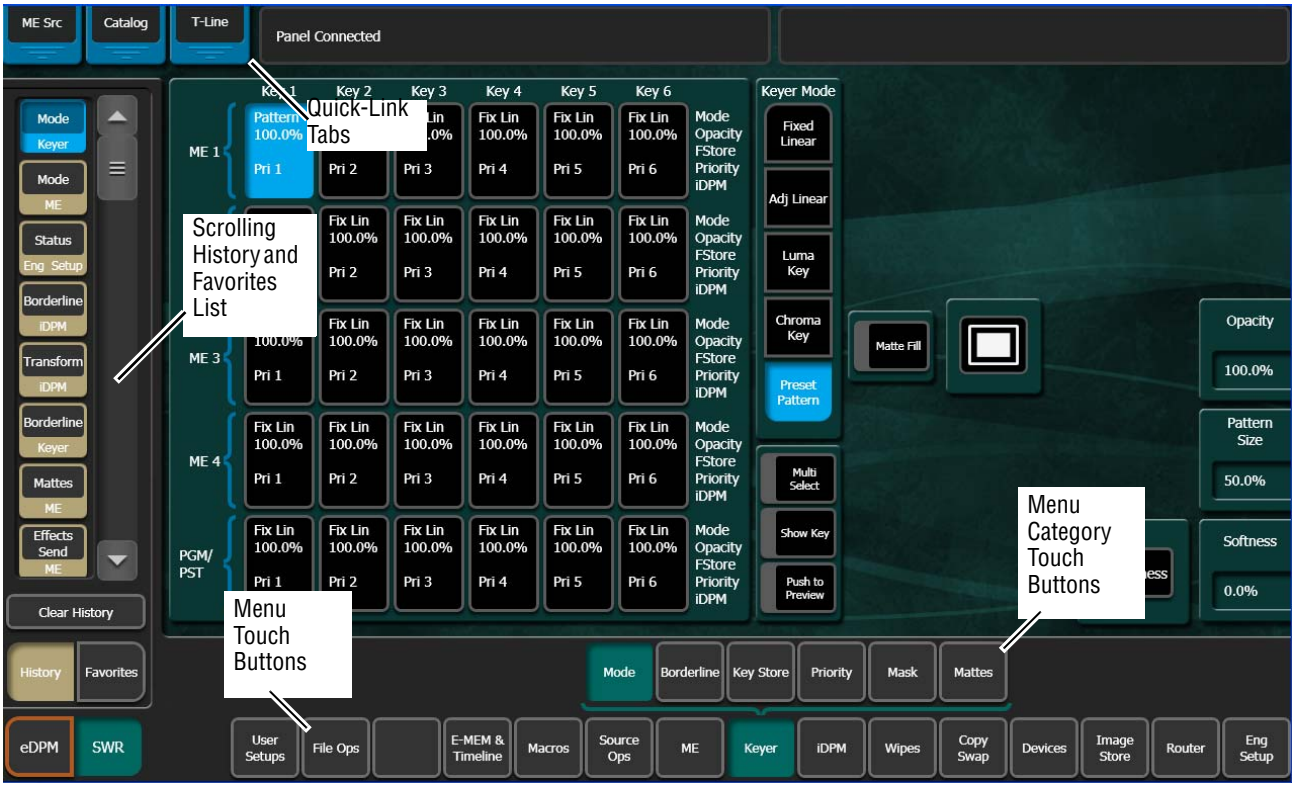
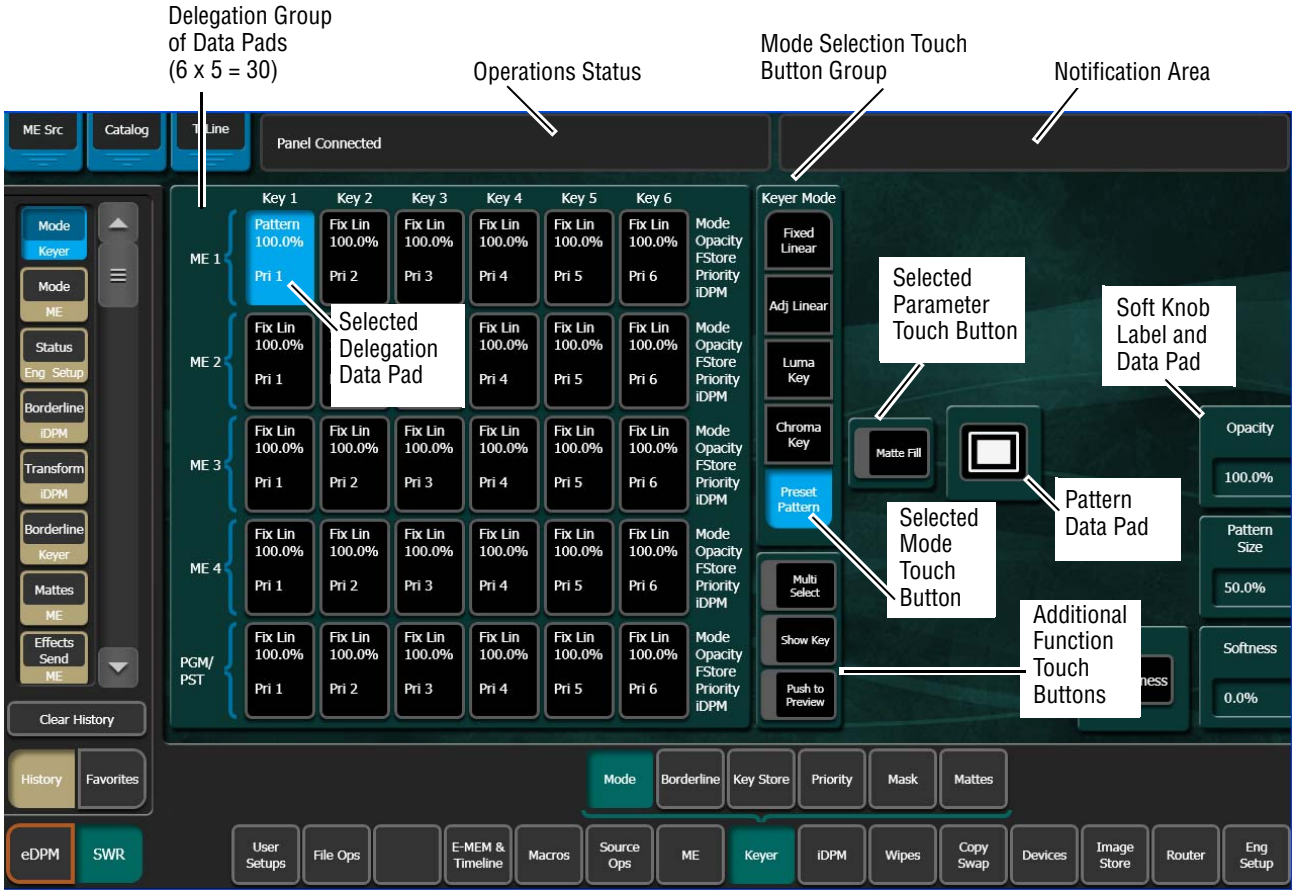


Figure 92. Keyer Mode Content Menu Example

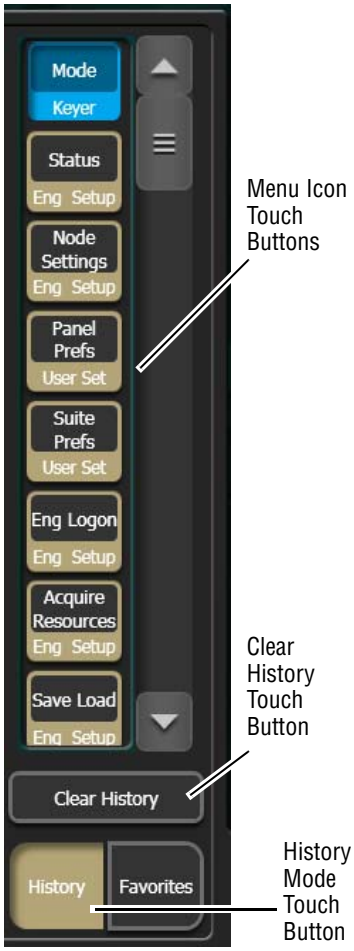


History and Favorites Modes

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

History Mode

Figure 93. History Mode Example



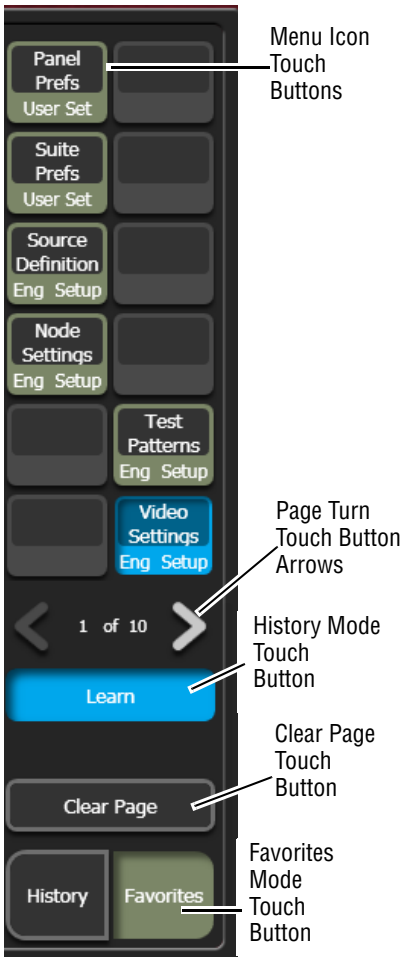
When the **History** mode touch button is selected, up to 45 previously visited menus can be quickly accessed by clicking on the representative menu Icon. The scrolling menu icon window can be cleared by selecting the **Clear History** touch button (Figure 93, left).

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 93, left).

Favorites Mode

Figure 94. 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 94, left).

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

Use the **Left** and **Right** arrows (Figure 94, bottom-left) to navigate through Favorites pages.

To create a Favorites list, perform the following steps Figure 94, 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 94, 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 95. 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.

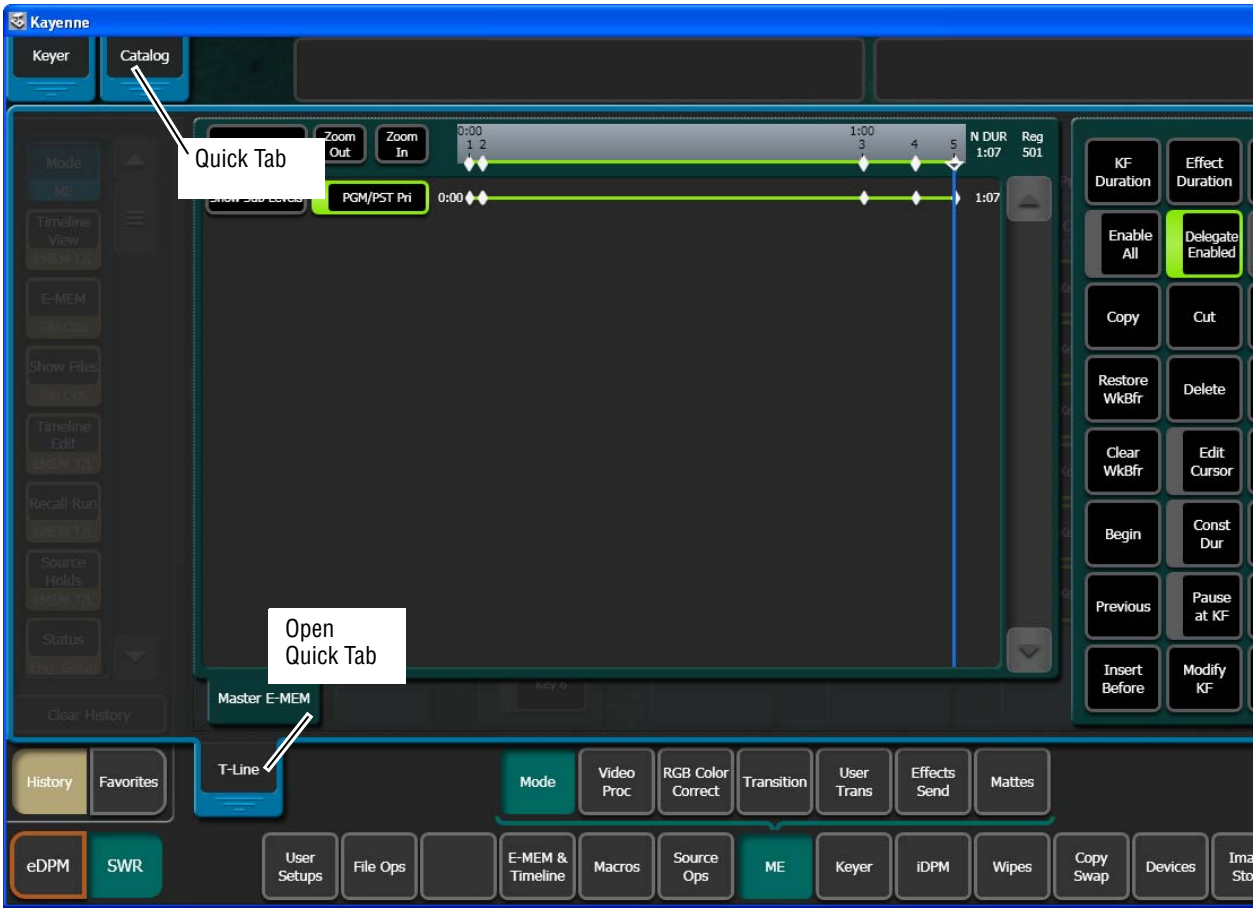
   The button changes to the Last Menu icon.

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 96), 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 in another menu, where the tab was, or on the tab again to close it. In the example in Figure 96, the E-MEM & Timeline (T-Line) menu Quick Tab has been selected.

Figure 96. Menu Quick Tabs Example



Data Pads and Touch Buttons

The Karrera 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 92, 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 92). 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 92). 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 92), or they can select from a group of parameters, and turn light blue to indicate the state of that parameter (**Preset Pattern**, Figure 92).

Menu Top Line

The top line is identical in all the Karrera system menus (Figure 92):

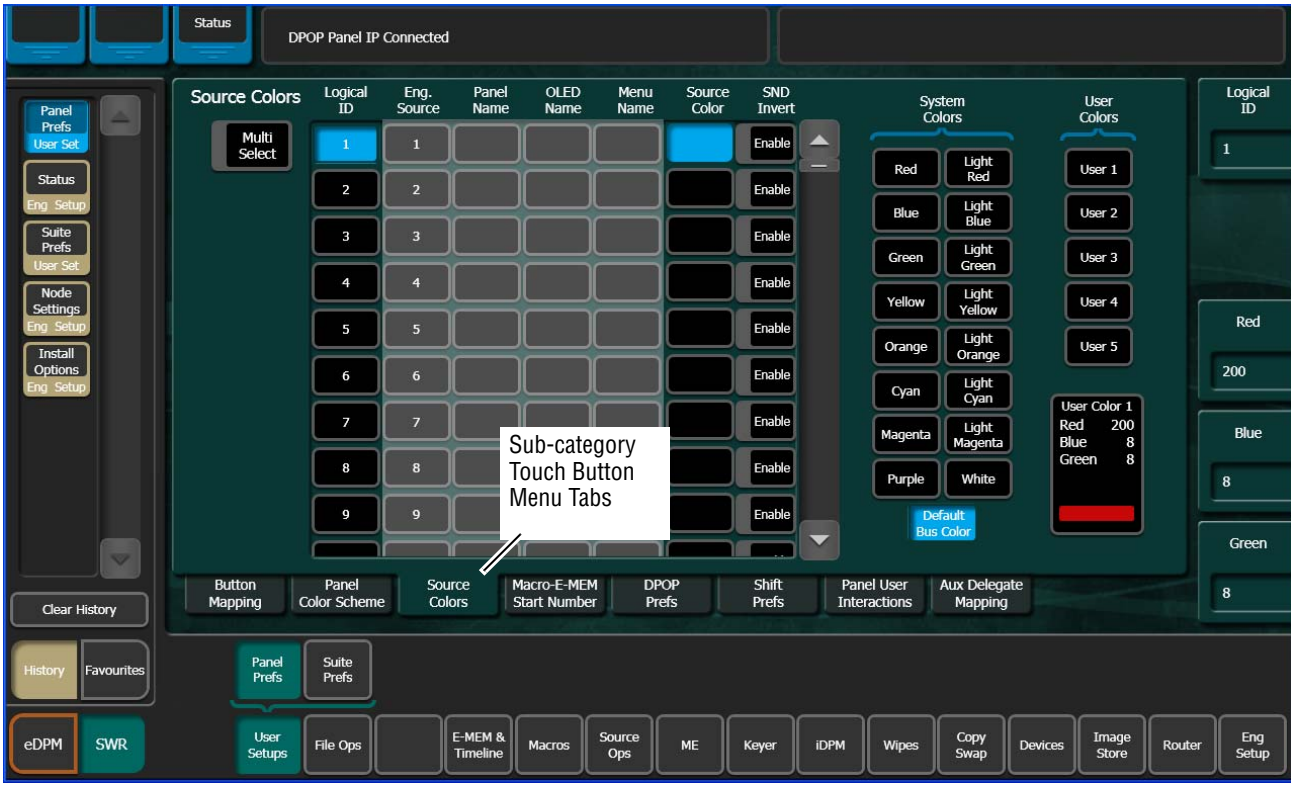
- The left portion of the top line has three **Quick Tabs** (see *Quick Tabs on page 201*),
- The center portion of the top line displays operations status messages, and
- The right portion of the top line is an operator notification area, where messages generated by the Karrera system are displayed.

Menu Category Selection

Menu category selection touch buttons are arranged along the bottom of the screen (**Mode**, **Borderline**, **Key Store**, etc., Figure 92) 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 97).

Figure 97. 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.

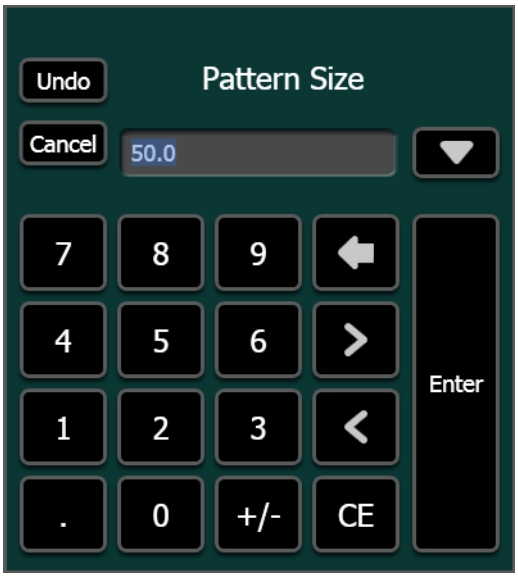
Parameter Control Area

In the Keyer menu example, Figure 92 on page 197, 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 98). You can also use a standard computer keyboard to enter information while this display is active.

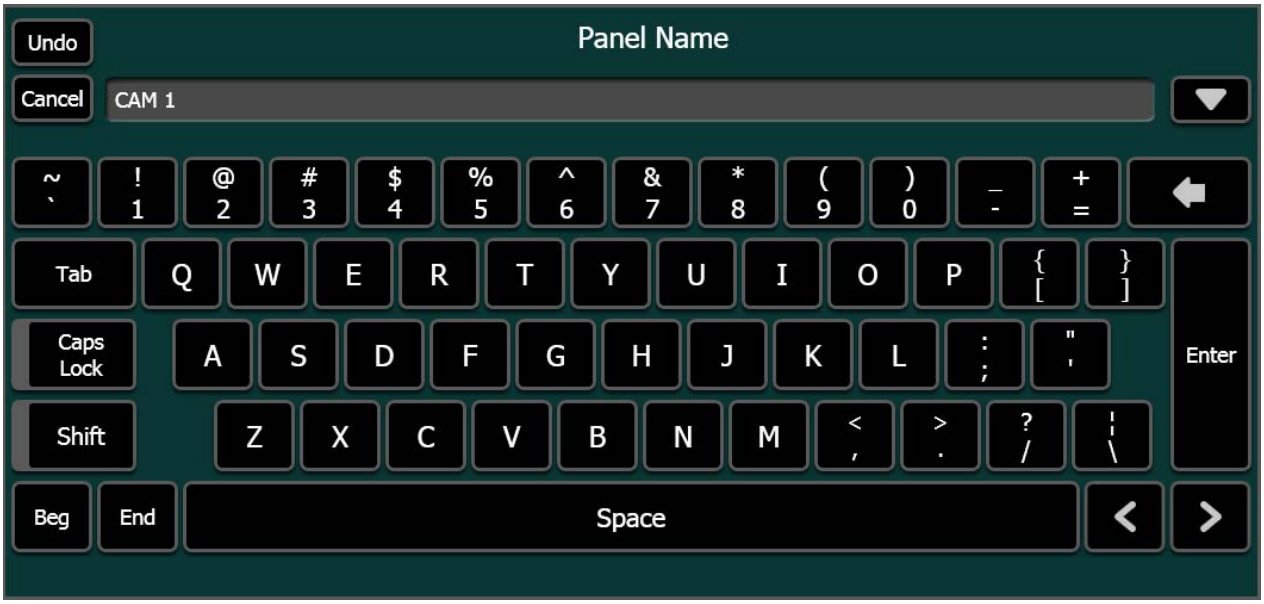
Figure 98. Numeric Keypad



Alphanumeric Keypad

Touching the pad for a text parameter brings up an alphanumeric keypad (Figure 99). You can also use a standard computer keyboard to enter information while this display is active.

Figure 99. Alphanumeric keypad



Scrolling Lists

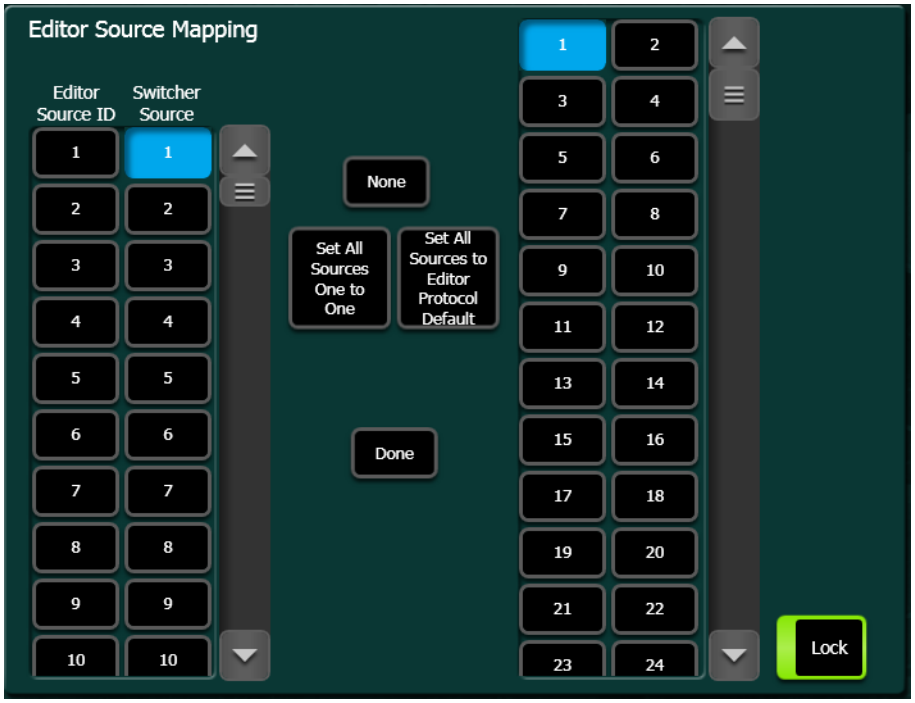
When multiple items are available for selection, scrolling lists are used (Figure 100). On most menus, touching the up and down triangle buttons scrolls the list up or down one item. When the top or bottom of the list is reached, that button goes gray. Touching the green area above or below the white 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 100. Scrolling List

Some menus have two scrolling lists, used to associate an item in one list to an item in the other list (Figure 101). 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 101. 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.

Transitions

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

- Cut
- Mix
- Wipe

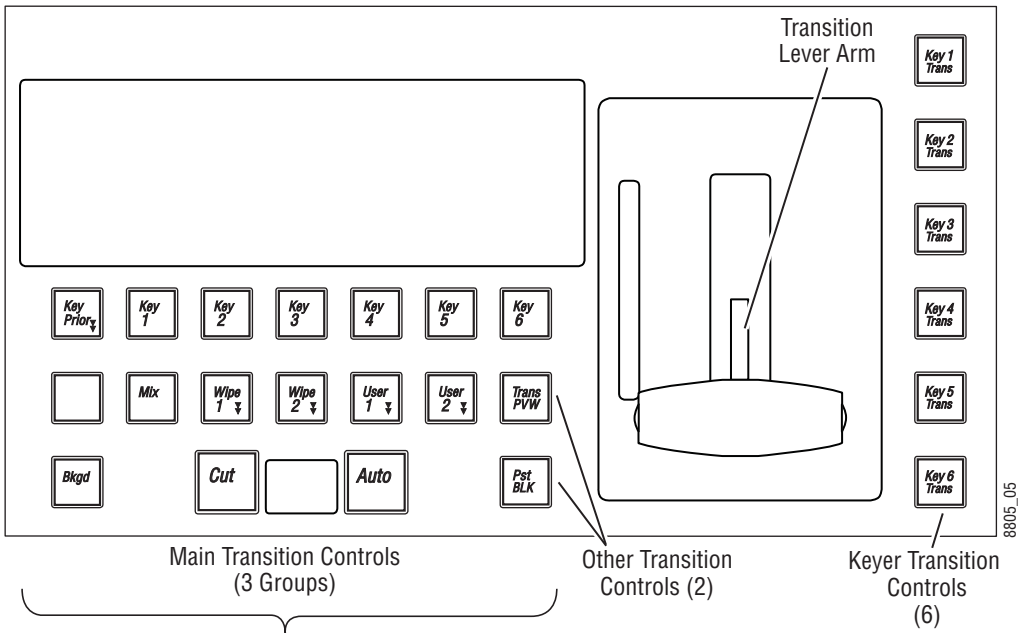
A transition can be applied to the entire picture, or to only the background or keyed elements of the picture, and can include multiple elements.

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

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 102. Transition Area



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 209) with the following added step:
2. Specify the duration of the transition in the Local or Master E-MEM area by pressing the **Menu** button, then **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 127*). Different durations can be specified by repeating this process for each element.

Perform:

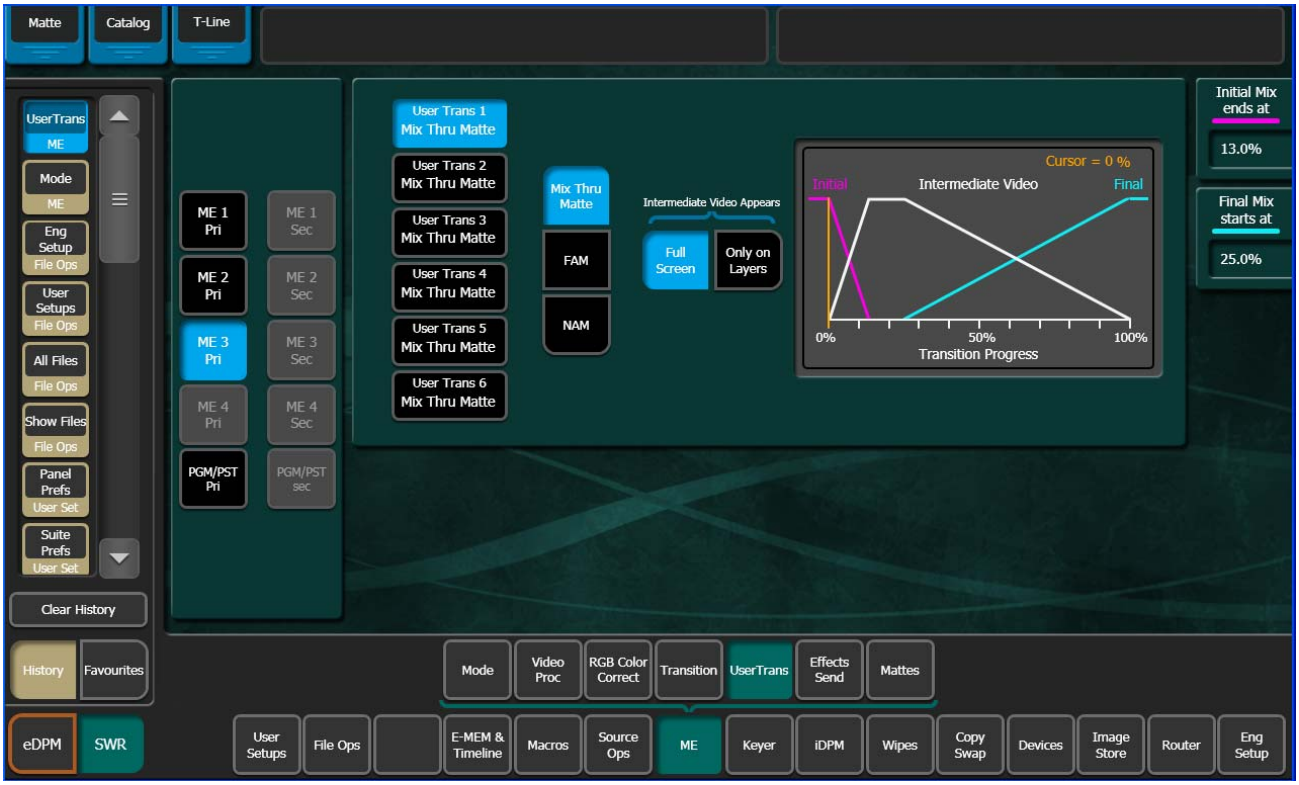
3. Press the **Auto Trans** button. The picture will transition only the elements selected at the specified rate(s). Other elements will remain unchanged.

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, UserTrans menu.
6. Select the **User Trans Mix Through Matte** (1-6) button.
7. In the ME, UserTrans 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 103.

Figure 103. 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 area. 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 area 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

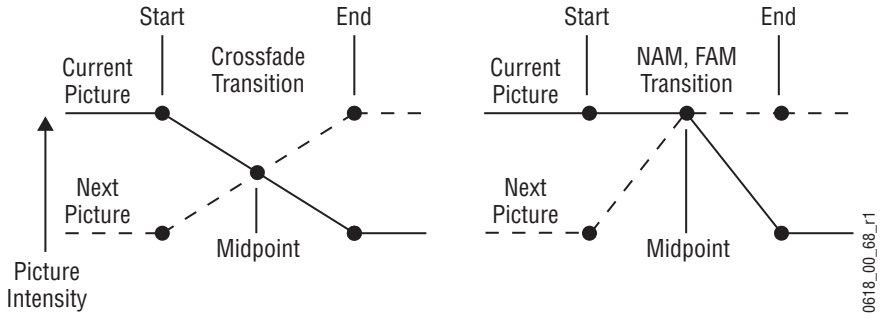
Non Additive Mix (NAM) and Full Additive Mix (FAM) are special mix transitions in the Karrera system.

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 104). 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.

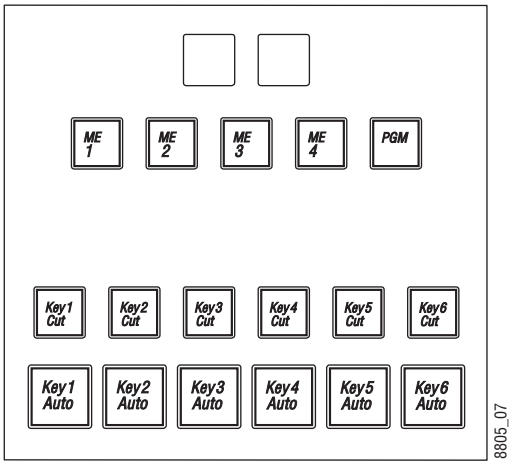
Figure 104. Normal, NAM and FAM Mixes



Transitions from the Master Keyer Transition Area

The Master Keyer Transition area, located on the lower part of the Control Panel between the Transition and Master E-MEM areas, is provided on the Karrera Control Panel to allow cut and auto cut keyer transitions of any delegated ME (Figure 105), from one convenient location.

Figure 105. Master Keyer Transition Area



To perform a keyer cut/auto cut transition, select an ME button (ME1—ME4, PGM) and then press a key cut or auto cut button (the transition rate for Auto Key cut transition buttons is set in the delegated ME).

The ME buttons tally the color assigned to the ME (as with the Multi-Function area); high tally for the selected ME, low tally if not selected. If the ME is not available to the suite, no button color is present.

Transitions Using E-MEM

Transitions can also be built into E-MEMs. See *E-MEM Transitions* *on page 229*.

Aux Bus Transitions

You can perform Aux bus transitions and mix or wipe between sources on an Aux bus. Karrera 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 106).

Figure 106. Resource Allocation Menu

Trans Lock Button

The **Trans Lock** button in the Source Ops, Aux Buses menu (Figure 107) 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).

Figure 107. Trans Lock Button—Source Ops, Aux Buses Menu

Setting Wipe Transition Parameters

1. Go to the Wipes menu in the Karrera Menu Panel or press the **Wipe** button in the Multi-Function area and set the wipe parameters for the ME(s) you will use for the aux bus.
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

Note The DoubleTake option is required for Aux bus transitions.

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.

Aux bus transitions can be recalled in a macro but are not E-MEMable, however the macro can be embedded in an E-MEM
(see *Macros and E-MEMs* *on page 143*).

Aux Bus Transitions

1. Go to the User Setups, Suite Prefs, Resource Allocation menu (Figure 106).
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**.
5. Select an Aux bus in the Source Ops, Aux Buses menu.
6. Press the **Mix** or **Wipe** button.
7. Press the **Trans Lock** button if you wish the mix/wipe transition to remain selected.

Note If locking transitions ON with the **Trans Lock** button, you must perform at least one transition from the menu to initiate the Aux bus mix/wipe transition.

8. Touch the allocated Aux bus source in the scolling source list (Figure 107) to execute the transition.

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).

Section 7

Advanced Operations

E-MEM & Timeline Operation

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 effect editing, using the Master Timeline for the examples.

Inserting a Keyframe

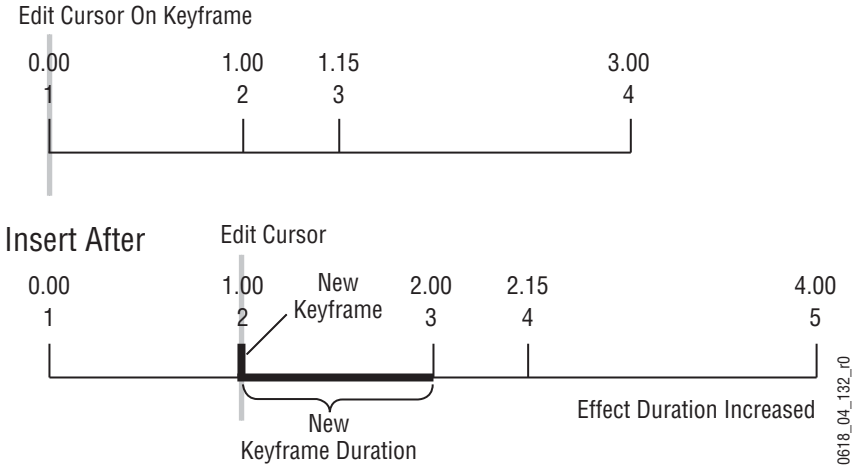
The Insert Before and Insert After operations are used to insert new keyframes onto the timeline of an effect. The result of the Insert operation varies depending on whether the edit cursor is on a keyframe or between keyframes (on the path).

An inserted keyframe has both work buffer values and a duration. The keyframe duration is calculated by the Karrera 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 222). 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 108).

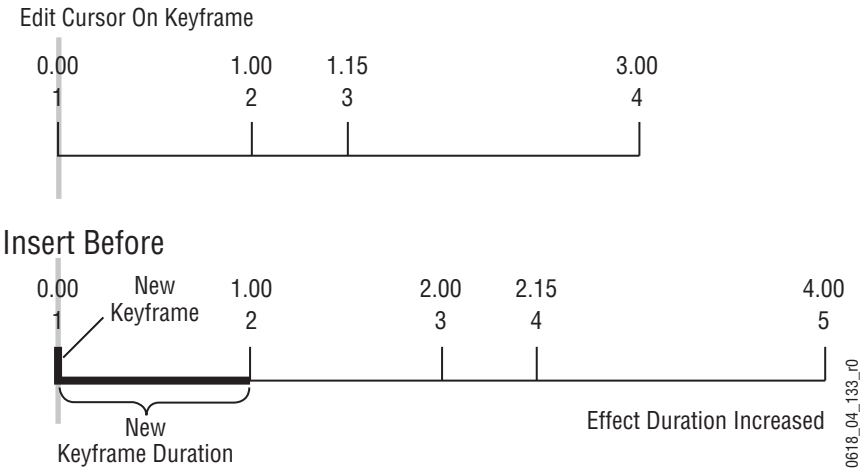
Figure 108. Insert After



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 222). Note that keyframes are renumbered after the insert. In the example, what was keyframe #1 becomes keyframe #2 (Figure 109).

Figure 109. Insert Before



Using Insert After or Insert Before on a Keyframe

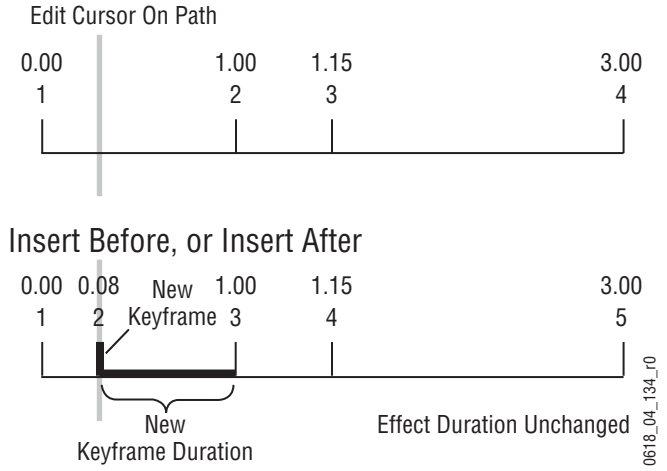
In an existing effect, an Insert After at the keyframe 2 location would seem to be the same as an Insert Before at the keyframe 3 location, but this is usually not true. The work buffer material inserted into an effect is typically

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 110. 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 (in Master E-MEM Area)

You can build an entire effect by inserting every keyframe on the path in the Master E-MEM area. 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**, **Enter** 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**, **Enter**, set up the third keyframe and add it.
5. Press **GoTm**, **3**, **•**, **Enter**, set up the last keyframe and add it.

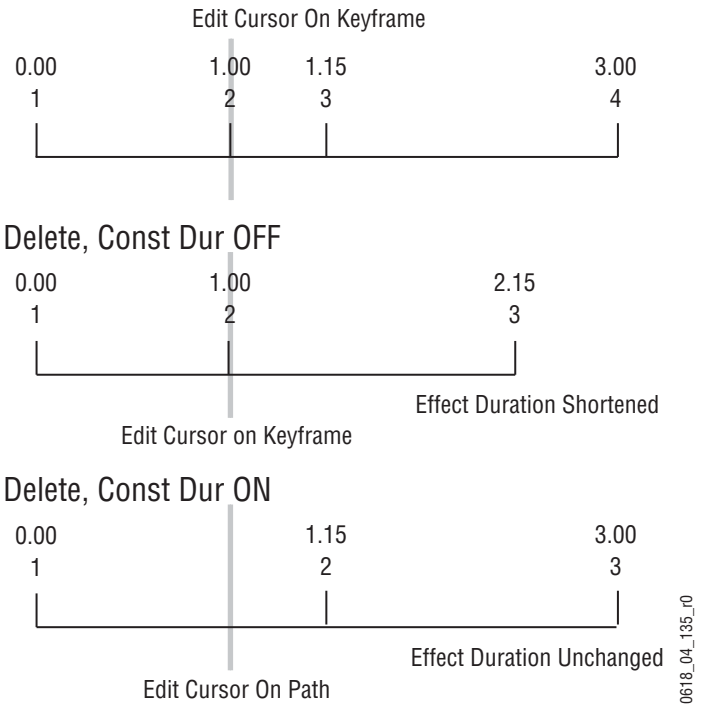
The effect will now exactly match the recorded material. Using E-MEM, you can run the effect and the recording simultaneously (see *E-MEM Control of External Devices* *on page 158*).

Deleting a Keyframe

In the menu, 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 111).

Figure 111. 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

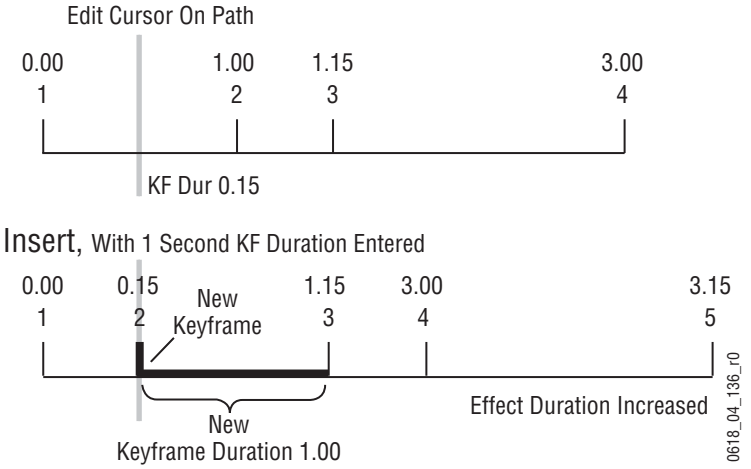
Pressing the **KF Duration** button in the **E-MEM & Timeline** menu so it is illuminated assigns the keyframe duration value to the keypad. Once assigned, keyframe durations will be displayed on the Master E-MEM readout. When the cursor is moved from keyframe to keyframe, the value will change to reflect 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 112.

1. Move the edit cursor to the desired location in the effect, in this case on the path midway through a one second keyframe.
2. Press **KF Duration** button.
3. Type a **1.0** duration value on the keypad and press **Enter** to change the value displayed on the readout.
4. Press **Insert Before** or **Insert After** to insert the new keyframe with the specified duration.

Figure 112. Insert KF with Duration Specified

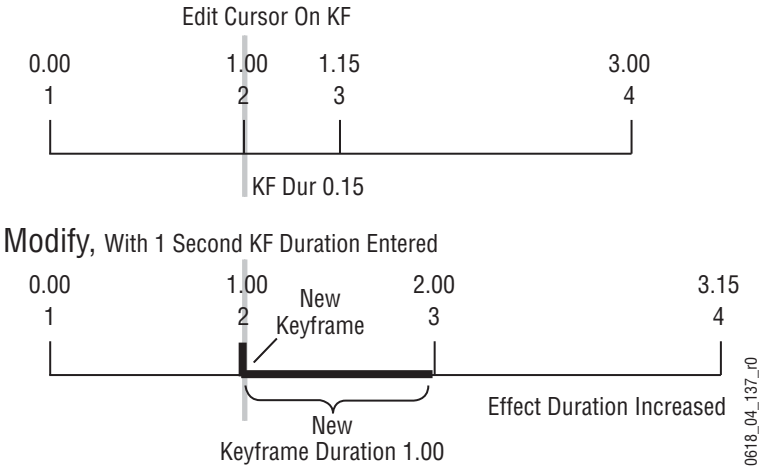


Modifying an Existing Keyframe Duration

The duration of an existing keyframe can also be modified. For example, the following procedure was used for Figure 113.

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.
2. Press the **KF Duration** button to display the keypad.
3. Type a **1.0** duration value on the keypad and press **Enter** to change the value displayed on the readout.
4. Press **Modify** to apply the new duration value to the keyframe.

Figure 113. 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

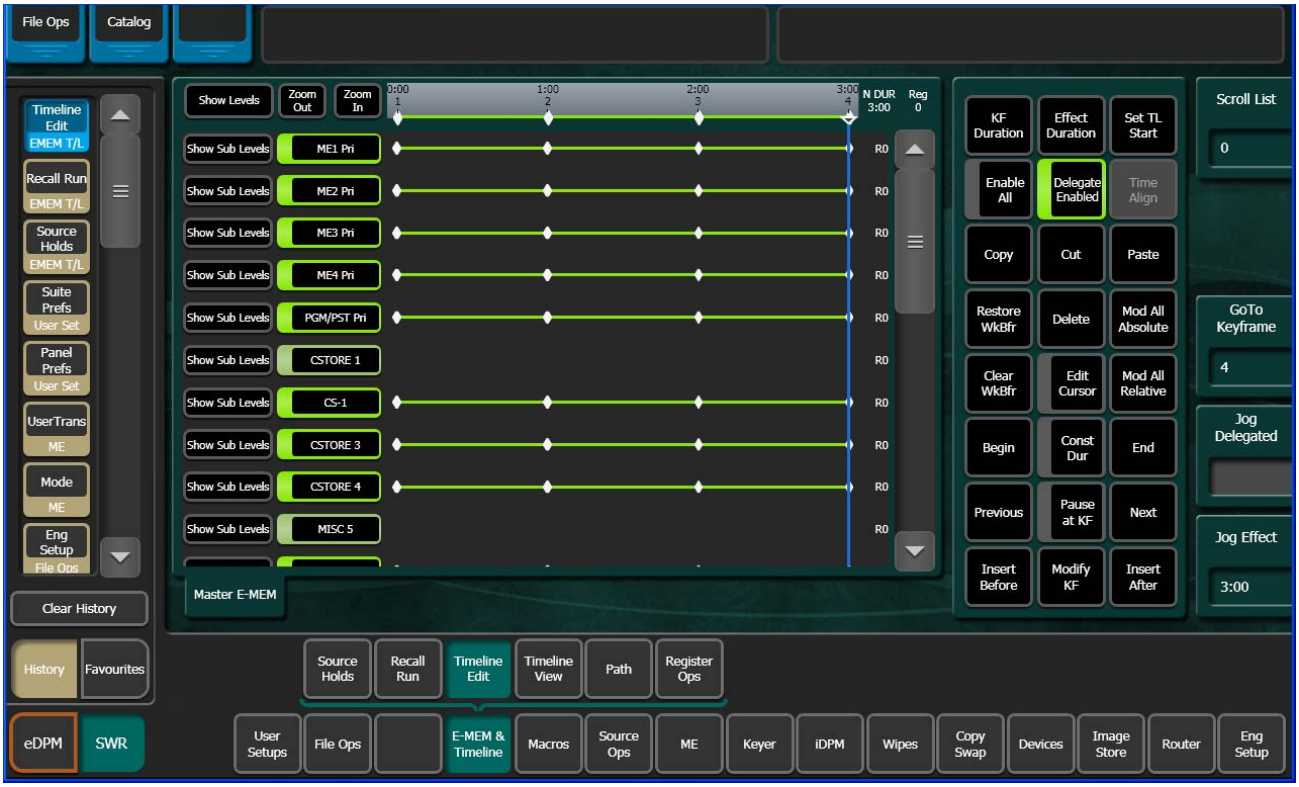
1. Select the effect whose duration you wish to change.
2. Touch the **Ef Dur** button on the Master E-MEM area.
3. Type a new duration in Seconds • Frames • Field format and touch **Enter**. Entering a single value defaults to frames, and the third Field value is optional. Entering a **1** for the Field value specifies odd field. For example, **1.0.1** indicates 1 second, 0 frames, 1 field.

Note 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 114).

Figure 114. 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**.

Note Entering only a • restores the natural duration of the effect.

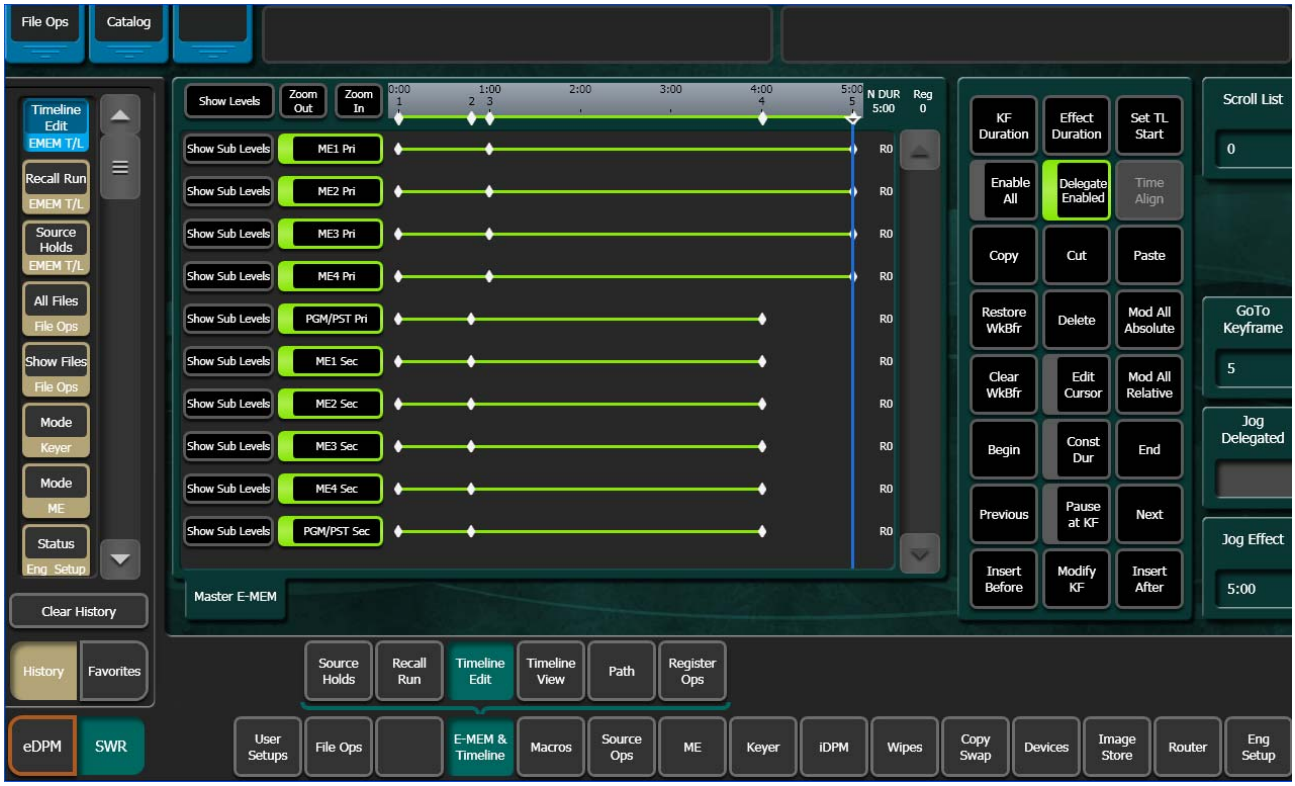
4. The new Forced Duration (F (Forced) DUR 8:00) of the event is showing at the right end of the white Duration box at the top of the Timeline View pane.

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 115 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 115. 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.

Note When using the Modify All Absoulute feature, it is recommended that only one parameter at a time is modified to prevent, for example, all keyframes being moved to the same position.

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 area. 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 area Enable buttons for the desired groups of levels, then press **Lrn**, **Auto Recall**.

To set or change the Effect Dissolve rate:

Press **Lrn**, **Diss**, **Rate** (in the Master E-MEM display), in the Master E-MEM area, type seconds, frames, or fields, then press the button for the register you wish to apply the effect dissolve rate.

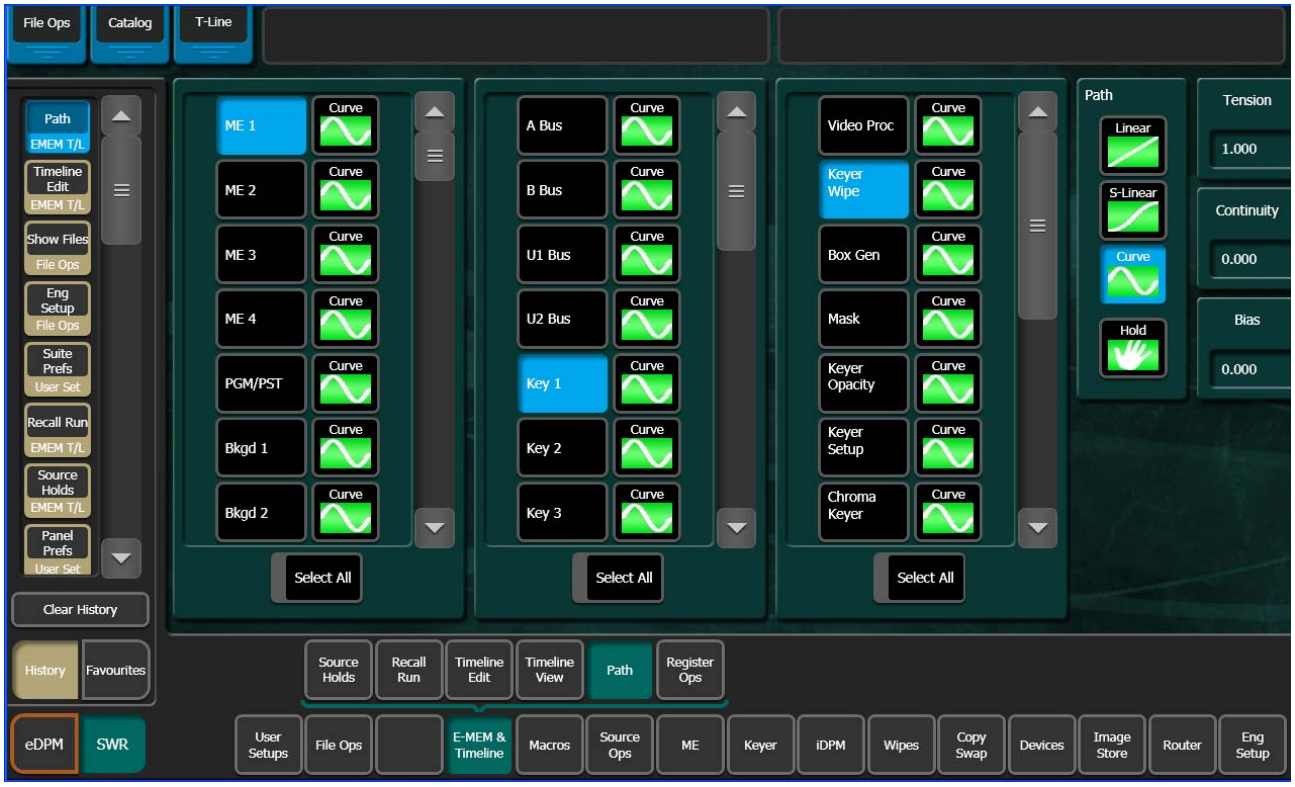
Editing Path Control

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 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 116 the keyer wipe of Keyer 1 of ME 1 has been selected for path control editing.

Figure 116. 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.

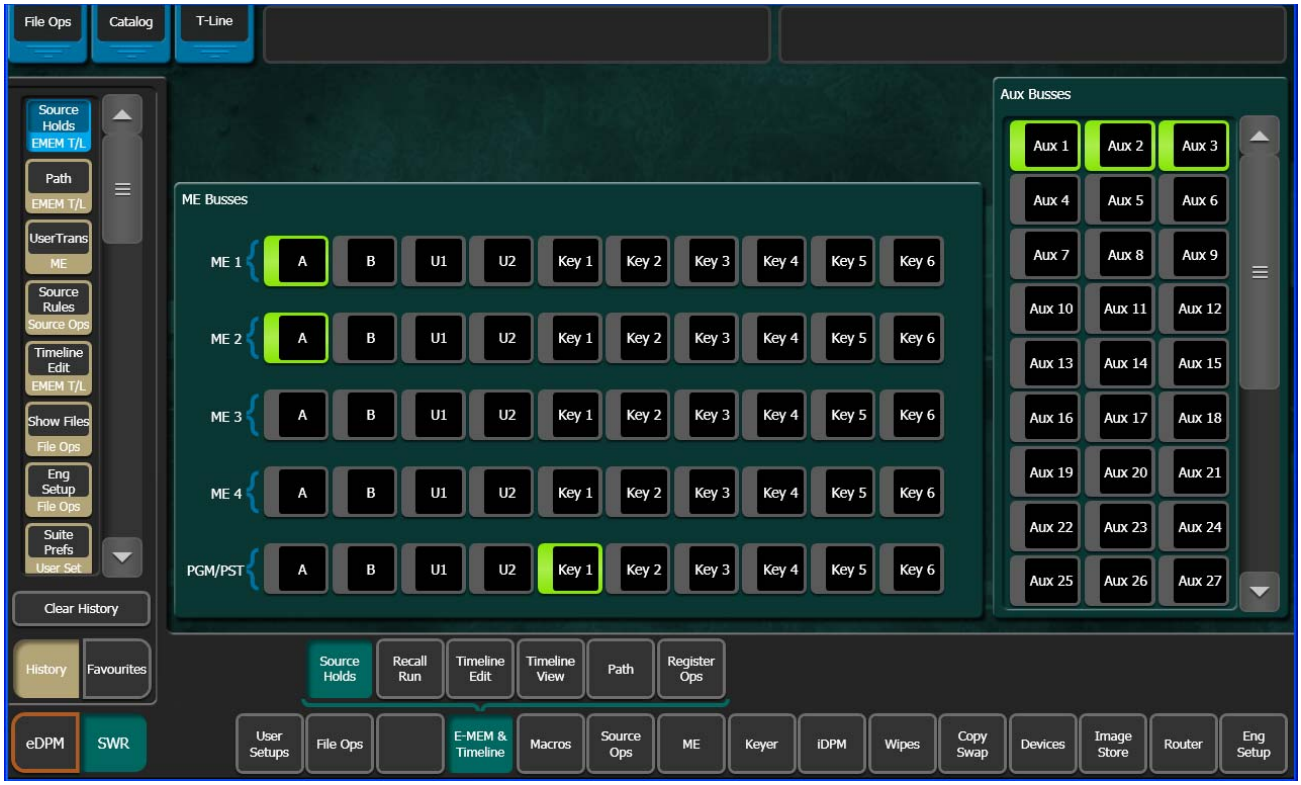
Source Holds in Effects

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 117).

Figure 117. Source Holds Menu



3. Press **Lrn** on the Karrera Control Panel (Master or Local E-MEM area), 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 Karrera 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 Karrera 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 Karrera 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 Karrera 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 Karrera 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 Karrera 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

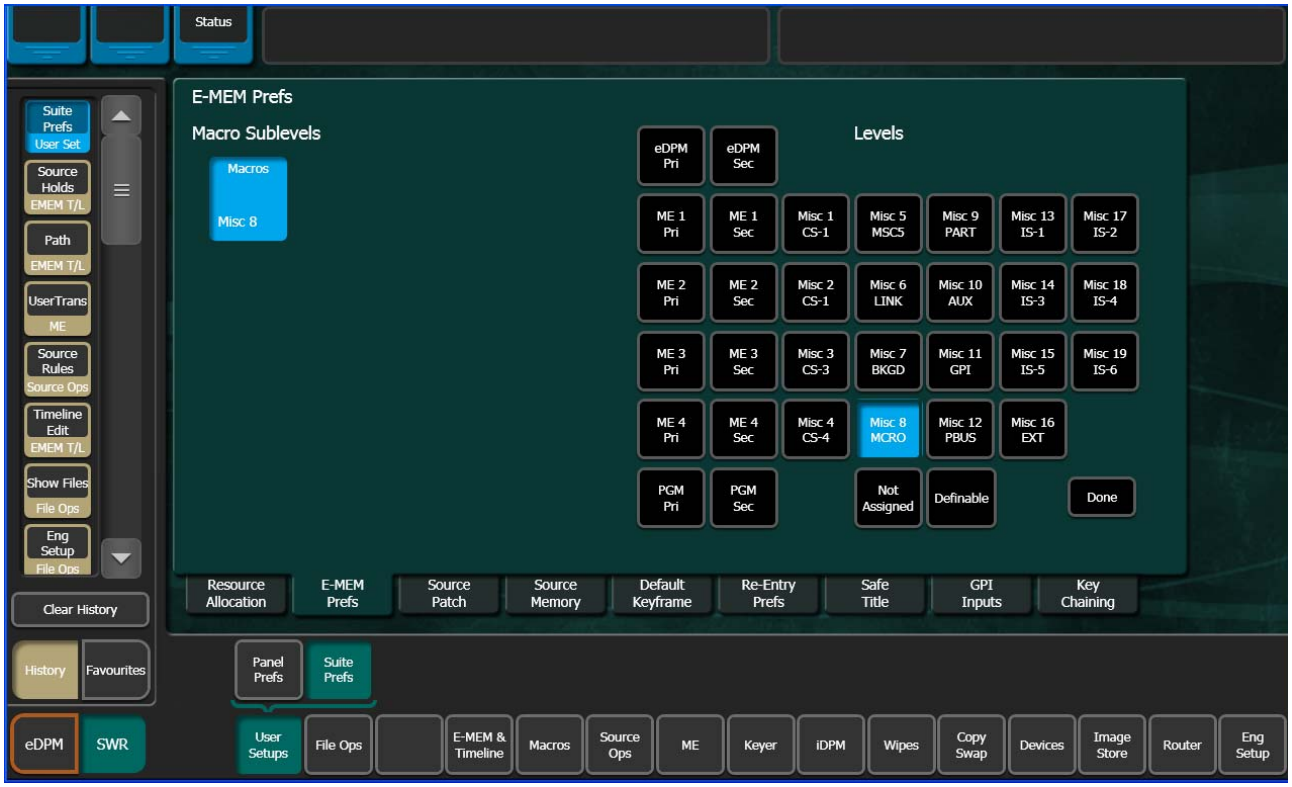
A macro can be added to an E-MEM keyframe and be executed when that E-MEM register is recalled and run. Only the macro register number (and its Enabled state) is saved to the E-MEM register, not the actual macro commands. If a macro is subsequently changed, any E-MEM specifying that macro register will run the modified macro. See *E-MEM Recalls in a Macro on page 143* 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 118).

Figure 118. 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 119).

Figure 119. Macro Catalog Menu

1. Touch the **Macro No.** data pad in the **Macro in E-MEM** pane to open the Macro selection menu (Figure 120).

Figure 120. 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.

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 only.

Excluding Sub-Levels in a Level

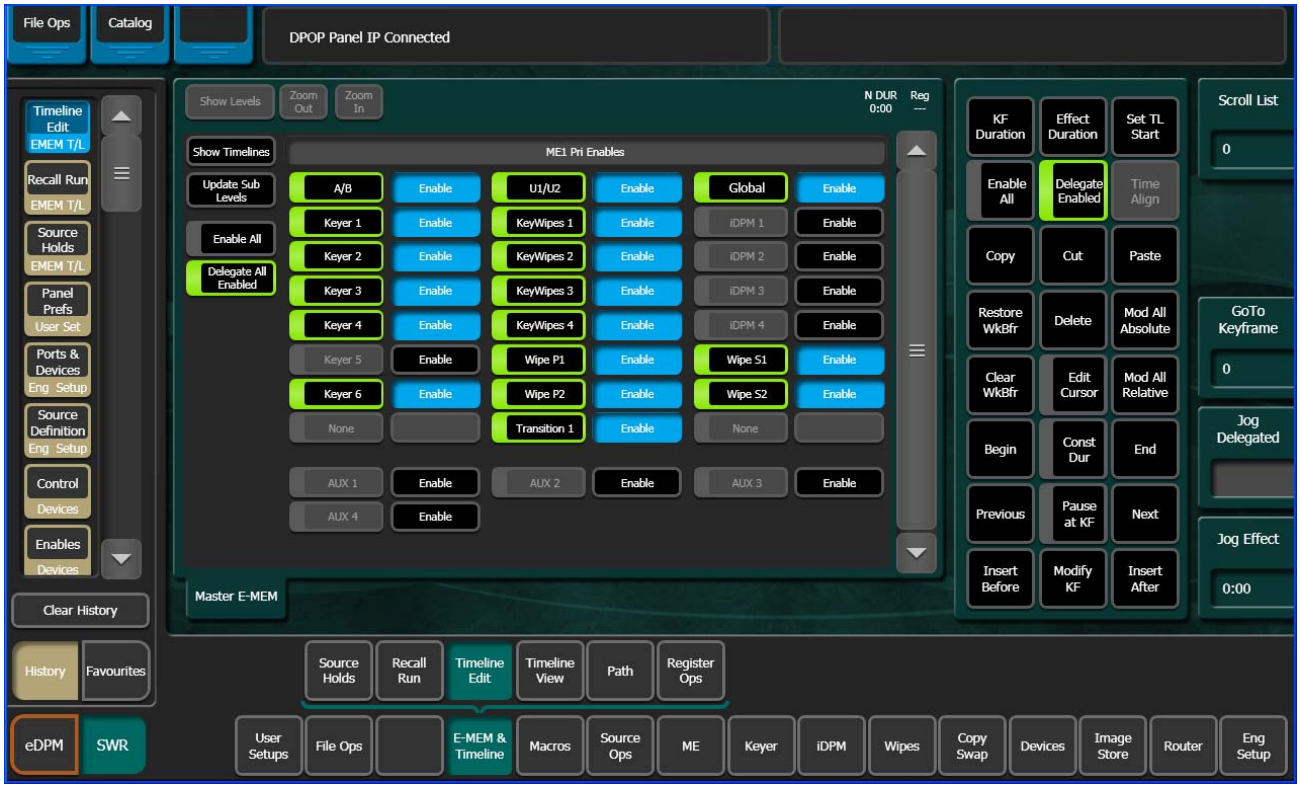
1. Go to the E-MEM & Timeline, Recall Run menu and touch the buttons of the switcher levels you want to enable for defining sub-levels (or touch the **Select All** toggle button. Alternatively, you can select the levels on the Master E-MEM area.

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 121). The Enables menu is displayed for that level.

Figure 121. Timeline & Edit Menu, Show Sub Levels

3. Touch the Enable button of any sub-level to disable that sub-level (Figure 122) from being included in the current E-MEM register.

Figure 122. 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 area and selecting a register.

Note Once any sub-levels have been disabled, the **Lrn** button in the Local and Master E-MEM area 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 keyframes (Figure 122).

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.

Note Define E-MEM is not keyframeable.

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.

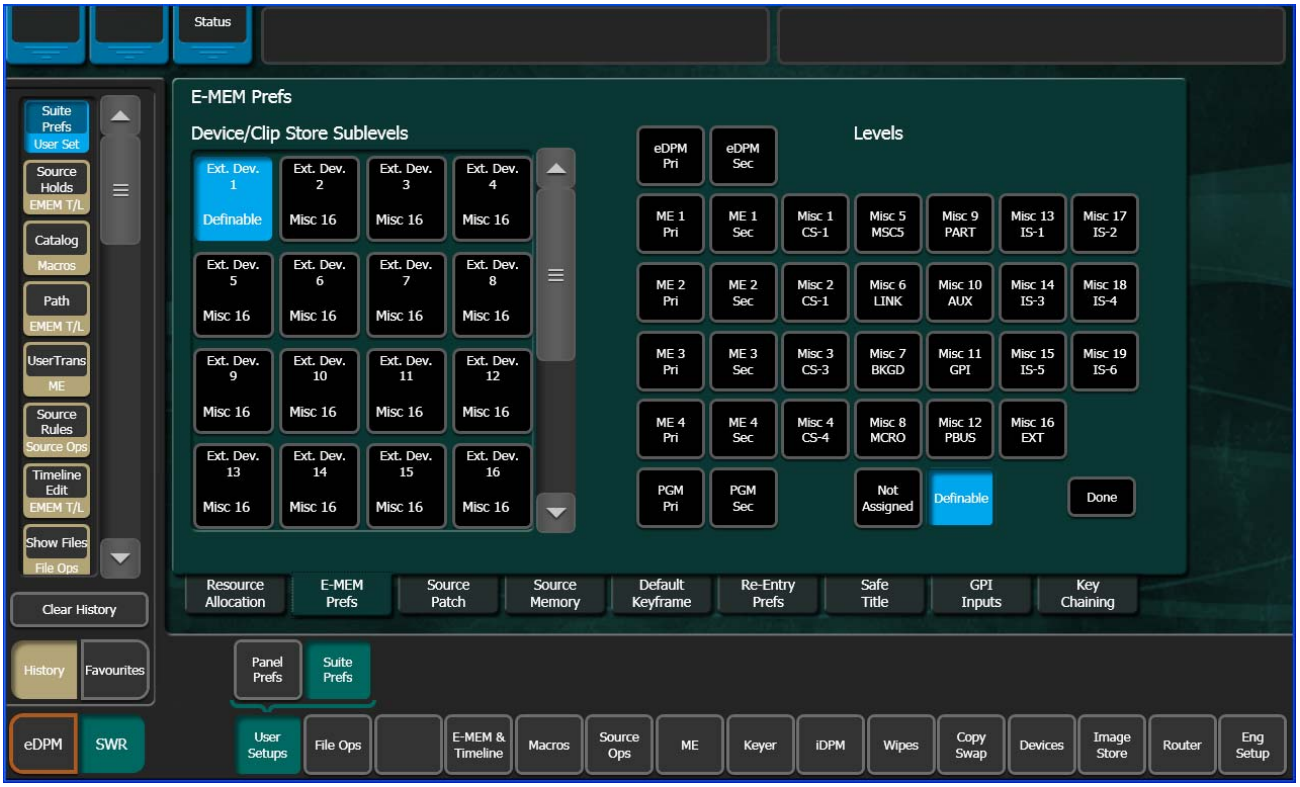
With Karrera, sub-levels which are set to be defined can be 'enabled' in any level.

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 123).
3. Touch the **Definable** button, lower right in the menu (Figure 123).
4. Repeat steps 1 and 2 for each sub-level you wish to make definable.

Figure 123. 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 124):

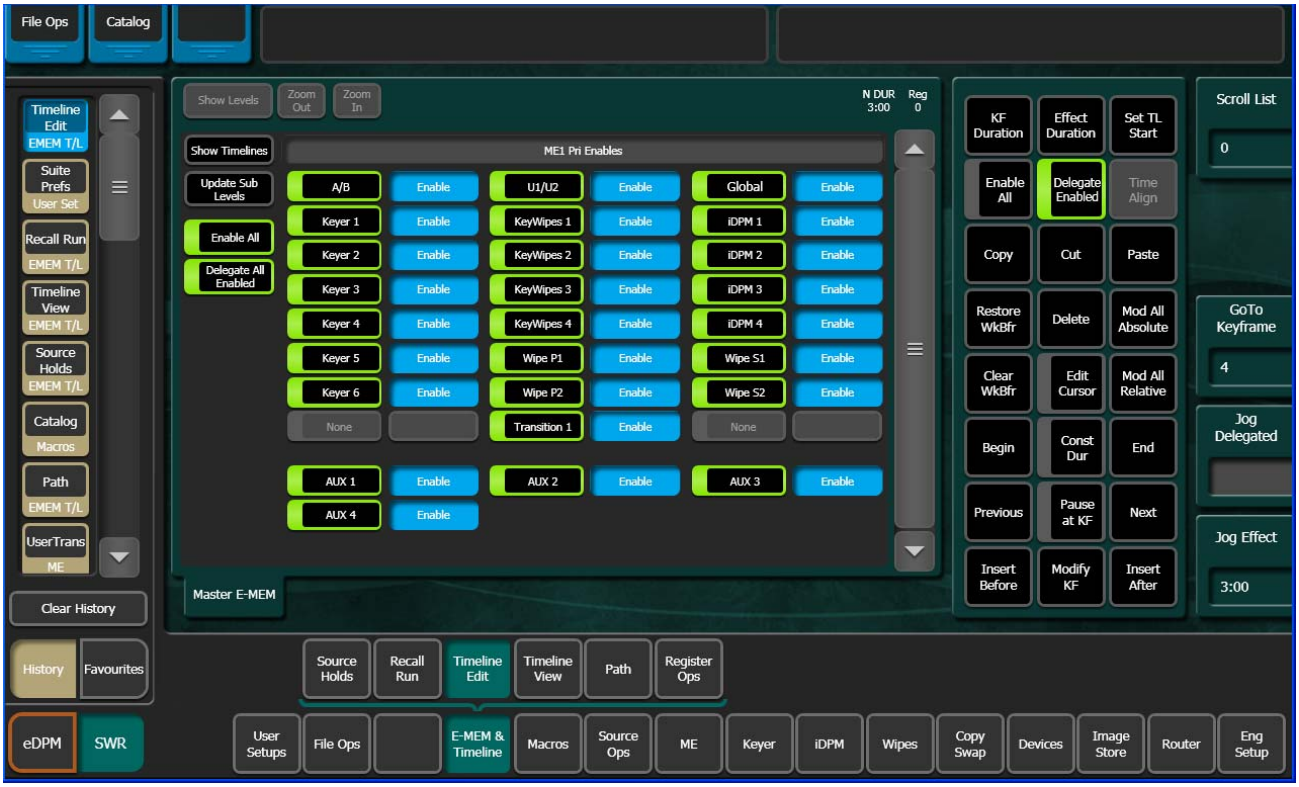
1. Go to the E-MEM & Timeline, Timeline Edit menu.
2. Touch the **Show Timelines** button.
3. Touch the **Show Sub Levels** button corresponding to the level you wish to define-sub-levels.
4. Touch the **Enable** button corresponding with the sub-level you wish to enable.
5. Learn the effect:
   a. For a new register, press and hold the cyan (light blue) **Lrn** button in the Local or Master E-MEM area, 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 124. Aux 1, Aux 2, Aux 3, and Aux 4 have been appended.

Figure 124. 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 Karrera menu will display a defined and delegated sub-level with 'yellow' (Figure 125) 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.

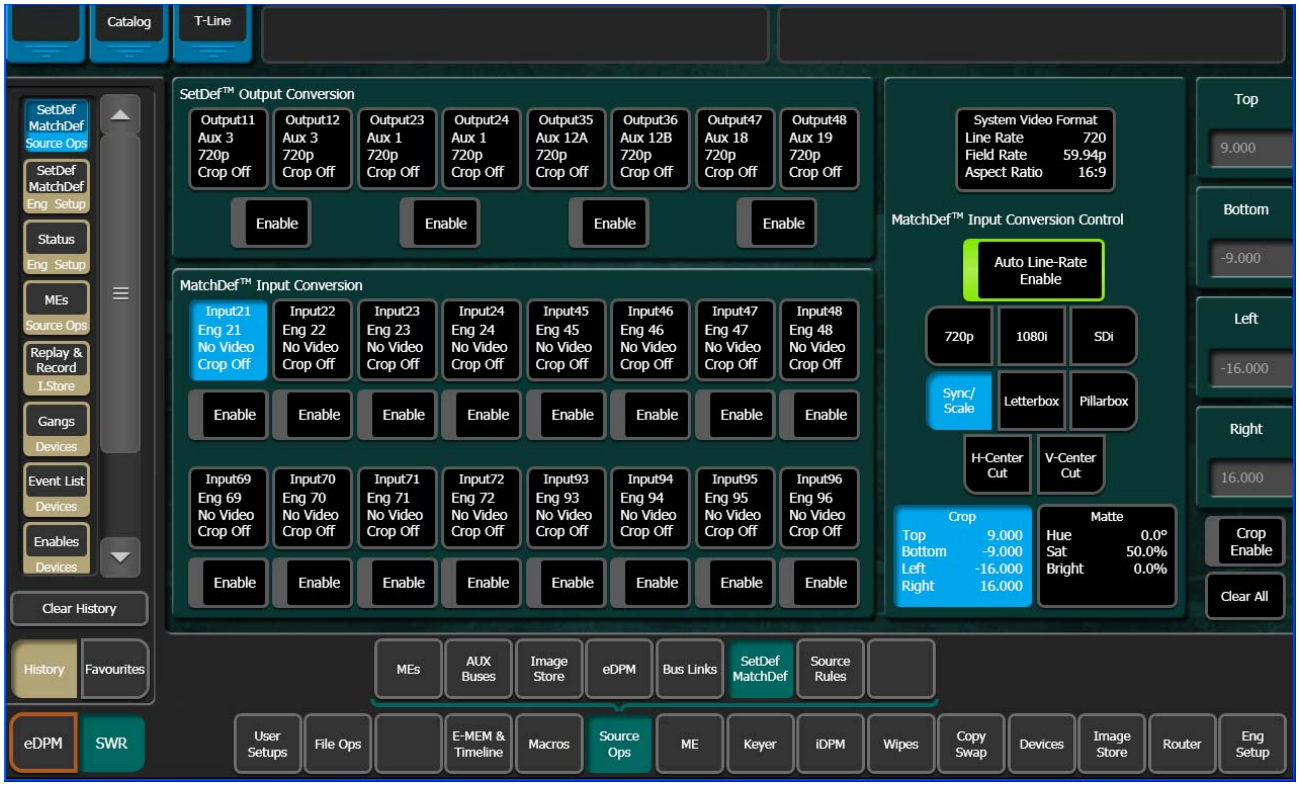
Figure 125. Timeline Edit Menu, Define E-MEM, Sub-level Conflict

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 126). For more information about E-MEM control, see *Basic E-MEM Operations* *on page 127*.

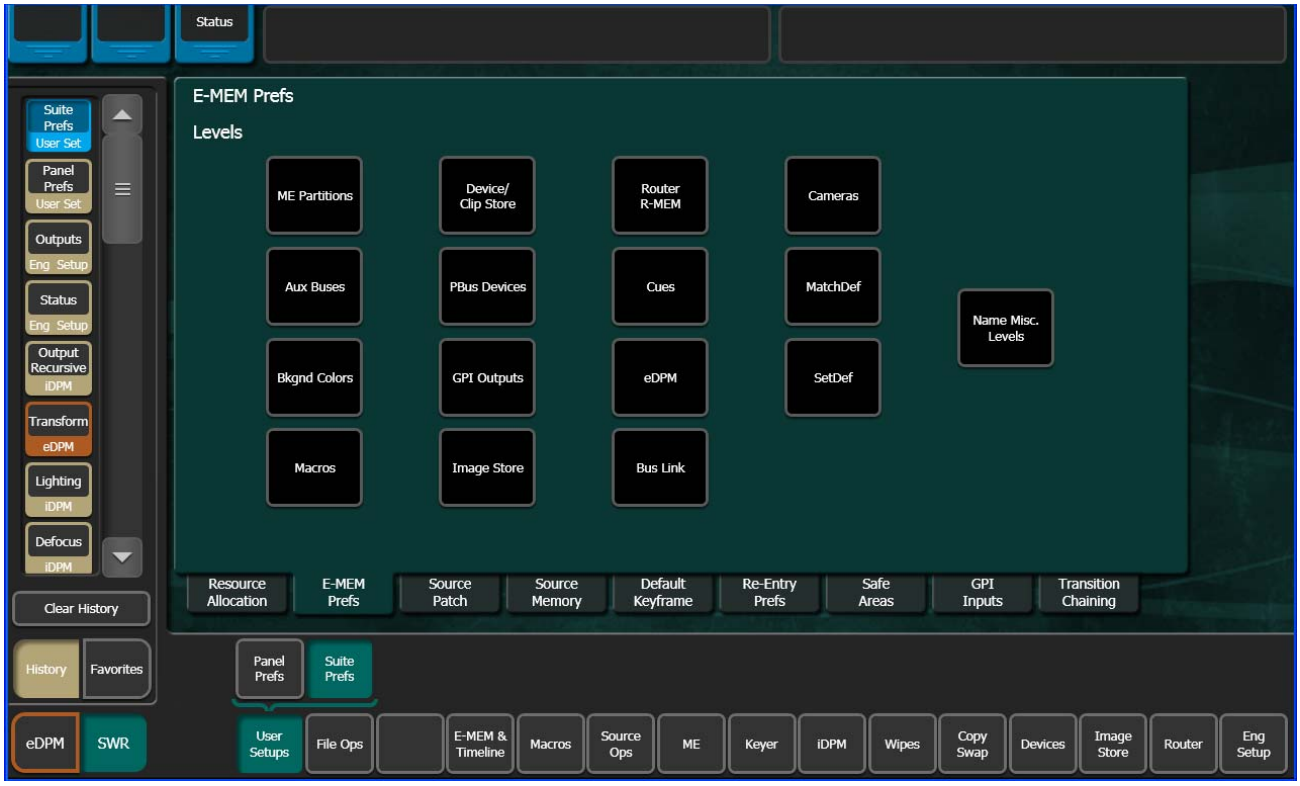
SetDef and MatchDef are E-MEMable but not keyframeable, therefore each will only be recalled on the first keyframe.

Figure 126. Source Ops, SetDef MatchDef Menu



SetDef and MatchDef sub-levels are selected from the User Setups, Suite Prefs, E-MEM Prefs menu (Figure 127).

Figure 127. E-MEM Prefs Menu

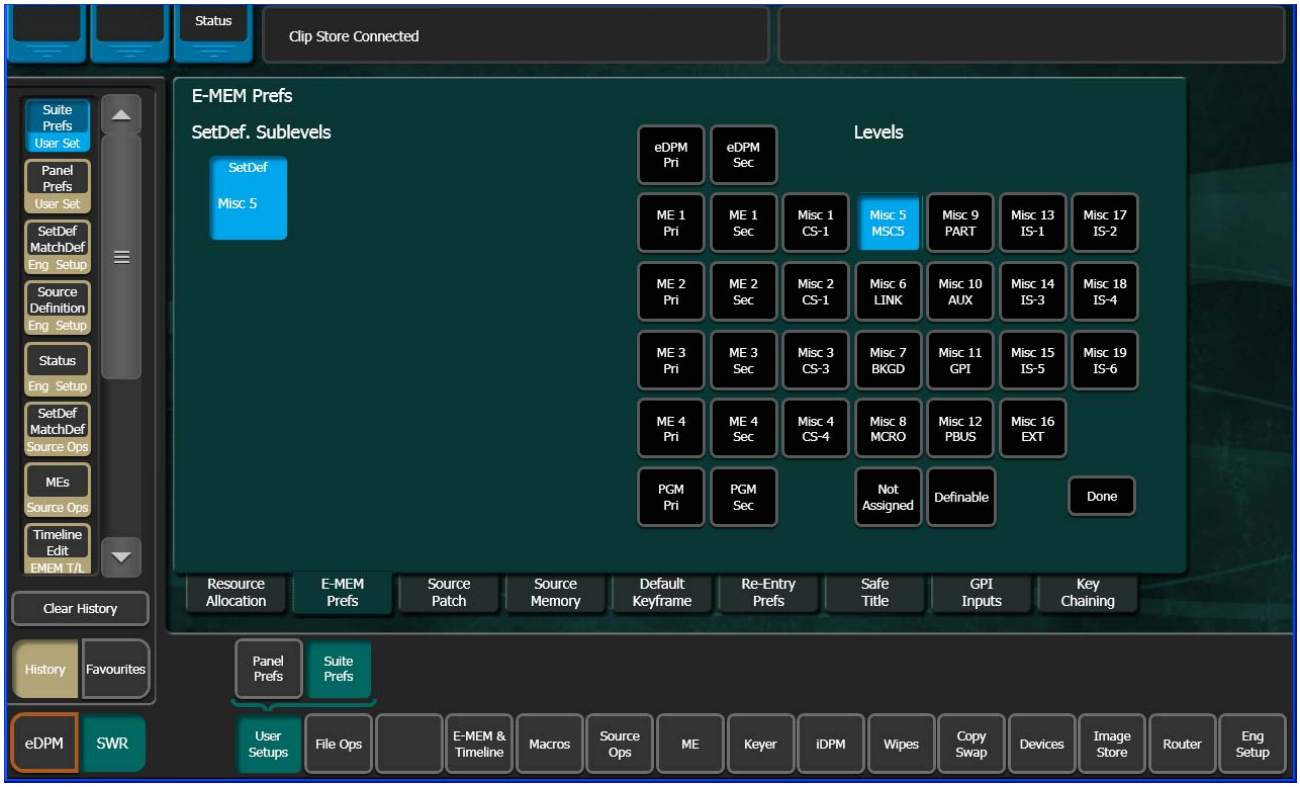


SetDef

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 127), the SetDef sub-level menu is displayed.

Figure 128. 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 127), the MatchDef sub-level menu is displayed.

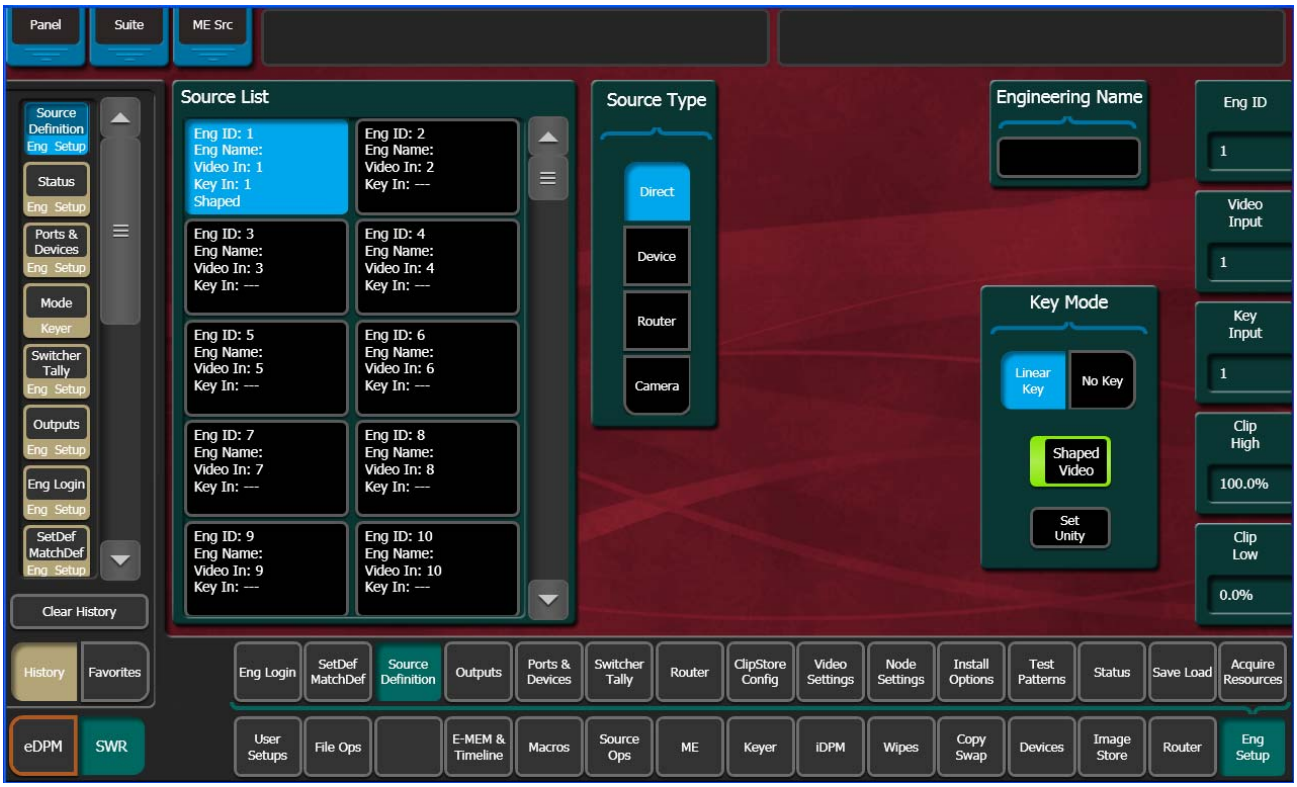
Figure 129. MatchDef Sub-level Menu

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

Additive Keyers

In the keyer circuitry of the switcher, unshaped video is processed using a multiplicative key and shaped video is processed using an additive key. In the normal course of operation, this is done automatically. Shaped video can be turned on or off (unshaped video) for a source's linear key in the Key Mode pane of the Eng Setup, Source Definition menu (Figure 130).

Figure 130. Eng Setup, Source Definition Menu



However, there are instances when manual control is useful:

- A source's key is not properly defined and you wish to correct the shape by overriding the key type, or
- You wish to key an artistic effect by changing the video to the "incorrect" video shaping.

Additive Keyer Operations

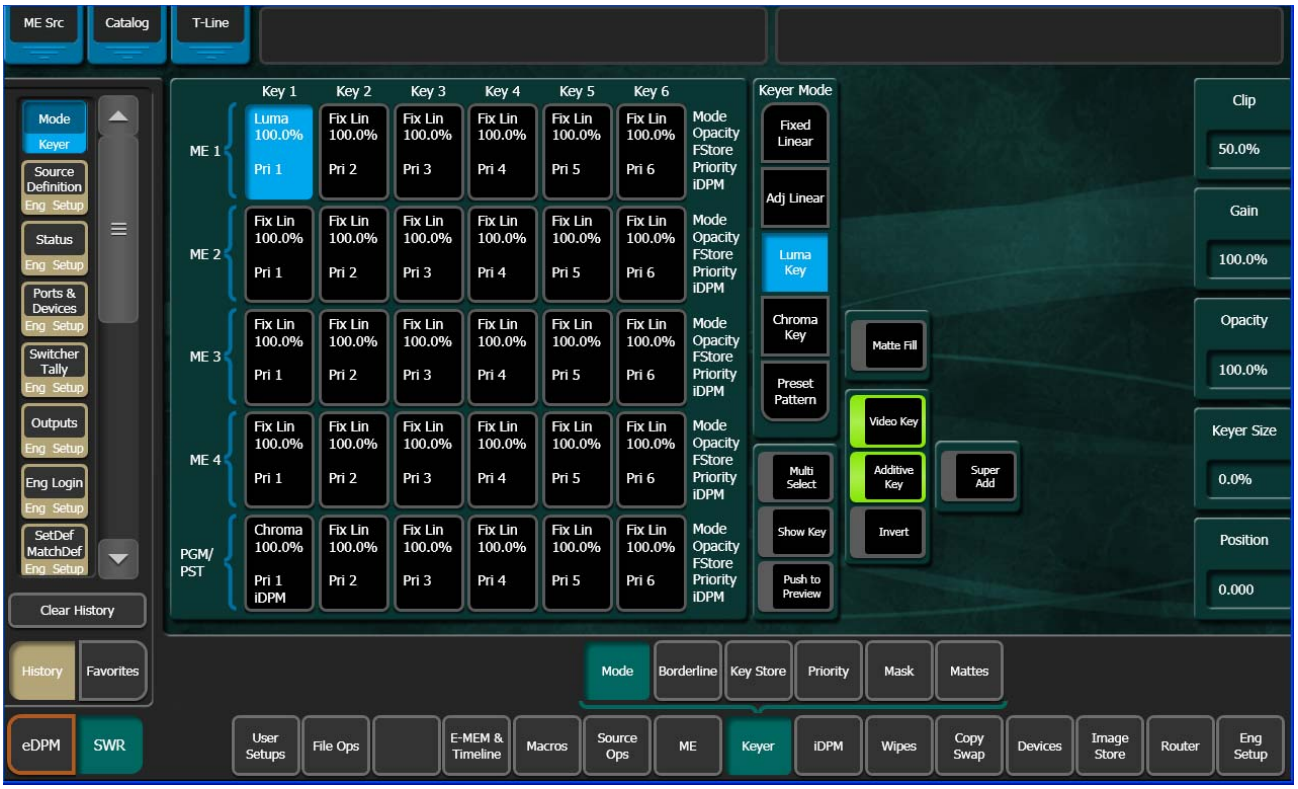
Additive Keyer buttons, including a button for Super Additive are provided in both the menu and in the Multi-Function area of the Control Panel.

From the Menu

Additive Key and **Super Add** buttons are provided in the menu for Fixed and Adjusted Linear and Luma keys so you can override the video shape selected in the Source Definition menu (changes from Auto to On or Off) for that source.

In the menu, the **Additive Key** button is located in the Keyer, Mode menu (Figure 131).

Figure 131. Keyer, Mode Menu—Additive Key



Note Selecting or re-selecting any Keyer Mode button (**Fixed Linear**, **Adj Linear,** or **Luma Key**) will reset the shape type to "Auto", i.e. as defined in the Source Definition menu.

1. Touch the desired Key.
2. In the Keyer Mode pane, touch the **Fixed Linear**, **Adj Linear**, or **Luma Key** buttons if not already selected.
3. Touch the **Additive Key** button to turn it to On (illuminates green).
4. Touch the **Additive Key** button again to turn it Off.

The key will remain in the selected On/Off state.

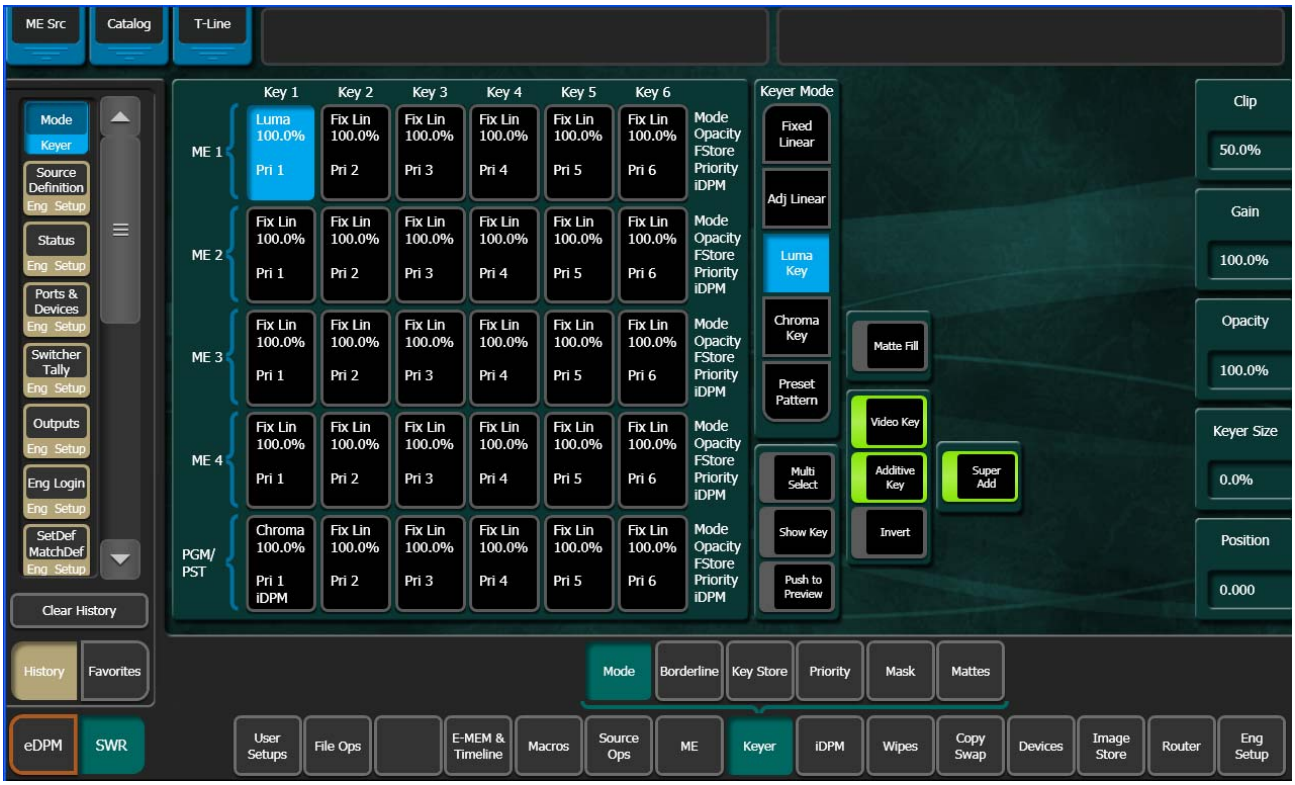
Super Additive

"Super Additive" mode replaces the key signal of the selected source with a full field of black, while in the additive key mode. The opacity of the fine and semi-transparent video is greatly increased based on its luminance. This is very much a "fashion-statement" kind of keying which has been very popular with entertainment shows. Additionally, Super Additive mode is very useful for keying over credits and other text because it brightens and increases transparency.

When Additive Key mode is On, the **Super Add** button is displayed (Figure 132) and defaults to Off. Touch the **Super Add** button to turn it On/Off.

The **Super Add** button is also returned to "Auto" state by selecting or re-selecting a Keyer Mode button.

Figure 132. Keyer, Mode Menu—Additive Key/Super Add Button



From the Control Panel

In the Multi-Function area of the Control Panel, the **Addv Key** button is provided. For Super Add, DPOP the **Addv Key** button (**Addv Key** button changes from high tally white to high tally orange).

Macro Editor

Macro Editor is a powerful part of the Karrera. The Macro Editor can communicate with the Karrera Frame or the Karrera 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 Karrera 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 Karrera 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 Karrera Frame Simulator will be installed automatically in the Grass Valley directory, during the software installation (see the *Karrera 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.

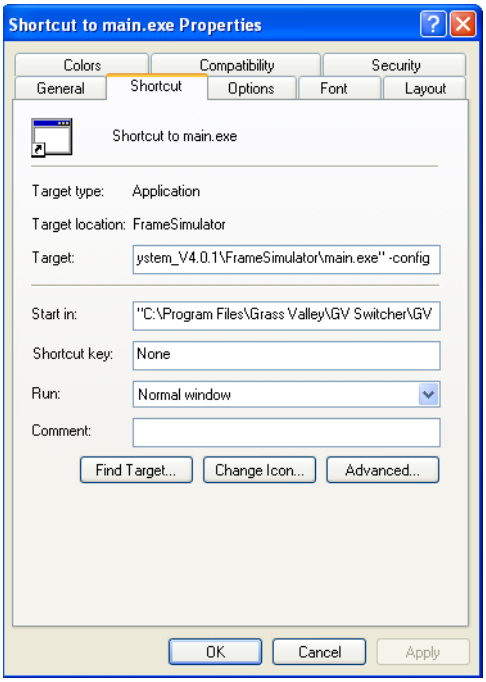
To configure, operate, and understand more about the Frame Simulator, open and follow the instructions in the Readme.txt file in the Frame Simulator directory (default):

C:\Program Files\Grass Valley\GV Switcher\GVSwitcherSystem_Vx.x.x \Frame Simulator.

To configure the Frame Simulator line rate using a Windows shortcut:

1. Navigate to C:\Program Files\Grass Valley\GV Switcher\GVSwitcherSystem_Vx.x.x \Frame Simulator.
2. Right-click select Create Shortcut.
3. Right-click on the shortcut and select Properties.
4. Append `-config` to the Target address after main.exe as shown in Figure 133.

Figure 133. Macro Editor Line Rate Shortcut



5. Open the shortcut to adjust the line rate.

Configuring the Karrera Menu

Enter the Frame simulator IP Address:

1. In the Karrera 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 is available in the Macro Catalog menu’s Macro List pane (Figure 134). Entering a Panel Name (four characters maximum) displays that name in place of the Macro Register Number in the Local

E-MEM area (when the Macro menu is delegated by pressing the **Macro** button).

Figure 134. 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 area 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 134).

Touching the **Edit** button displays the Macro Line Edit menu (Figure 135).

Figure 135. 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

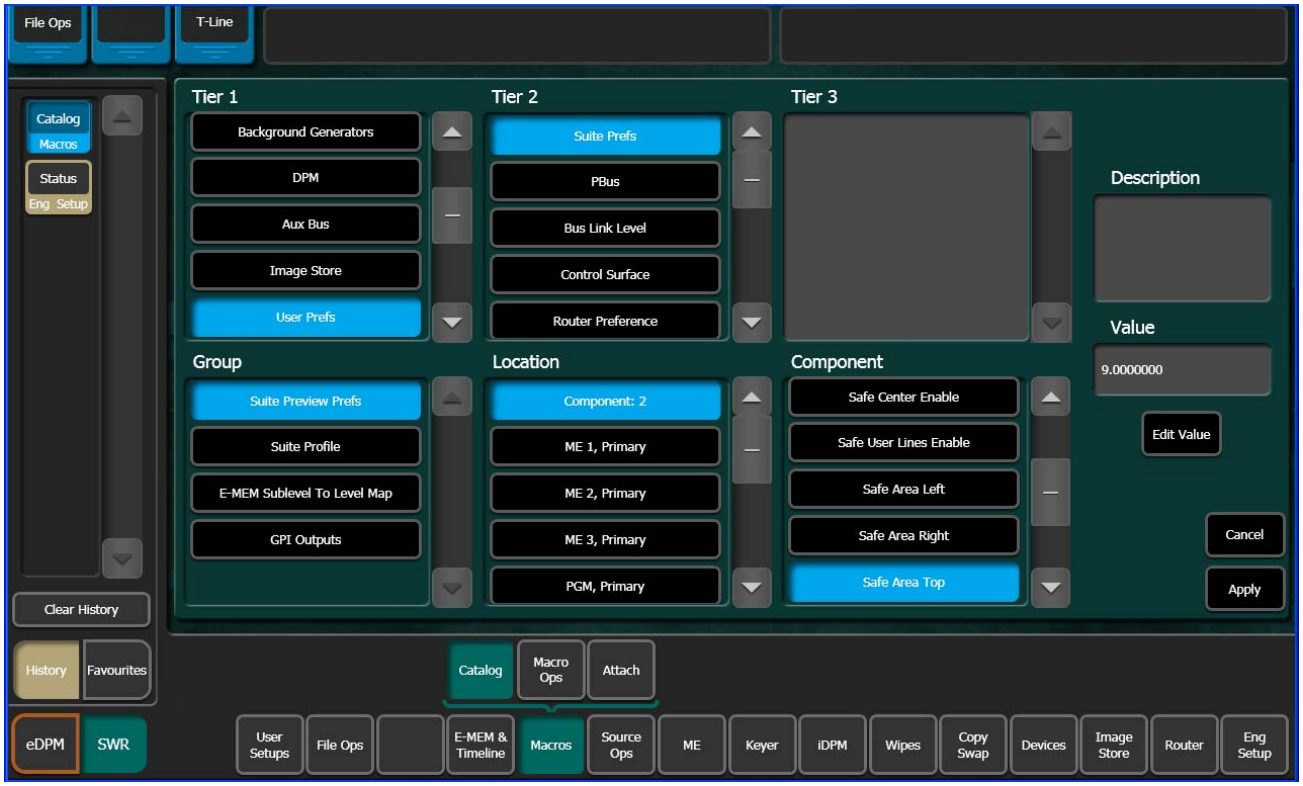
You can edit a macro line by touching the line you wish to edit in the Macro Line Editing menu (Figure 135) and then touching the **Line Edit** button.

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 136) 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 136. Component Edit Value Menu



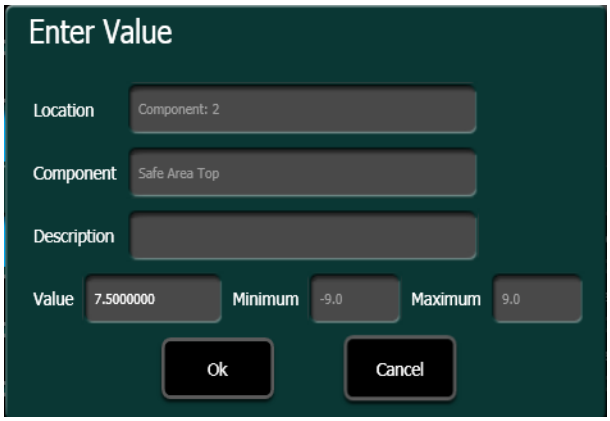
If you wanted to use a macro built for ME 1 on ME 2, you could copy the macro register and go through each line and simply change ME 1, Primary to ME 2, Primary. The macro will now perform identically but for ME 2.

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 136:

1. Touch the **Edit Value** button, the Enter Value dialog is displayed.

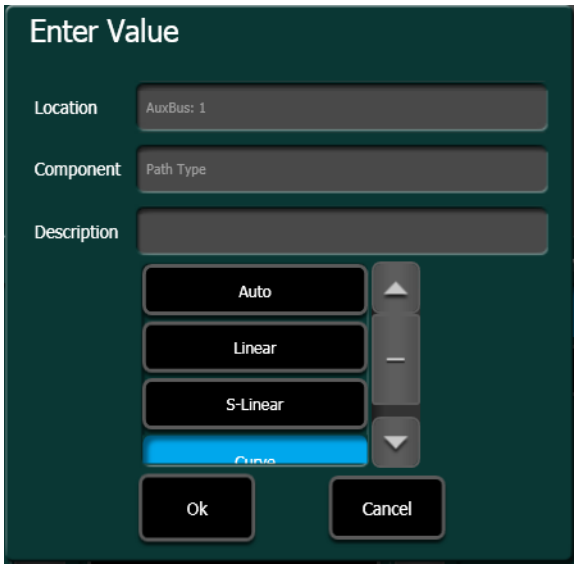
Figure 137. Edit Component Value Menu, Enter Value Dialog Example



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 138).

Figure 138. 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.

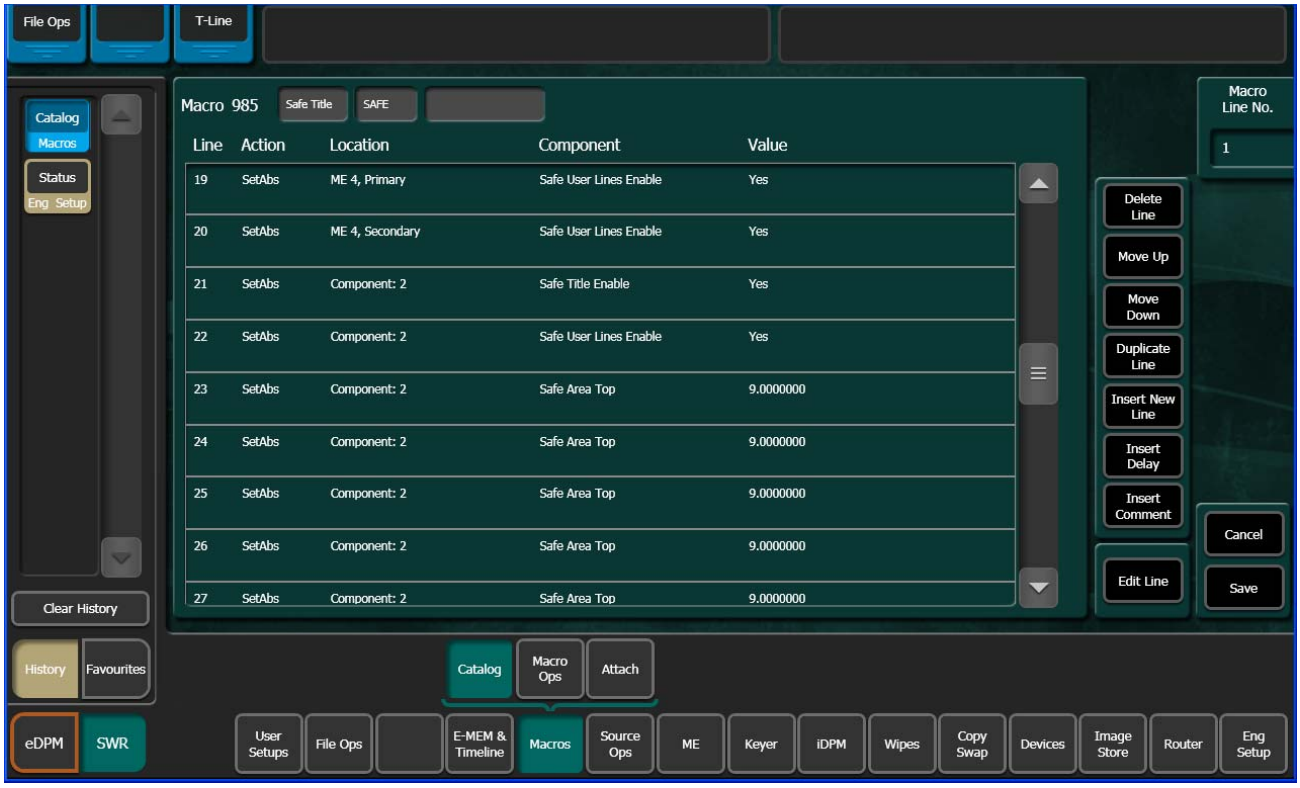
3. Touch the **Apply** button.
4. Touch the **Save** button to save your changes.

   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 139).

Figure 139. 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)

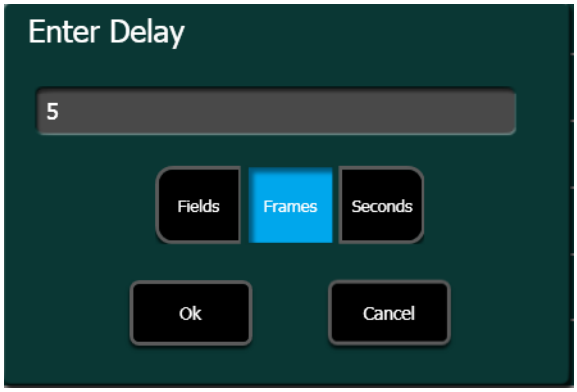
Insert Delay—Inserts a Delay (line) after the selected line (see *Inserting a Macro Delay*)

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 140. 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 139), the Component Edit menu is displayed (Figure 136).
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.

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 Karrera System. All keys in a chain transition on and off together (see *Key Chaining* *on page 262*).
- 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 266*).
- Partition Sync—Links Primary and Secondary partitions within the same ME (see *Partition Sync Mode* *on page 267*).

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

To access the Transition Chaining menu, touch **User Setups**, **Suite Prefs**, **Transition Chaining** (Figure 145).

Figure 141. 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 Karrera 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 142).

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

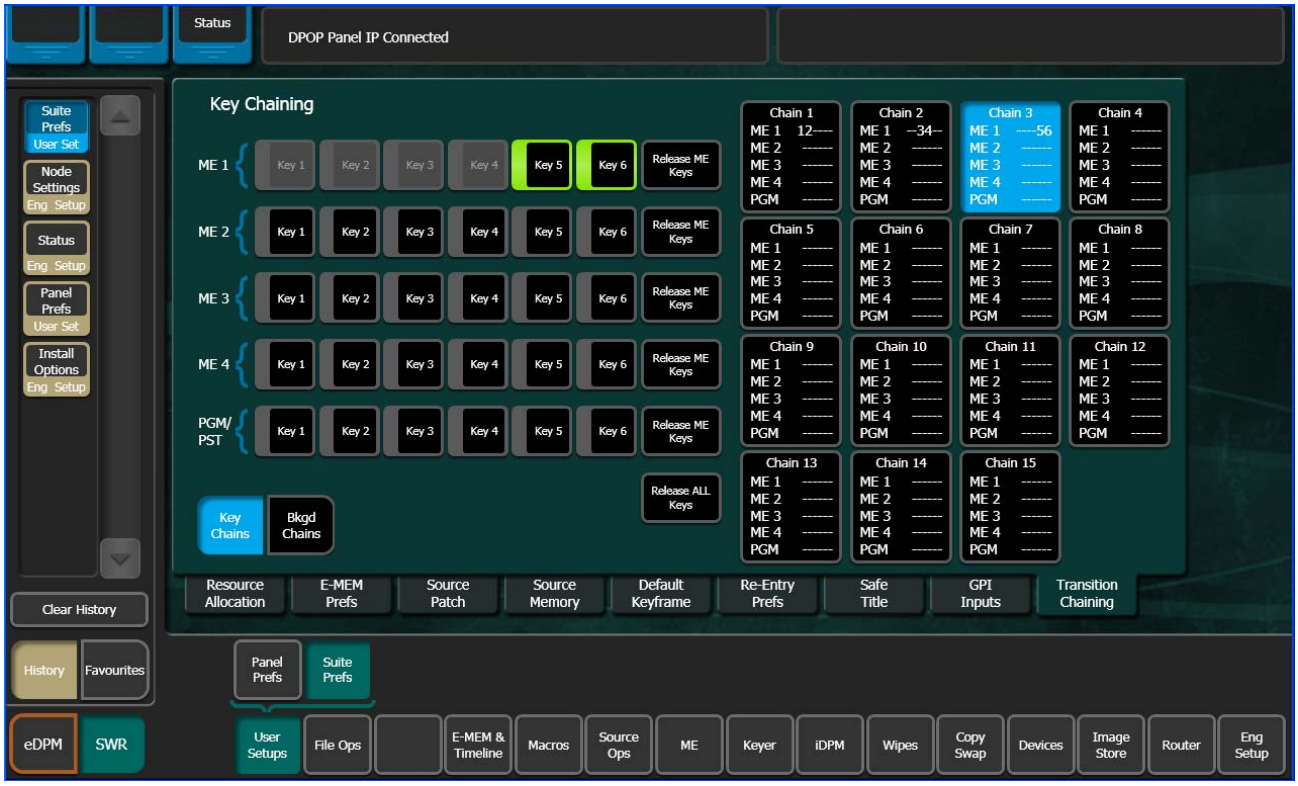
Keyers are controlled from the Transition area on the Karrera Control Panel. They can be cut on/off or transitioned on/off using the dedicated Key Cut and Auto buttons. Key chaining allows for a single button push to transition all the keys in the chain. A single keyer selection in the Next-Transition area 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 142) 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 142).

Figure 142. 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 area of an ME, with those keyers as part of a chain, will result in the following:

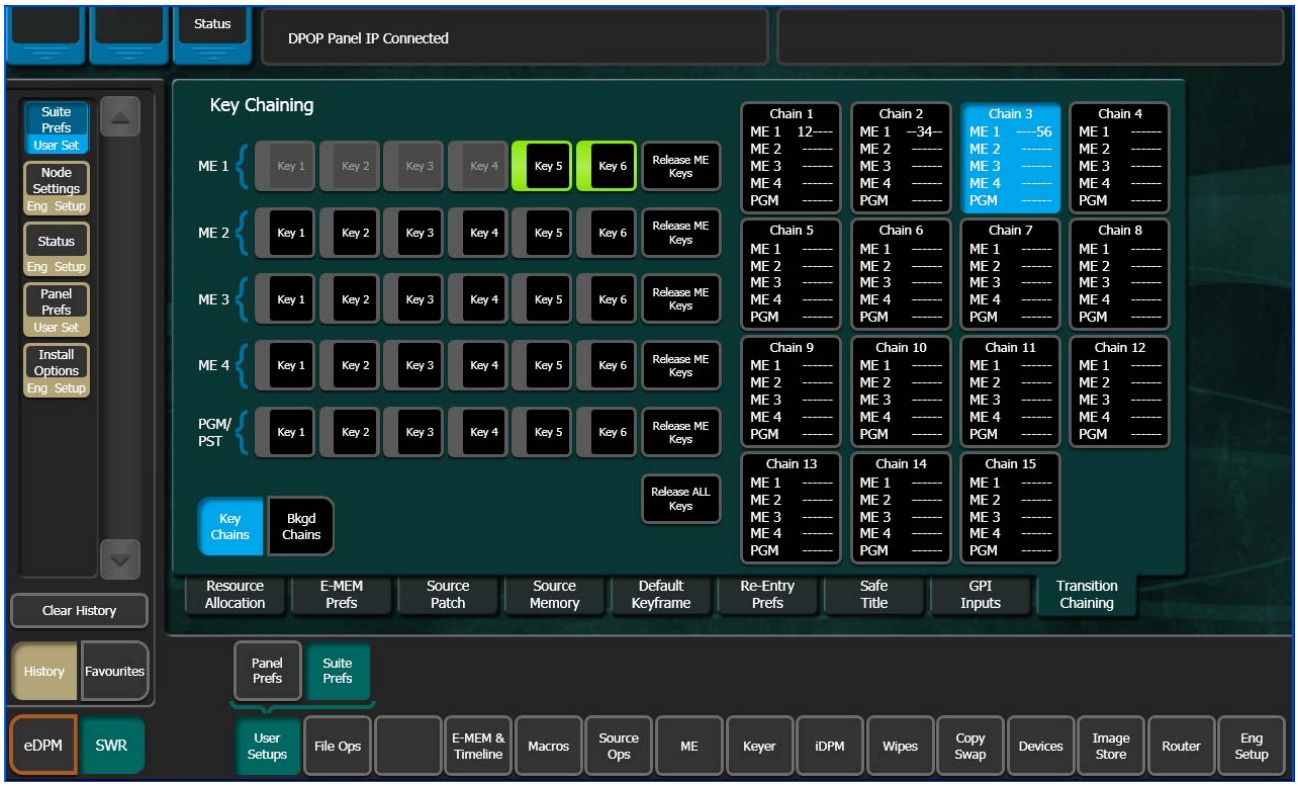
- Chained keyers on the same or different MEs all transition simultaneously,
- The transition rate of the button that is pressed (controlling keyer) is applied to all the other (controlled) keyers in the chain.

Key Chaining on a Single ME

As shown in Figure 143 (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 143. 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.

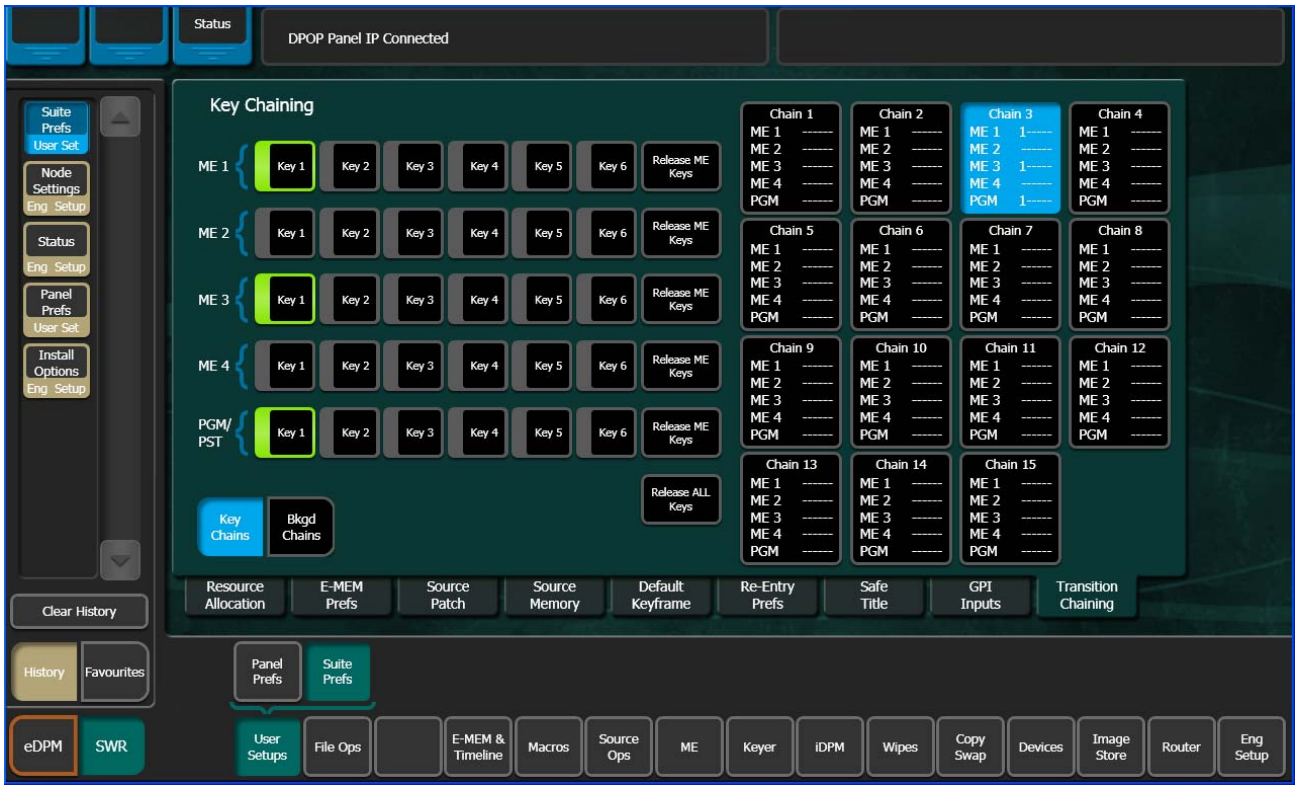
If a selection is made for a keyer in the primary partition, and the chained controlled key is in the secondary partition, the controlled keyers will transition simultaneously with the keys in the primary partition, irrespective of the delegation of the **Sec** button (Source Select area). The same is 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 area) 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 144 (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 144. 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 263*. 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 (Figure 145).

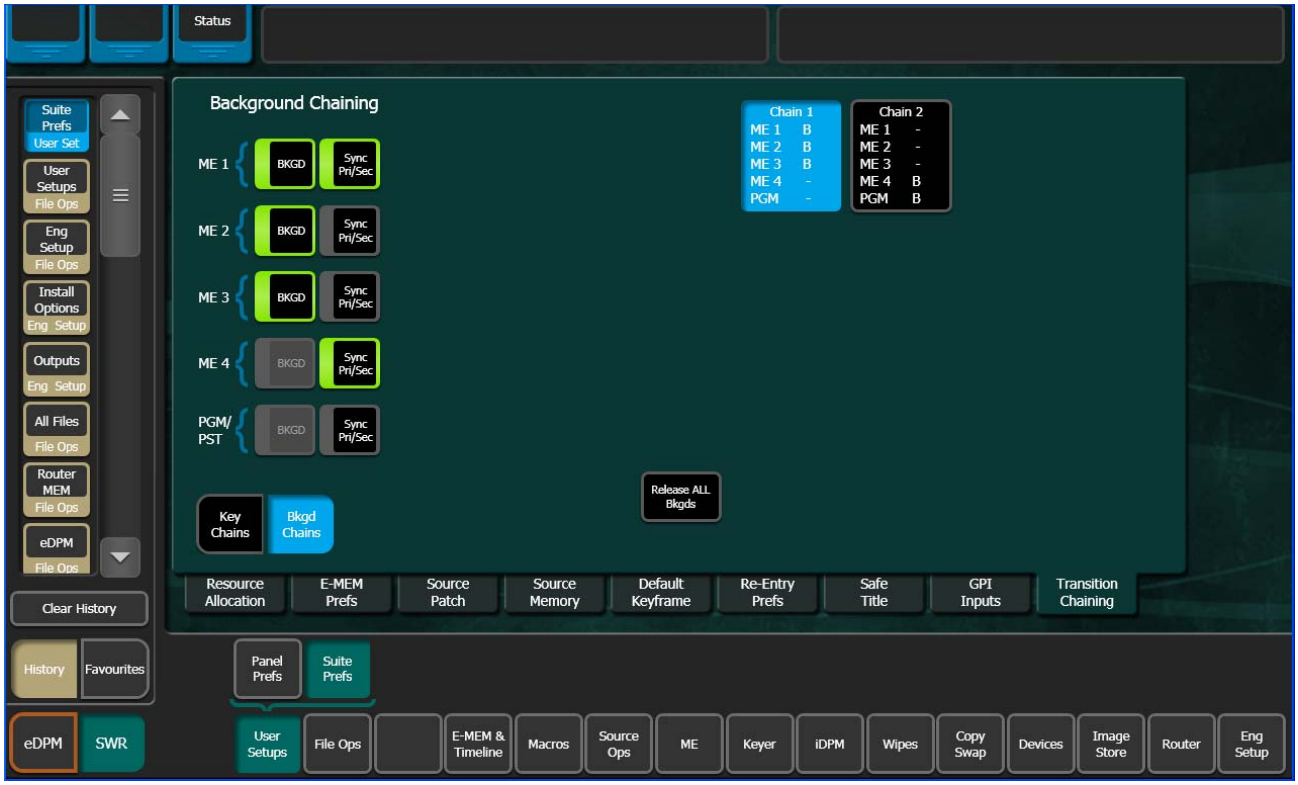
Similar to Key Chaining, where the first ME Keyer button pressed on the Control Panel is the controlling ME for the chain, the first ME Bkgd button pressed on the Control Panel becomes the primary or "controlling" ME. This is important for example when you are coupling MEs (backgrounds, keyers, buses, 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 in the Transition area (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 145).

Figure 145. 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 145).

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 in the Source Select area.

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. Turning on a **SyncPri/Sec** button (Figure 145) 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 Karrera 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 area.

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 146*).

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.

ME Split Mode Operation

Introduction

Split Mode allows the operator to divide a Karrera 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 Karrera 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 276 for setup information for this scenario).

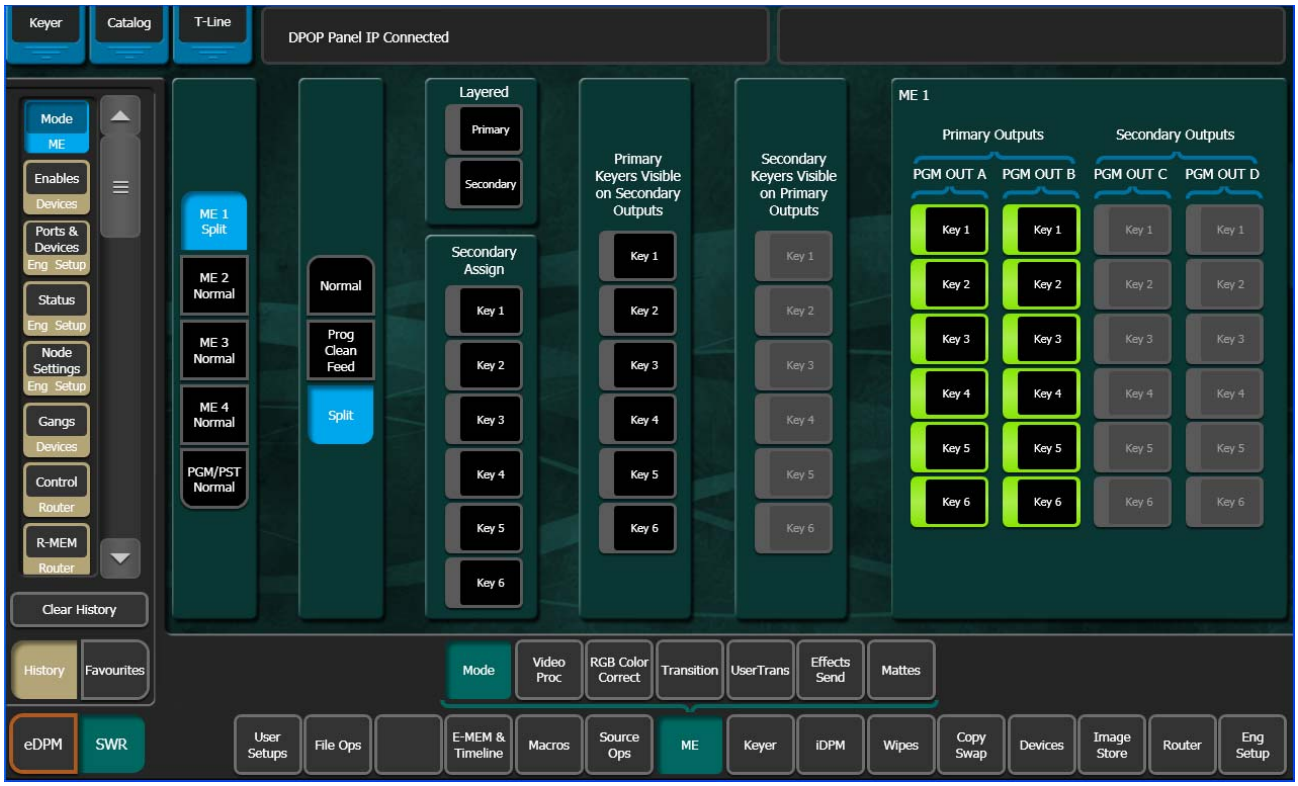
Split Mode can also be used for other purposes. For example, complex composites could be built on the Secondary partition of an ME by assigning all six keyers to that partition. The Primary partition of that ME is then used only for background transitions between the A and B buses.

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 146).

Figure 146. 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 274*). Touching an item so its indicator illuminates green, 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 and the Transition area and Local E-MEM area 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 areas control both partitions simultaneously. Also, the button tally indicators in the Transition area 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 primary and secondary ME partitions on switched preview using the System Bar. Press the **Sw PVW** button and select an ME for primary, select the ALT button (next to Sw PVW) to see the secondary.

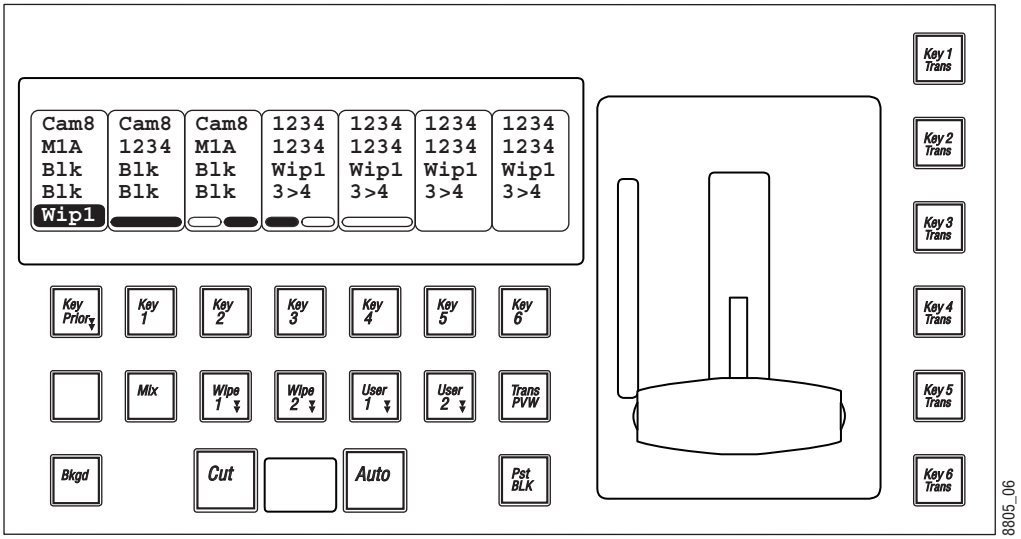
Transition Area

When the 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**/**Auto** buttons (Figure 147) can always be used regardless of partitioning and panel delegation. If a keyer is associated with the secondary partition, the "Keyer-On" oval indicator is split in two and a secondary indicator is displayed near the bottom in the Transition area's OLED for the selected element (Figure 147).

Figure 147. Split ME Mode, Transition Area



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 Area

When the ME bank of a split ME is delegated to one partition, that ME's Local E-MEM area 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 Area

The Master E-MEM area allows for enabling the ME levels. If the ME is unsplit 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 Area 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 can be used to copy ME settings from one location to another (see *Copy/Swap* *on page 285*). 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 276*.

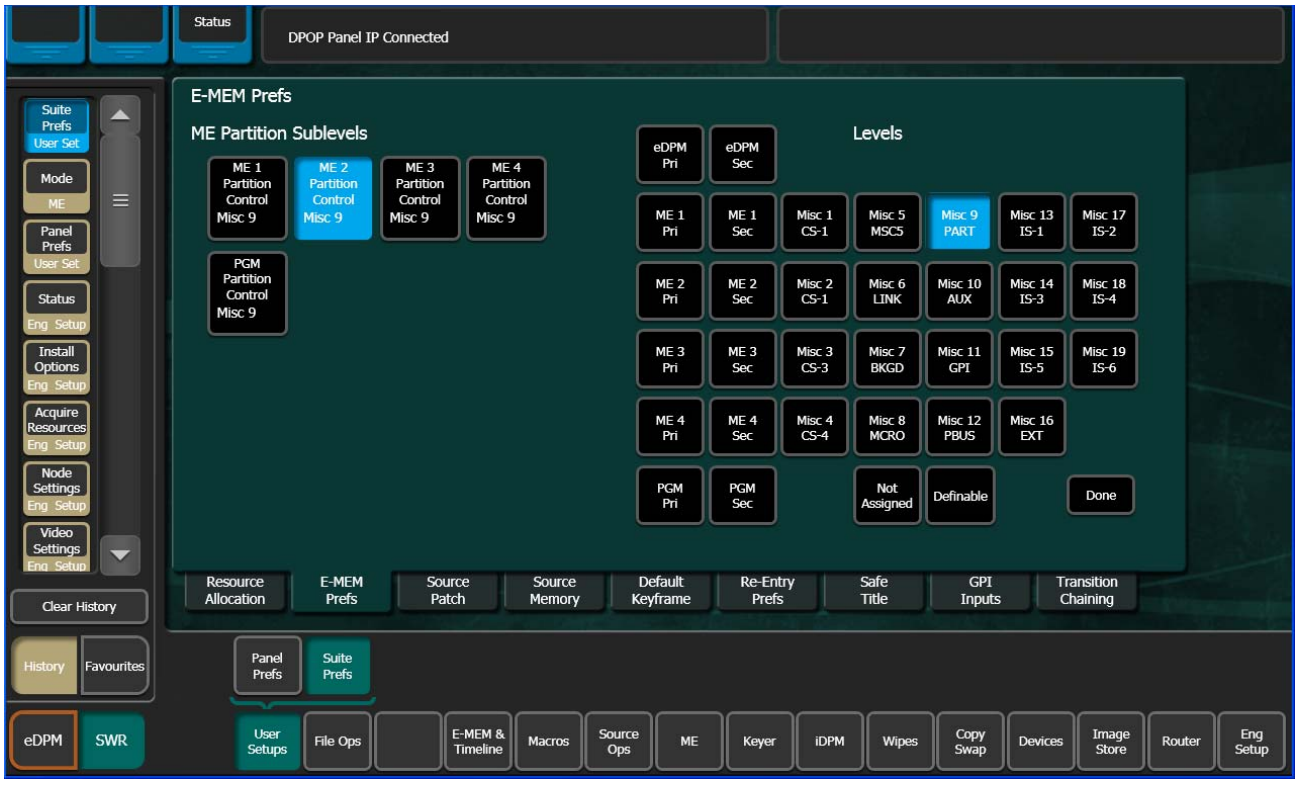
Split ME E-MEM Level Assignments

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 area and how the Master E-MEM area 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 148).

Figure 148. ME Partitions Menu



The ME and Pgm Pst data pads display the current partition control parameters for that element. On a new Karrera 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 Karrera 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 area (**ME 1 Pri**, **ME 2 Pri**, **Pgm Pst Pri**). A Secondary partition has its own level, enabled in Split Mode.

There are also dedicated buttons in the Master E-MEM area (**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 area when it has been delegated to a Secondary partition. The Master E-MEM area 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 area. Control continues to be available from that ME's individual Local E-MEM area 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.)

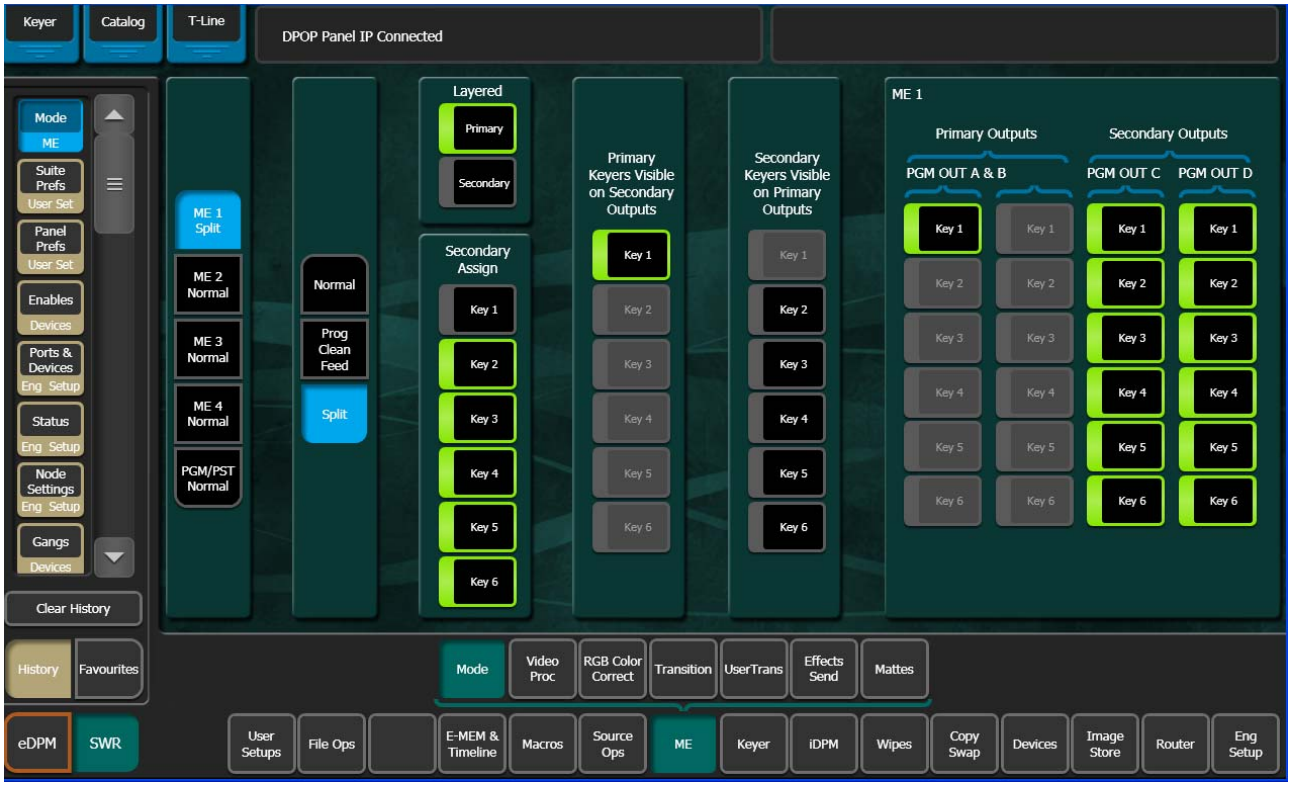
Layering is enabled on an ME-by-ME basis in the ME Mode menu. When enabled for the primary output, the A output has black selected as the background source and the B output acts as the key cut signal for the keyers selected for the primary output. Similarly, for the secondary output the C output has 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 149). 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 149. ME Mode, Split Layered

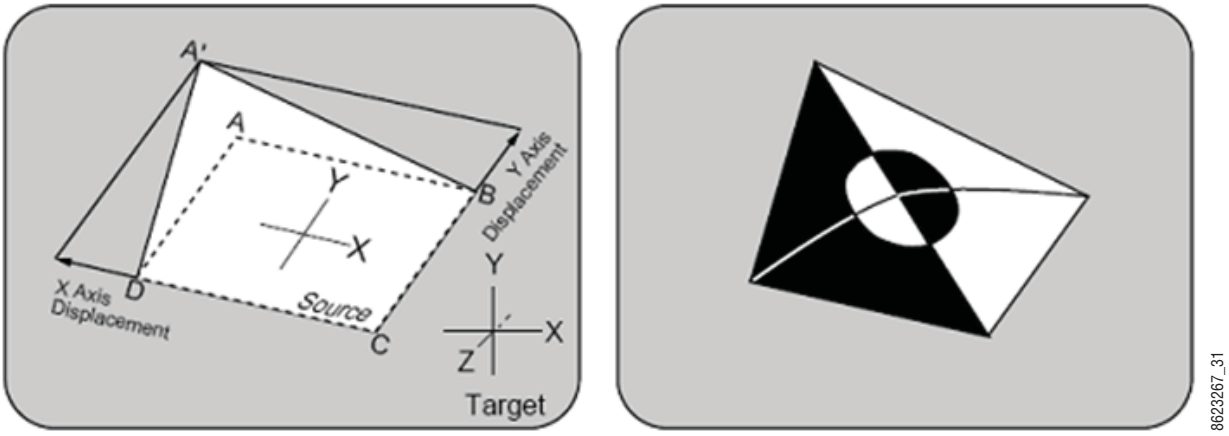


Corner Pinning

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 150).

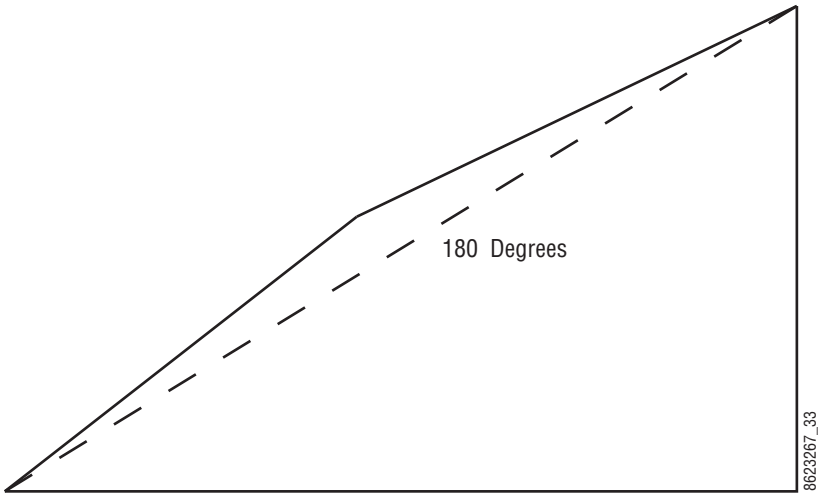
Figure 150. Corner Pinned Object



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 151), all vertices point outwards and all diagonals lie entirely inside the quadrilateral.

Results from adjusting a corner beyond the limits are undefined.

Figure 151. Convex Quadrilateral—Corner Adjust Limits



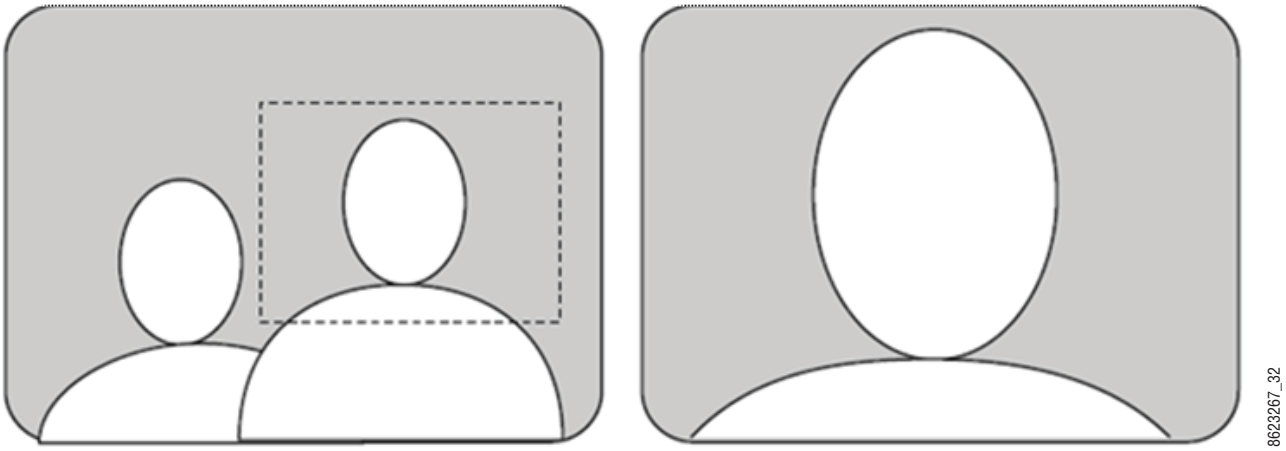
To allow fine adjustment of an image when using Corner Pinning, the View Through (View Thru Enable) feature allows you to temporarily (for editing purposes only) reduce the opacity of an iDPM channel to let you “look through” the image to align the corners precisely with the background.

Corner Pinning and Cropping

Corner Pinning is designed to work in conjunction 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 152). 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 152. Corner Pinned Cropped Object

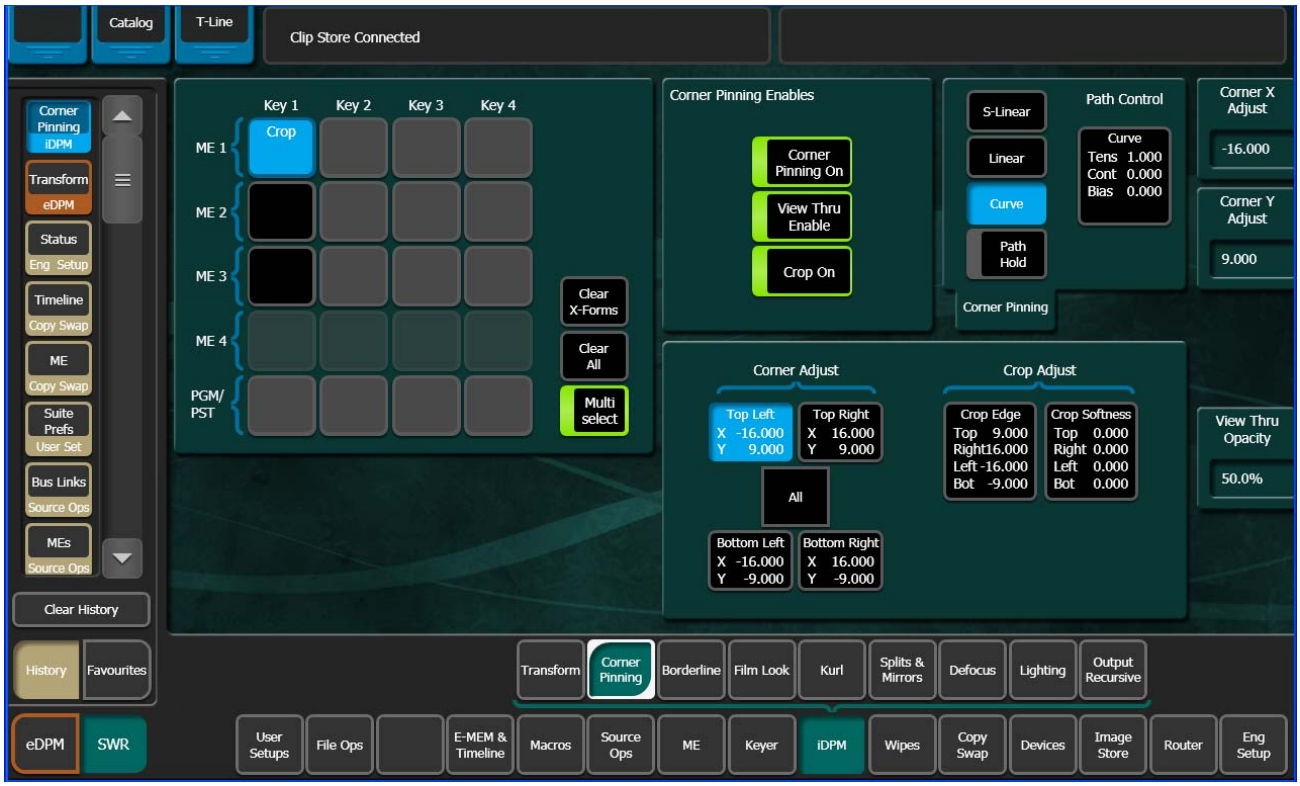


Note Toggling Corner Pinning on and off will reset the corners to the current crop values and change the pinned corners.

Corner Pinning Menu

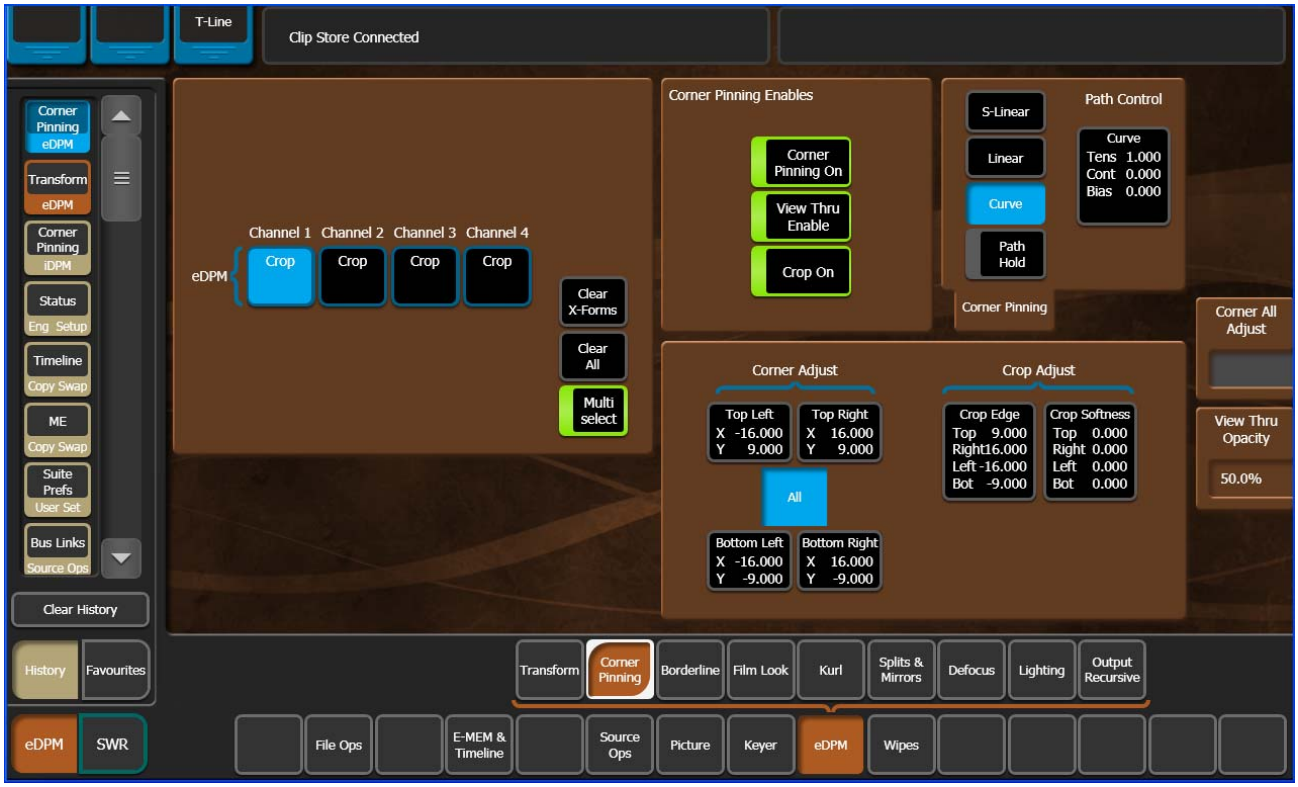
The Corner Pinning menu (Figure 153) is available in both the SWR (Switcher) (iDPM, Corner Pinning) and the eDPM (option) mode (eDPM, Corner Pinning). The menus function identically.

Figure 153. iDPM, Corner Pinning Menu



Touch the **eDPM** mode button (lower left), **eDPM**, **Corner Pinning** (Figure 154).

Figure 154. eDPM, Corner Pinning Menu



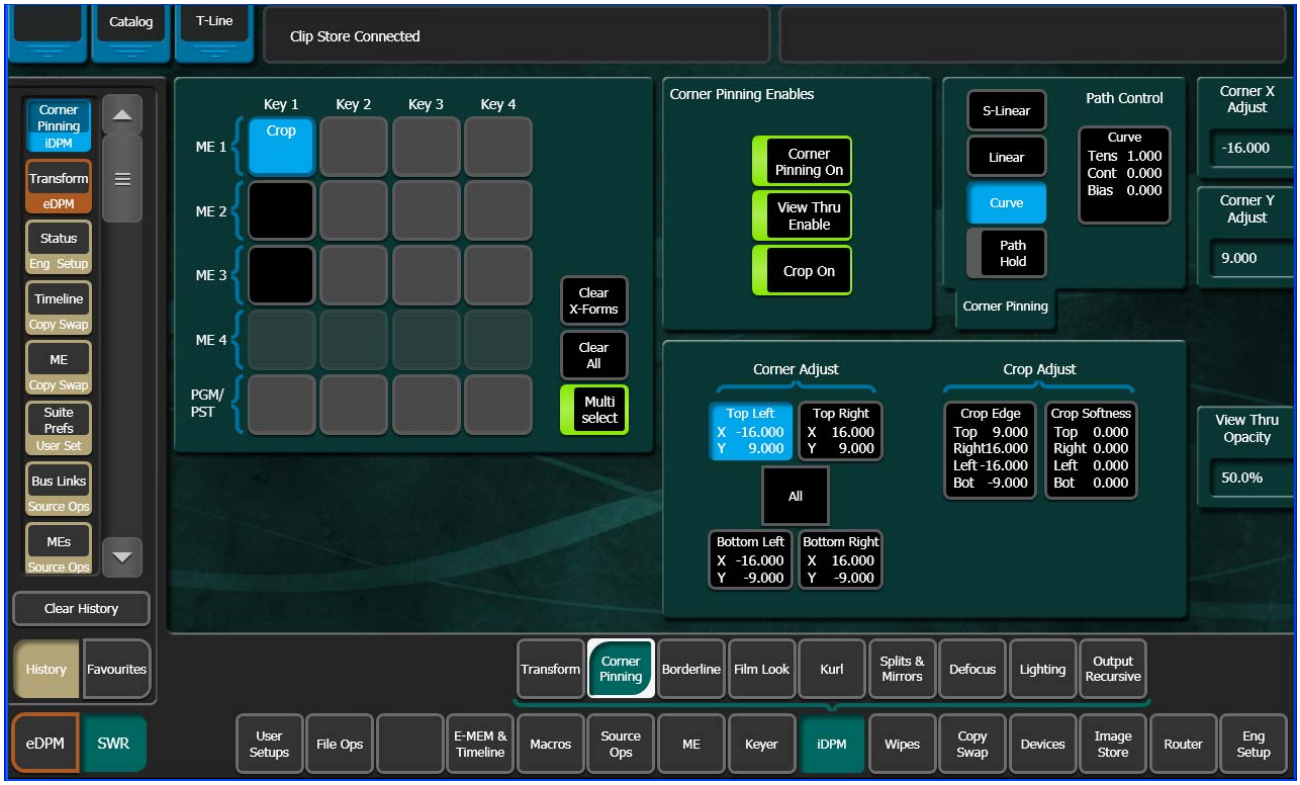
An example of how Corner Pinning would be valuable is that during a sporting event, a camera points at a shot clock. The DPM uses Corner Pinning to build a box to contain the clock and crop adjustments place the clock exactly in the box but the camera is accidentally moved and the content of the box 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 155).

Figure 155. Corner Pinning On



7. Touch the **Corner Pinning On** button to turn it on (highlights green).

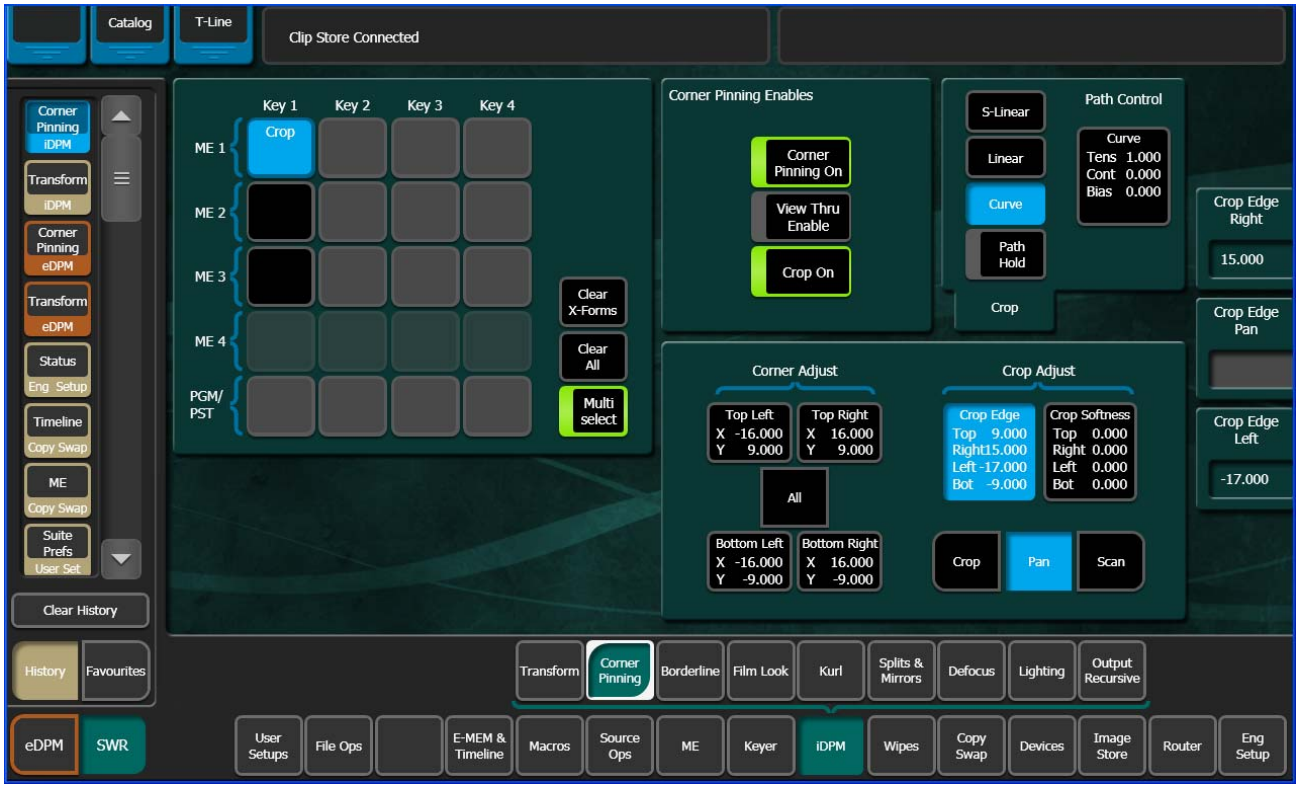
   The image will fill the screen—each corner of the key is now pinned to the corners of the monitor.
8. Touch the **All** button in the Corner Adjust area of the Corner Adjust/Crop Adjust pane. Adjusting the iDPM with the Corner Pinning **All** button enabled, acts similar to a zoom. Use the **Corner All** 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 156).

Figure 156. 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.

Copy/Swap

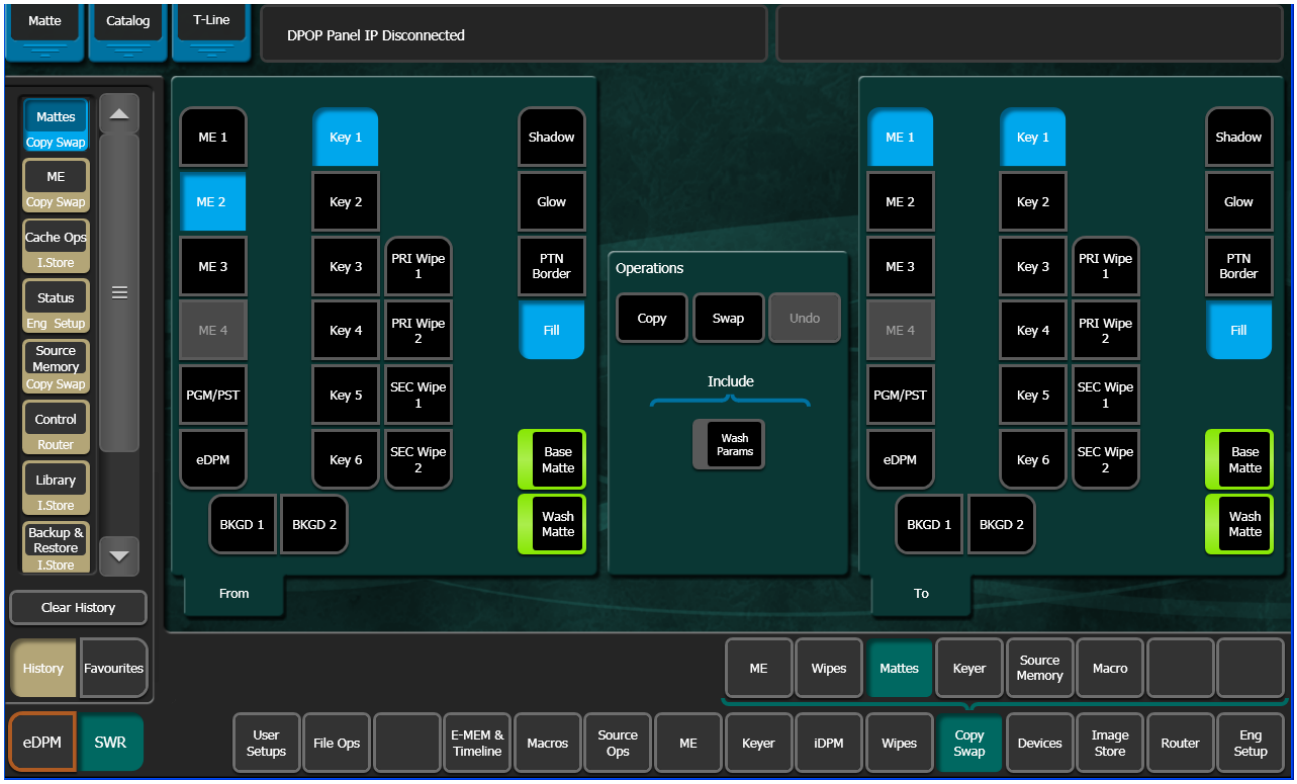
Copy and Swap functions are available for MEs, Keyers, and e-DPM Channels. With Copy you can use the settings of one location at a different location in the system. This can be useful if, for example, an effect has been set up on ME 1 but it needs to be placed on-air using ME 2. You can quickly copy 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 157, 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 157. 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 158).

Figure 158. 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 159).

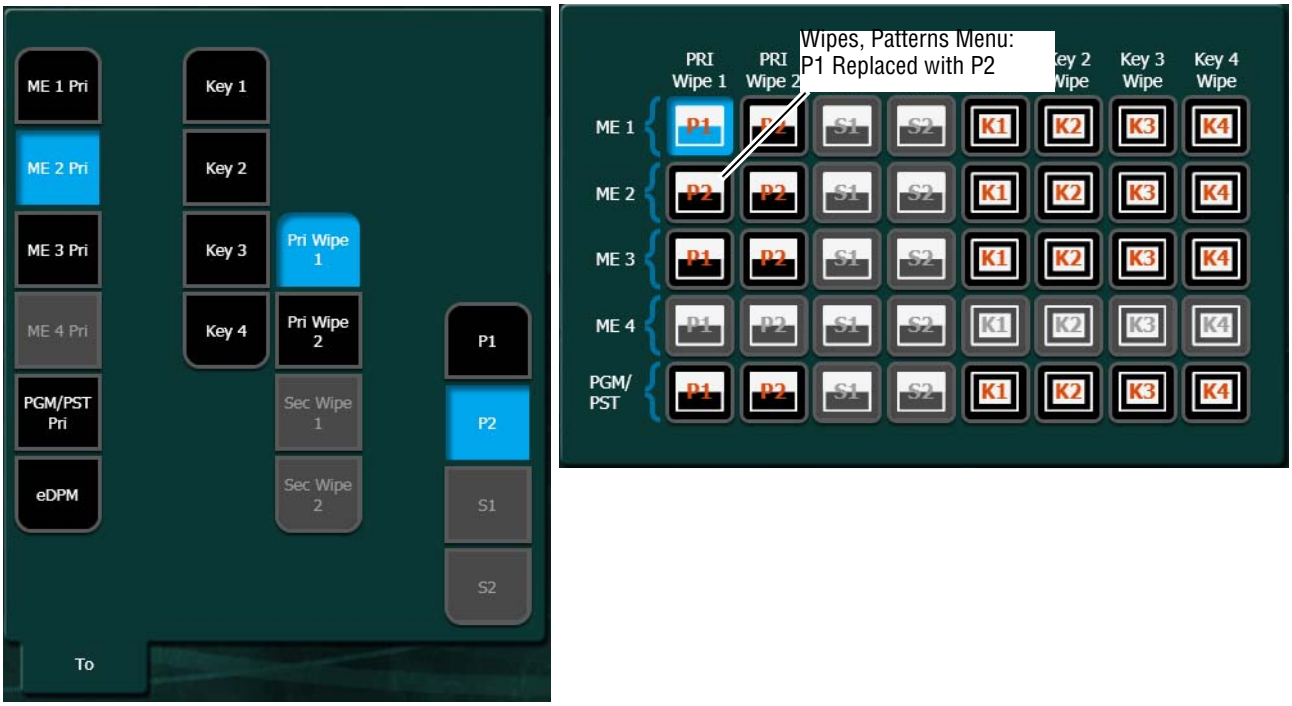
Figure 159. Copy Swap Wipes Menu

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 160), 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 160).

Figure 160. 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.

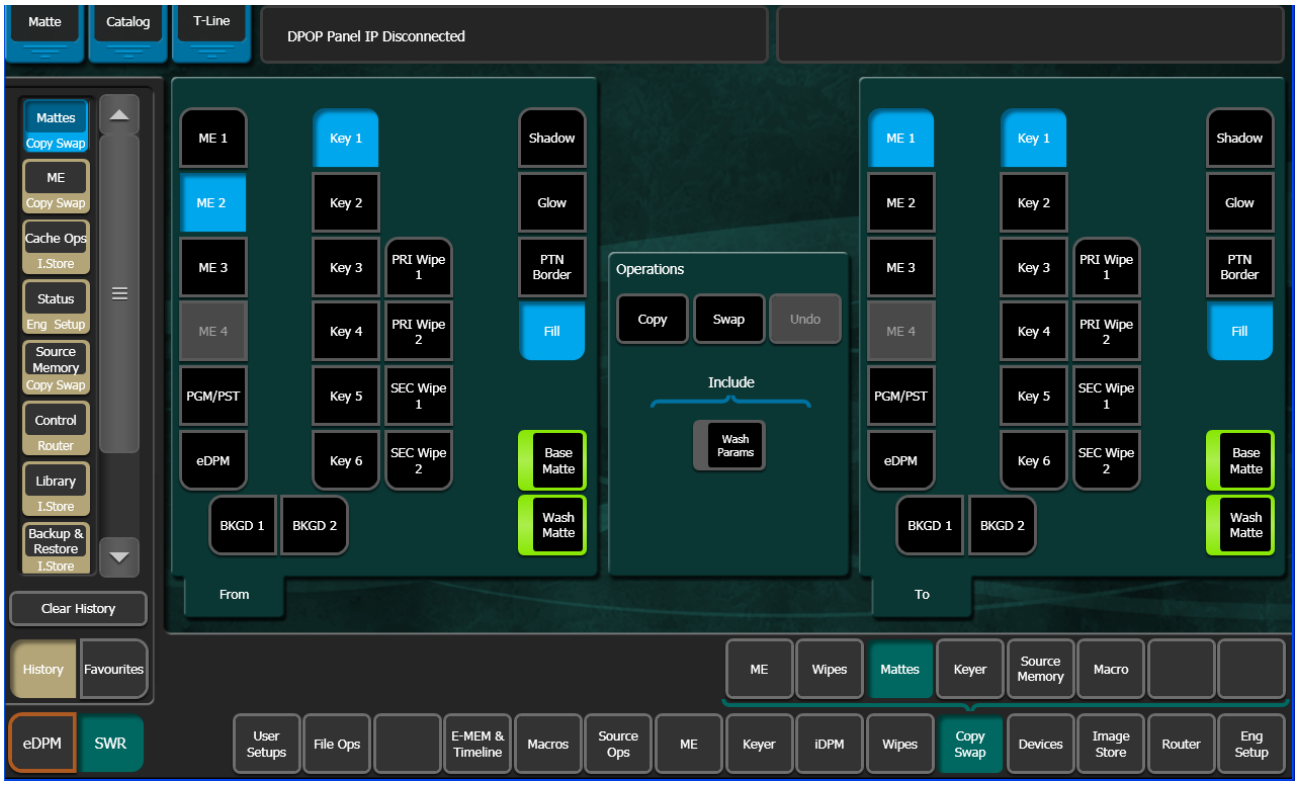
To copy an eDPM Wipe

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 161).

Figure 161. Example, Copy Swap Mattes Menu

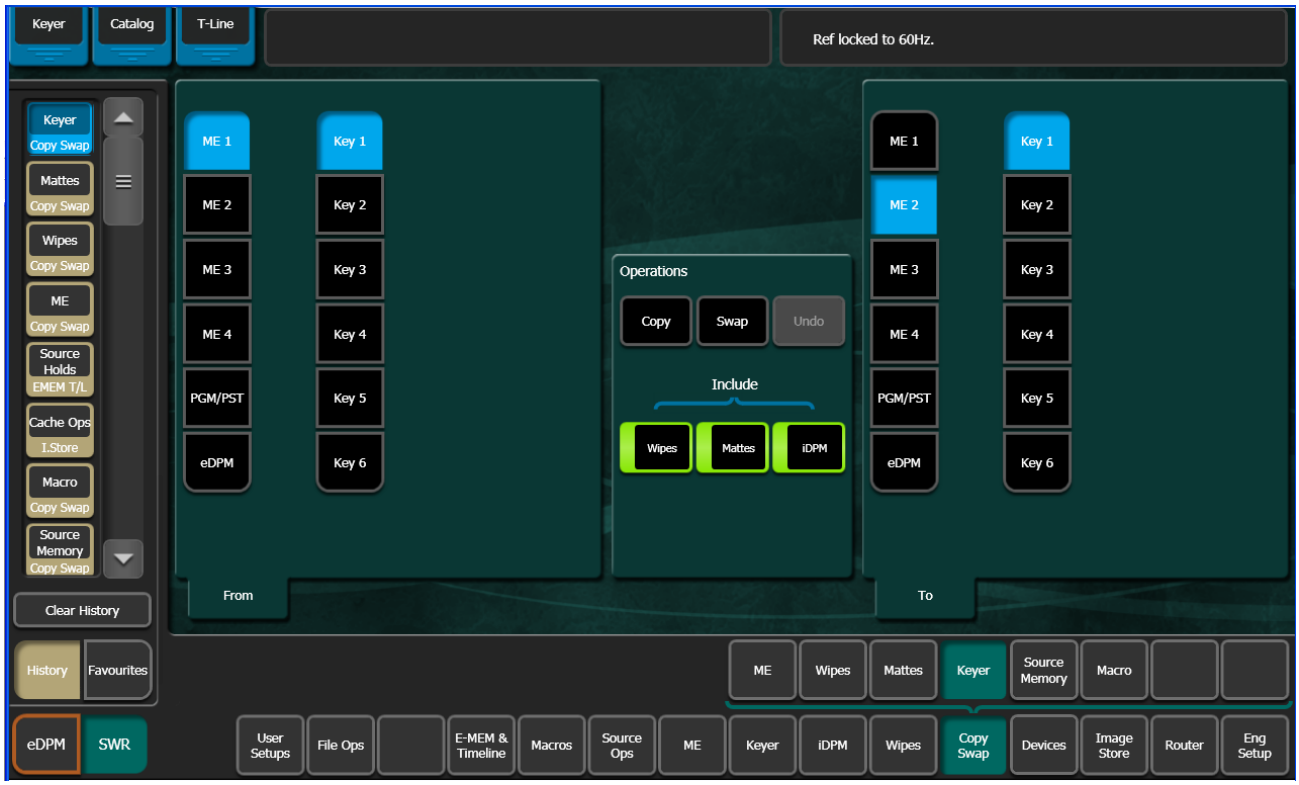


Some combinations of ME level, Key level, and matte generator level do not exist. For example, in Figure 161, the destination matte is ME 1's Trans Wipe. Pst Ptn Border, and Fill are grayed out because they only apply to keyer mattes. Similarly, if Bkgd 1 had been chosen, no further delegation would 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 162).

Figure 162. Copy Swap Keyer Menu



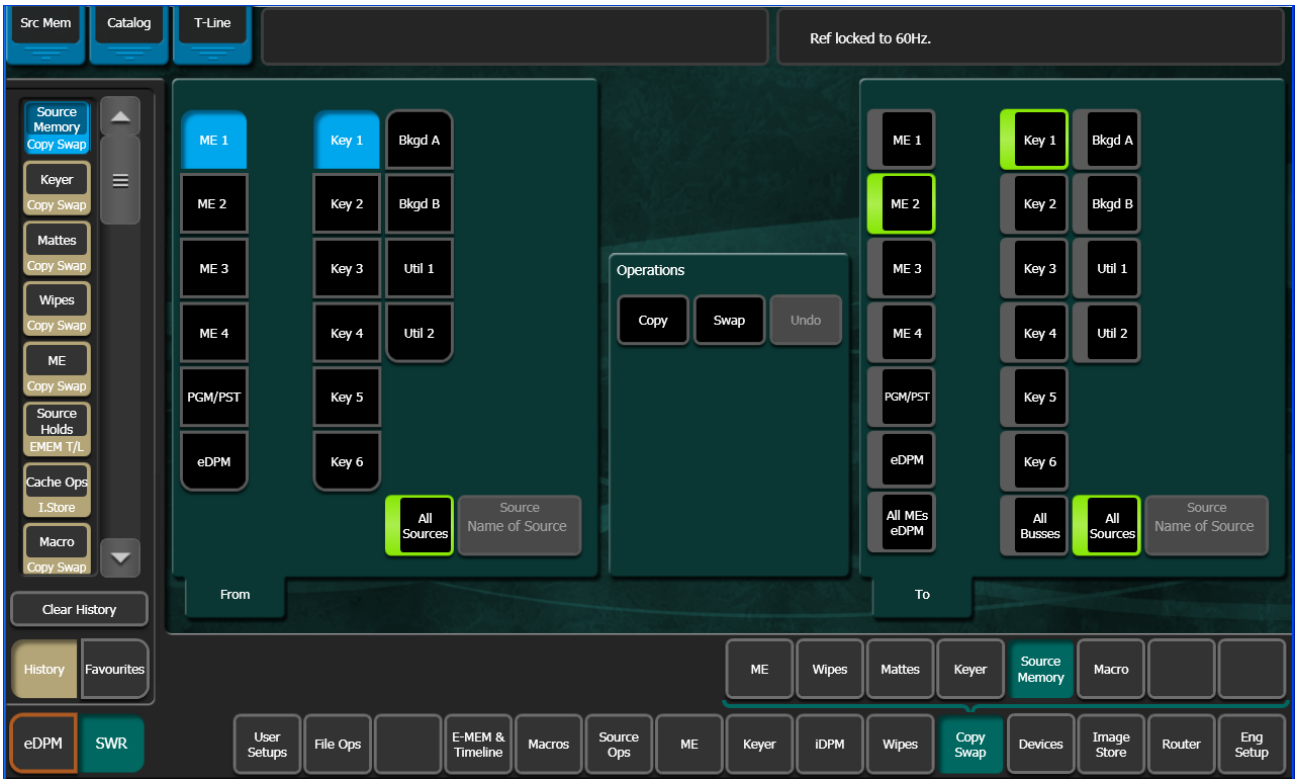
The menu enables the copying and swapping of entire keyers, including the mapping of key cutter and key fill sources. It is a direct copy of what is currently in the chosen From keyer, including key type, key split condition, and all parameters describing the key's behavior.

Wipes, Mattes, and iDPM resources can be included/excluded using the buttons in the *Include* section of the Operations pane (Figure 162).

Copy Swap Source Memory Menu

Touch **Copy Swap**, **Source Memory** to access the Copy Swap Source Memory menu (Figure 163).

Figure 163. Copy Swap Source Memory Menu



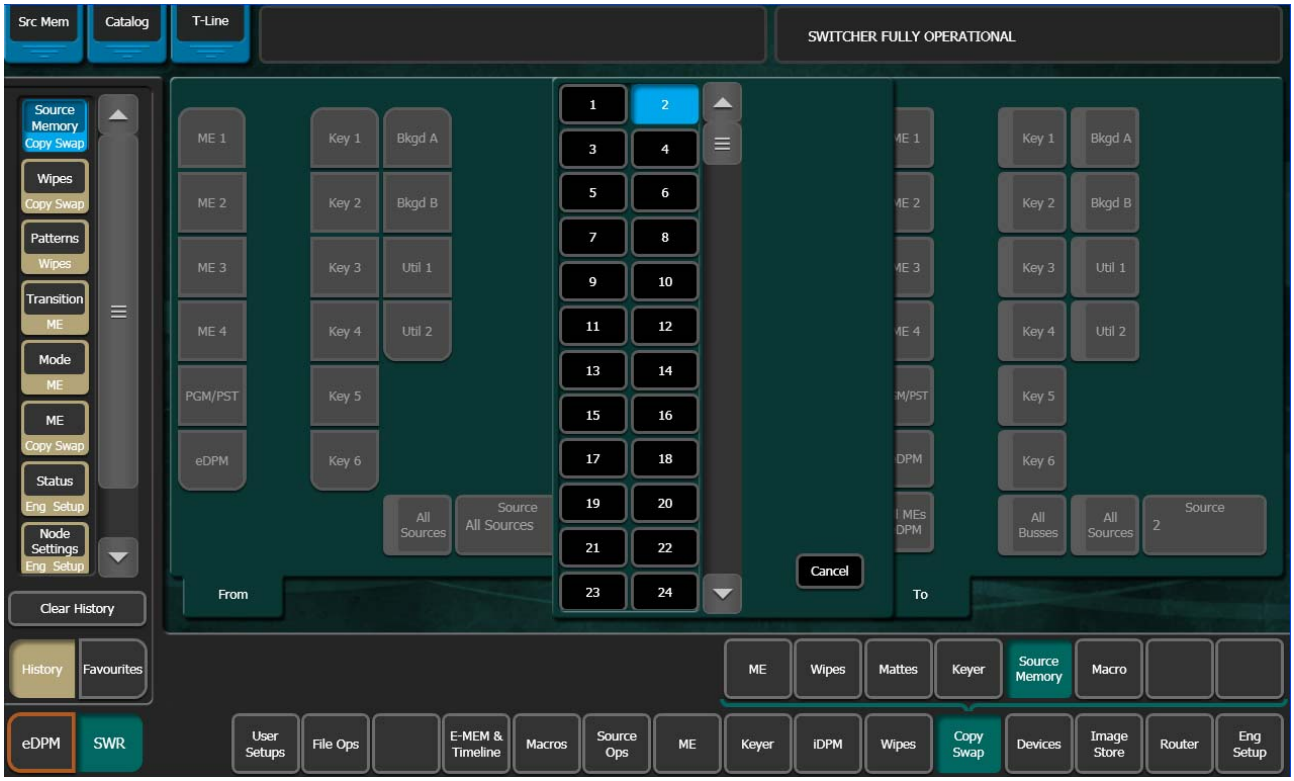
The user delegates the ME/eDPM level, the keyer within the ME/eDPM, and the numbered input source to the keyer. Each source on each keyer has its own source memory, which is a collection of keyer settings specific to that particular intersection (point of use) of the keyer and its input.

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 163). 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 164.

Figure 164. 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:

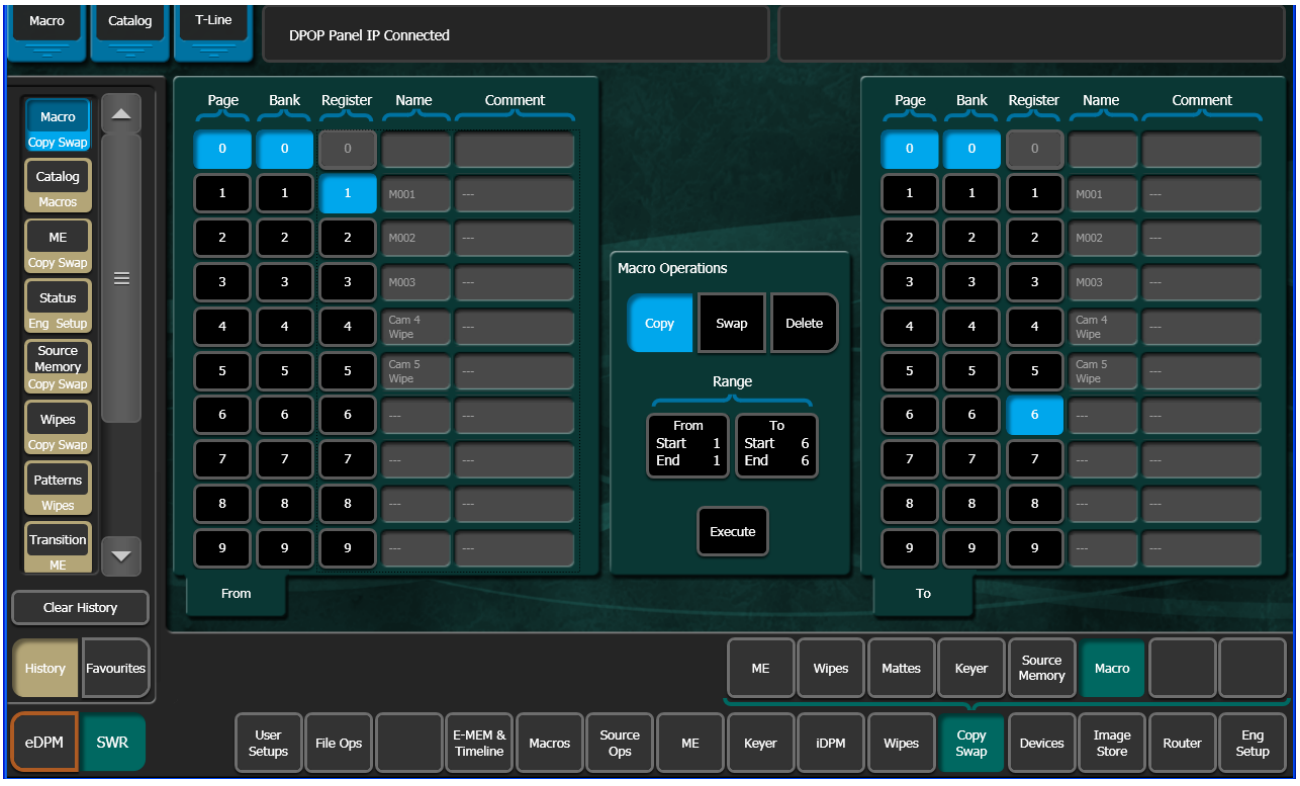
- A specific default source and a specific bus,
- A specific source to all buses,
- All sources on a specific bus,
- All sources on an ME, or
- All sources to all buses on all MEs.

Copy Swap Macro Menu

The Copy Swap Macro menu (Figure 165) is accessed by touching **Copy Swap**, **Macro**.

Note The functionality of this menu is duplicated in the Macros, Macro Ops menu for convenience.

Figure 165. Copy Swap Macro Menu

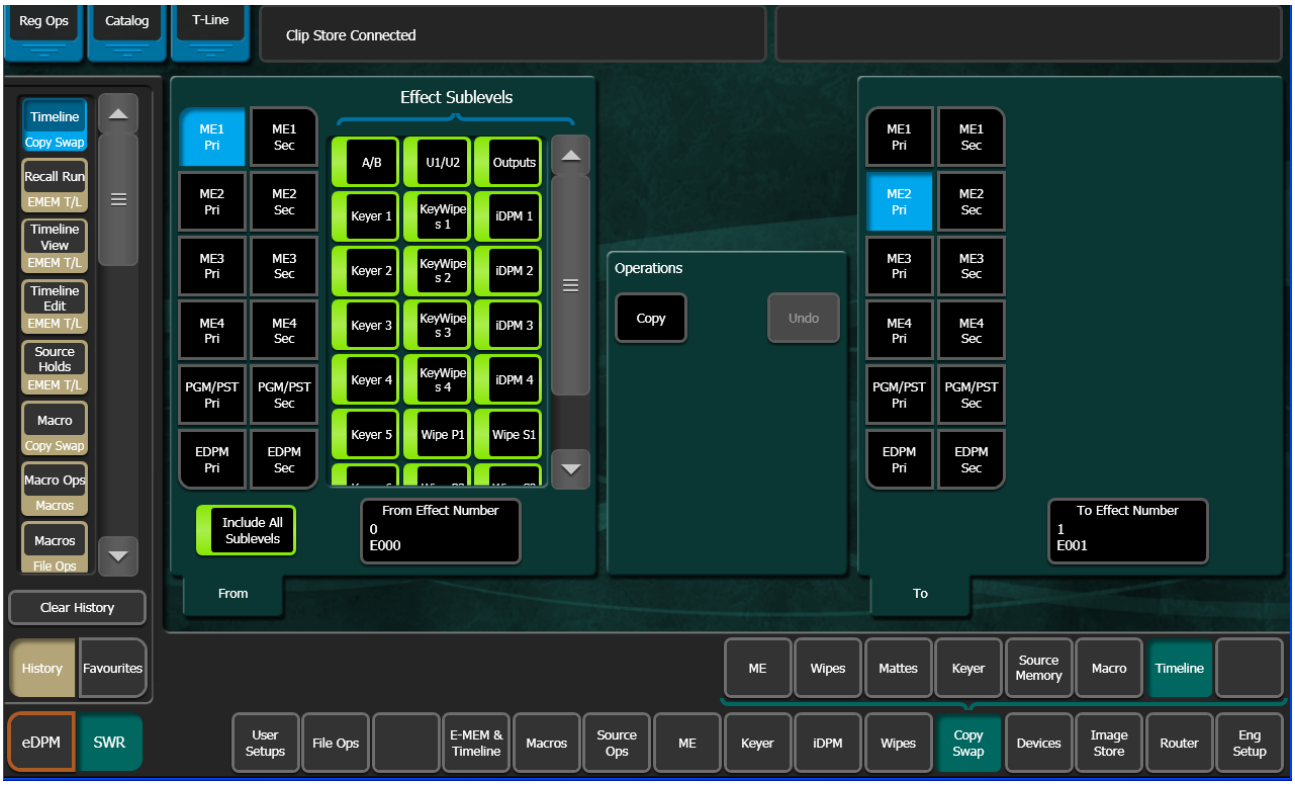


Macro register information can be moved from one register to another with this menu by selecting the registers in the From and To scrolling panes, then touching the **Copy** or **Swap** buttons in the Macro Operations pane (Figure 165). The soft knobs and data pads on the upper right can be used to quickly select specific register numbers in each pane.

Copy Swap Timeline Menu

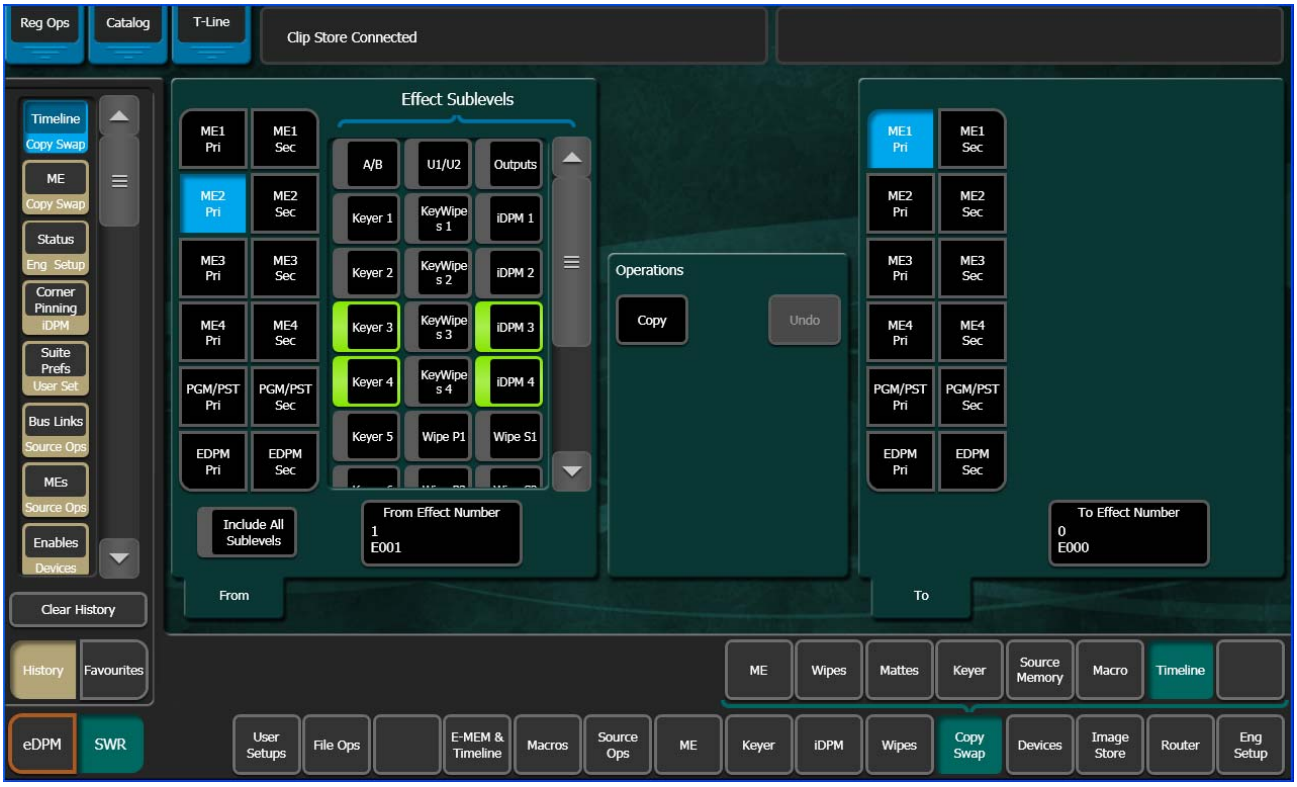
The Copy Swap Timeline menu (Figure 166) is accessed by touching **Copy Swap**, **Timeline**.

Figure 166. 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 166) or with this button off, sub-levels can be excluded from being copied by touching the sub-level's enable button (Figure 167).

Figure 167. 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 167) 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 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 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.

Image Store (Stills)

With Karrera 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 Karrera Menu or Control Panel, using the DCM (Device Control area) or the System Bar.

File Format

Locally, images are stored as a .KIF (Karrera Image Format) file (which is compatible with the Kayenne Image Format).

Setup Information

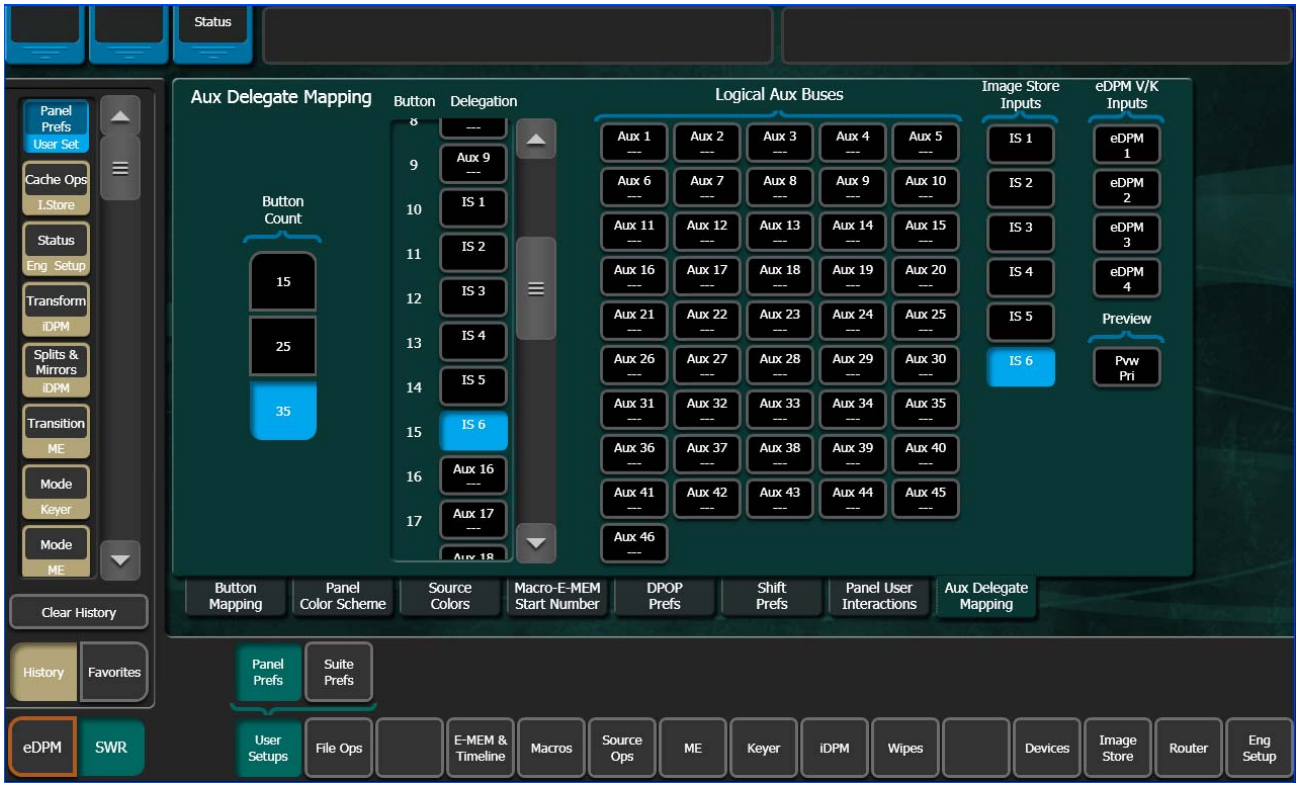
For Engineering Setup information, see the *Karrera Installation and Service Manual*.

Image Store Input Aux Delegate Mapping

Delegate Image Store inputs to the aux bus destinations in the System Bar area (A1-A15):

1. Go to the Aux Delegate Mapping menu by touching **User Setups**, **Panel Prefs**, **Aux Delegate Mapping** (Figure 168).
2. Select an Aux button (1-15 in the Button/Delegation scrolling list).
3. Select an Image Store input (**IS 1**-**IS 6**) in the Image Store Inputs button delegation column.
4. Repeat Steps 2 and 3 for up to six Image Store inputs.

Figure 168. Image Store, Aux Delegate Mapping Menu



Now you can select the assigned Still Store source by pressing the **Aux** button in the System Bar area then pressing one of the A1-A15 buttons.

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 169):

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 tab, E-MEM & Timeline menu.

Figure 169. Image Store Quick Tabs

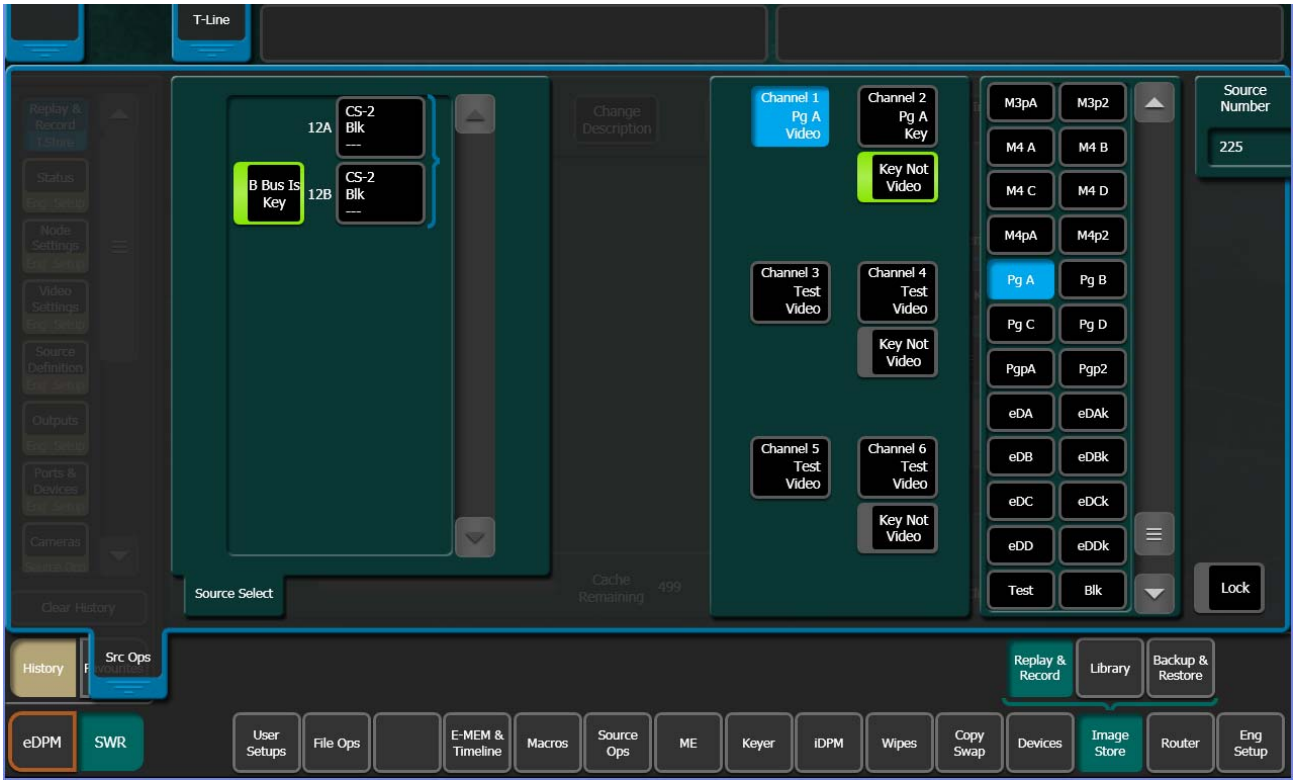


Image Icons and Lists

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 307*), 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 area (see *Image Store Input Aux Delegate Mapping* *on page 298*).
2. Go to the Capture Still menu by touching **Image Store**, **Replay & Record**, **Still** menu tab.

Figure 170. Capture Still Menu

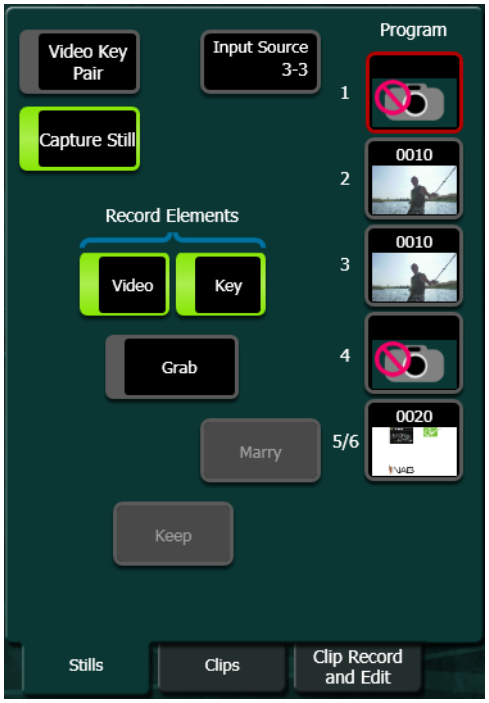
3. Select an Image Store channel by touching it (1-6 under 'Program').

4. Touch the **Input Source** data pad and touch the input source for the selected channel (Figure 170).

Figure 171. Input Source Button/Menu

5. Touch the **Show E-E** button. The **Show E-E** button becomes the **Grab** button (Figure 172).

Figure 172. 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 172) to place the captured image in cache.

8. A keypad is displayed with a **Name** button (Figure 173).

Figure 173. 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

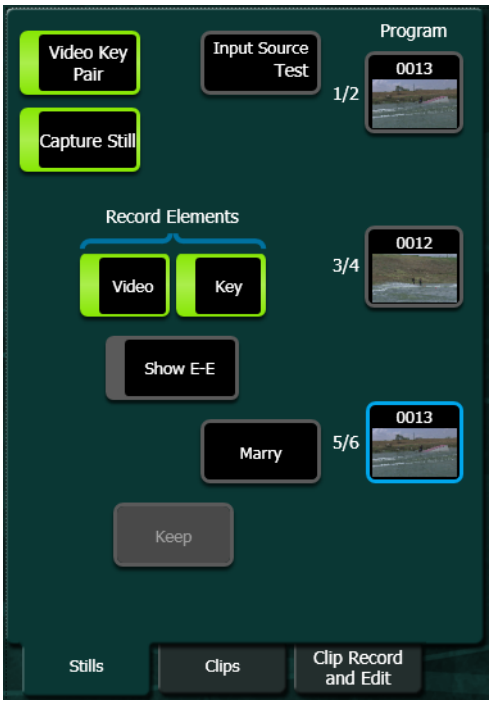
Channels 1 & 2, 3 & 4, and 5 & 6 can be captured (and played back) as video/key pairs (odd for video, even for key). For example, to capture a video/key pair from source input to Image Store Channels 1 and 2:

1. Go to the Image Store, Record & Replay, Stills menu tab and touch the **Capture** button (Figure 174).

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 174. Capturing V/K Image Pair



8. Capture the still as described in *Capturing a Still from Input Video* *on page 300*.

Marrying Two Videos as a Video/Key Pair

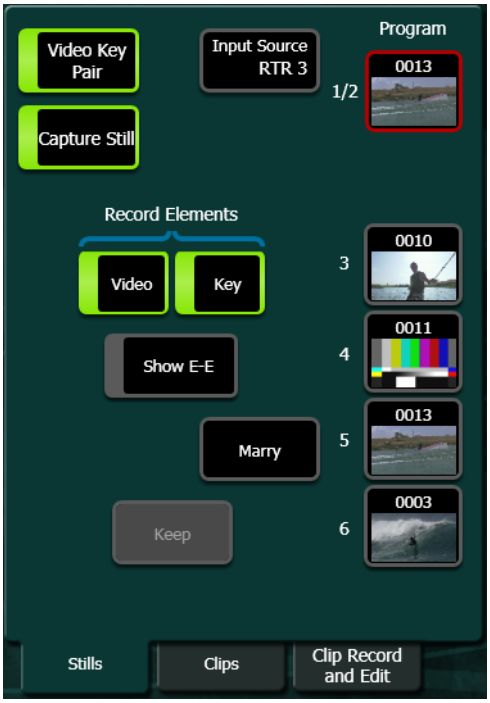
Two existing video images can be "Married" using the **Marry** button in the Capture Still menu, to create a video/key image with the same Image Store ID. Once married, the image will take the ID number for the video in the odd channel.

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 174).
8. Touch the **Marry** button.

Figure 175. Capture Still Menu, Marry Button



Note The Marry function cannot be undone. The combined image is permanently video/key.

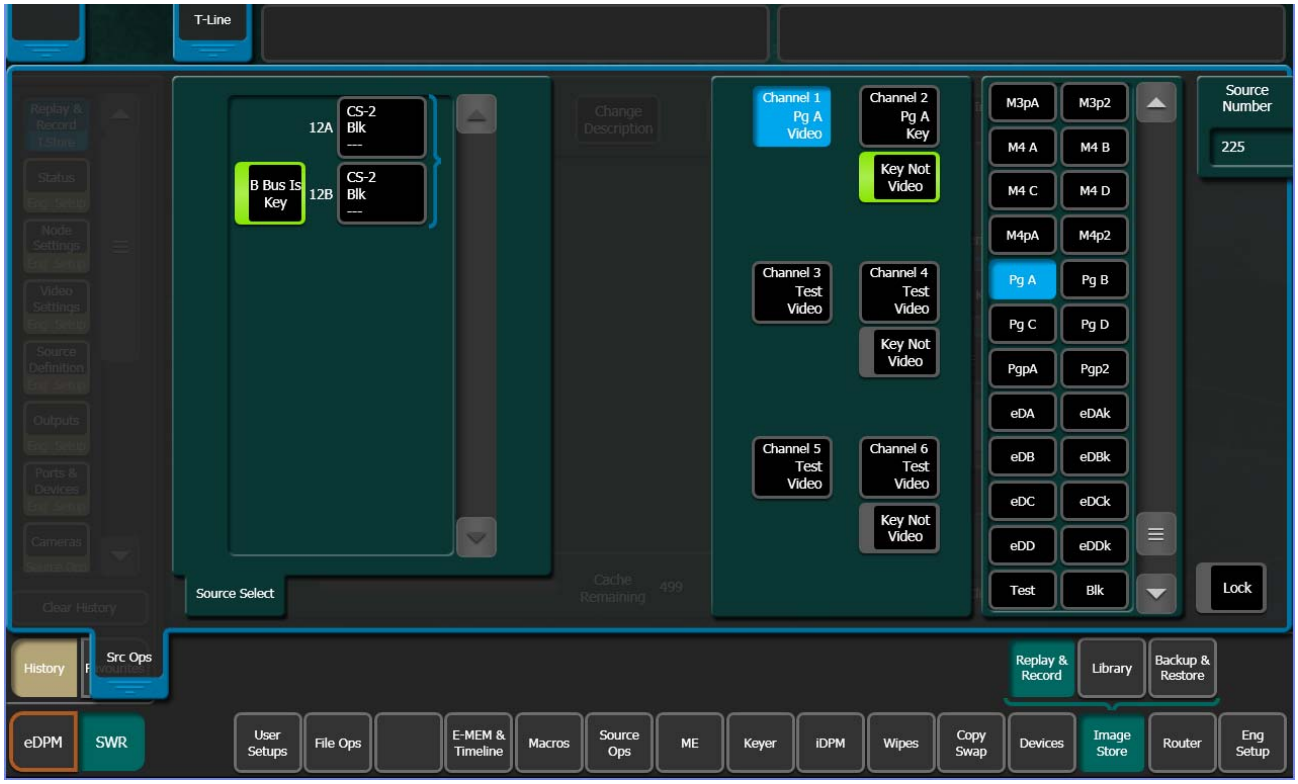
The two images become a video/key pair. The odd image's thumbnail/list item is displayed with its new Image ID and a V/K in the description. The image in the even numbered channel is now the key channel of the pair (Figure 176).

Figure 176. Married Image

Key Signal-only Capture

In addition to capturing a video or video/key, Karrera can be configured to capture a key-only signal. This setting is in the **Src Ops** Quick Tab menu (Figure 177). *Also available in the Source Ops, Image Store menu*.

Figure 177. 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 300*), or pair and capture the key signal with an odd channel (see *Capturing Stills as Video Key Pairs* *on page 304*).

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 304*), you can perform a Split Key operation from the Image Store Src Ops Quick Tab menu (Figure 178) using the **Split Key** button (see *Split Key on page 64* for more information).

Figure 178. Src Ops Quick Tab Menu, Split Key button

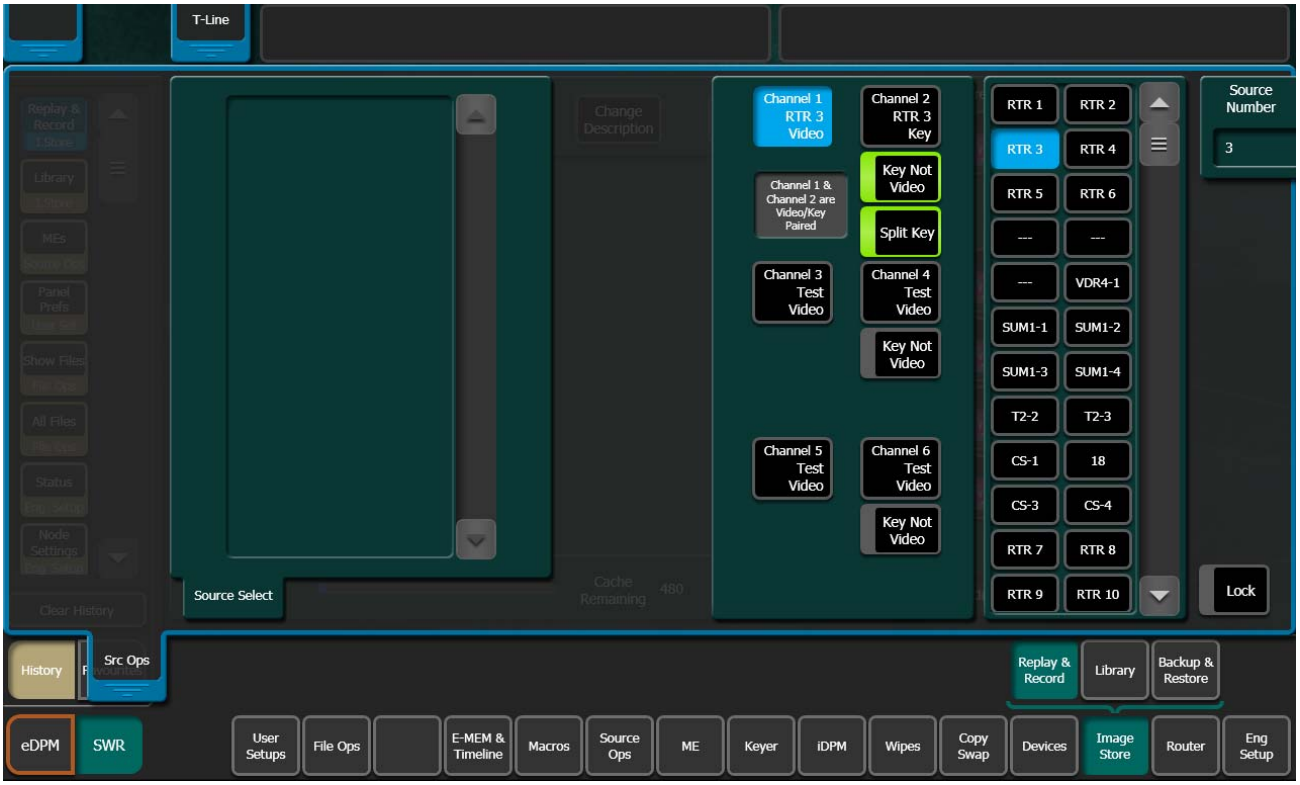


Image Playback

Image playback is performed in the Image Store, Replay & Record, Stills menu tab (Figure 179). 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 179. 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 180), enter an image number, and then touch **Enter**.

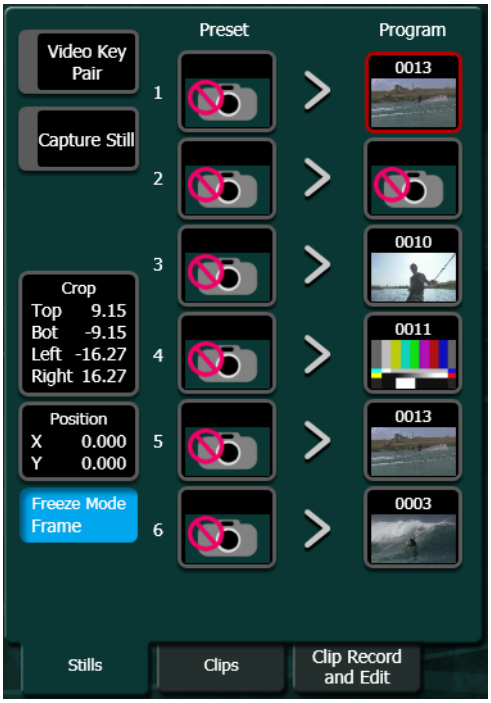
Figure 180. Scroll Image List Keypad

- 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 179).

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 181).

Figure 181. 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 182) 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 182).

Figure 182. Crop Menu

3. Touch either the **Production Aperture** or **Clean Aperture** type button (Production Aperture is the default) (Figure 182).
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 182).
5. Touch the **Confirm Crop** button to perform the crop function (Figure 182).

Positioning Images

The position of images can be changed in the Position menu (Figure 183).

Figure 183. Position Menu

1. Touch the image you wish to re-position.
2. Touch the **Position** data pad to display the Position menu (Figure 183).
3. Touch the **Horizontal** (X) or **Vertical** (Y) data pads (Figure 183) 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 183).

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 184):

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 184. Freeze Mode Button

Image Store Library

The Image Store Library menu allows you to perform file operations within Image Store. Native Karrera and Kalypso (see *Kalypso Still Image Conversion on page 322*) 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 319*). 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 185):

- Image ID
- Image Description (name)
- M/S (Still)
- Length
- Format
- Content (Y/N)

File Transfers

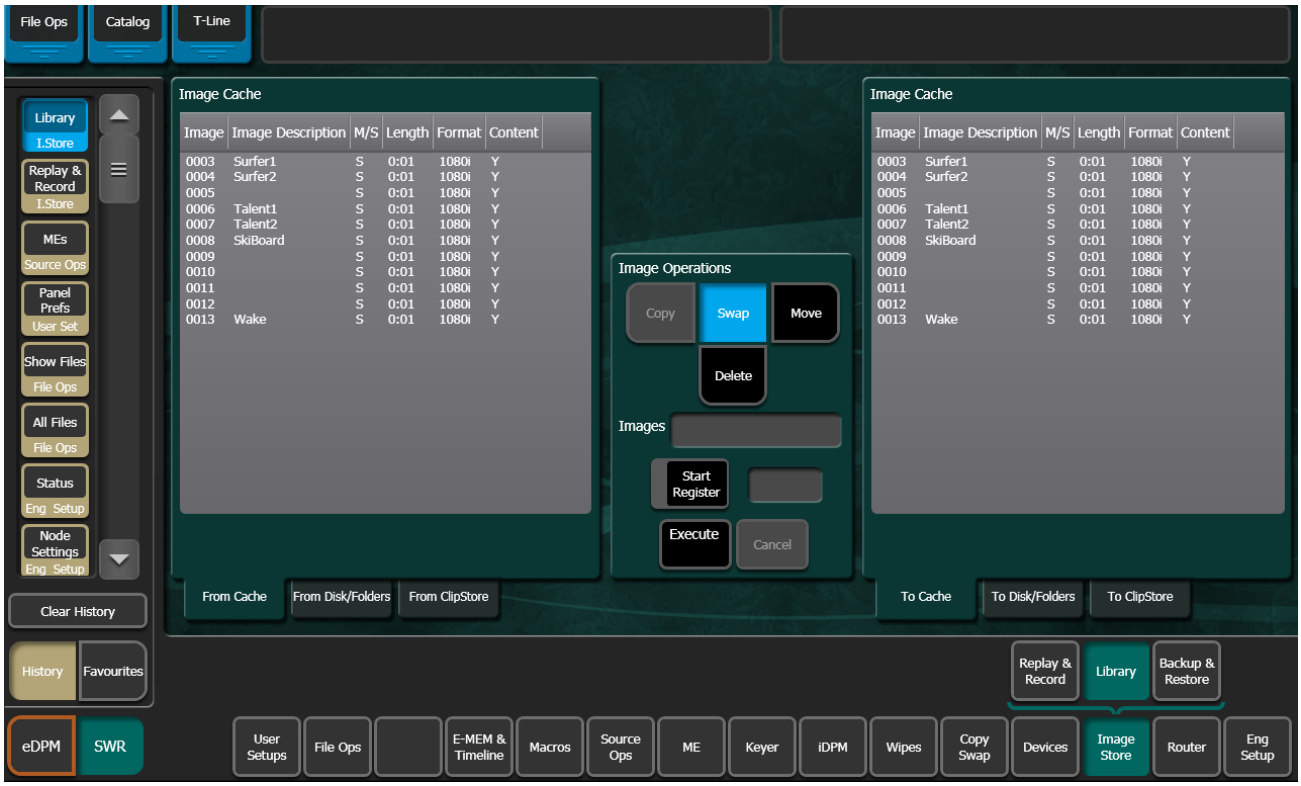
From a USB Memory Stick

See *Directory to Cache File Transfers on page 319*.

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 185).

Figure 185. 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 317*).

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 318*), 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 Karrera 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 Karrera 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 319*).

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

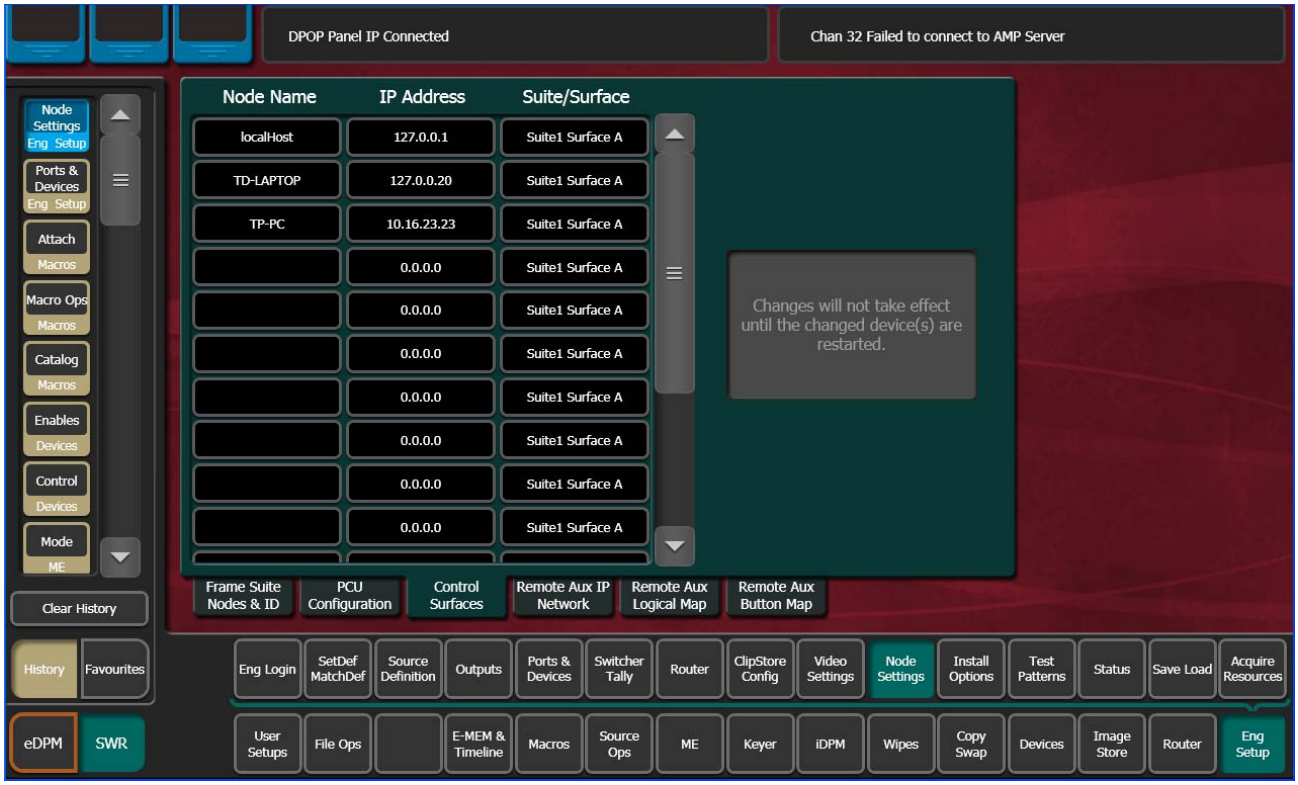
1. Open a Windows Explorer window.
2. Click on the **Tools** pull-down menu, select **Folder Options**.
3. Click on the **View** tab.
4. Deselect the **Use simple file sharing (Recommended)** check box by clicking on it and click on **OK**.
5. Navigate to C:\ in Windows Explorer, right-click on the **Images** 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 Karrera 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 186).

Figure 186. 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 Karrera system. Kalypso files are converted by copying them to the Karrera Image Cache or to another directory on the Karrera system using the Karrera Image Store Library menu. Once converted they are available for immediate use on-air, and can be copied or backed up using the Karrera system the same as any Karrera Image Store images.

Kalypso image files are renamed during the conversion process. For example, a Kalypso I0000007 file set is converted to a Karrera Image Store file; 0007.kif.

Conversion Requirements

The following conditions must be met:

- The directory containing the Kalypso stills must be accessible to the Karrera 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 Karrera 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 Karrera 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 Karrera Image Store supports 487 lines. A Karrera 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 Karrera 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.

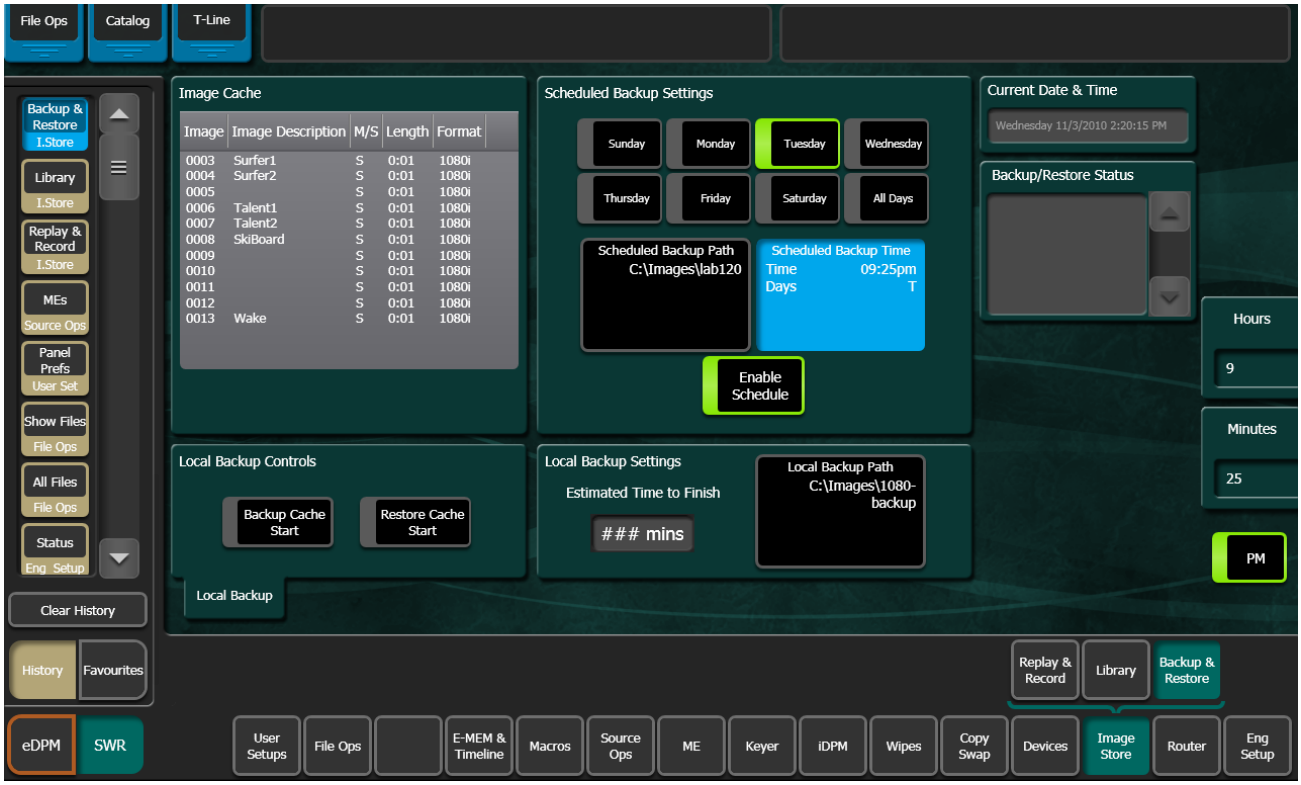
Note Only files with both .gva and .gvi components named using the Kalypso file naming format within the allowable range can be selected in the list.

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 Karrera 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 187).

Figure 187. Backup & Restore Menu



CAUTION Backup/Restore folder names cannot have underscores (_) in addition to special characters in their names or the process will fail.

Manual Backup

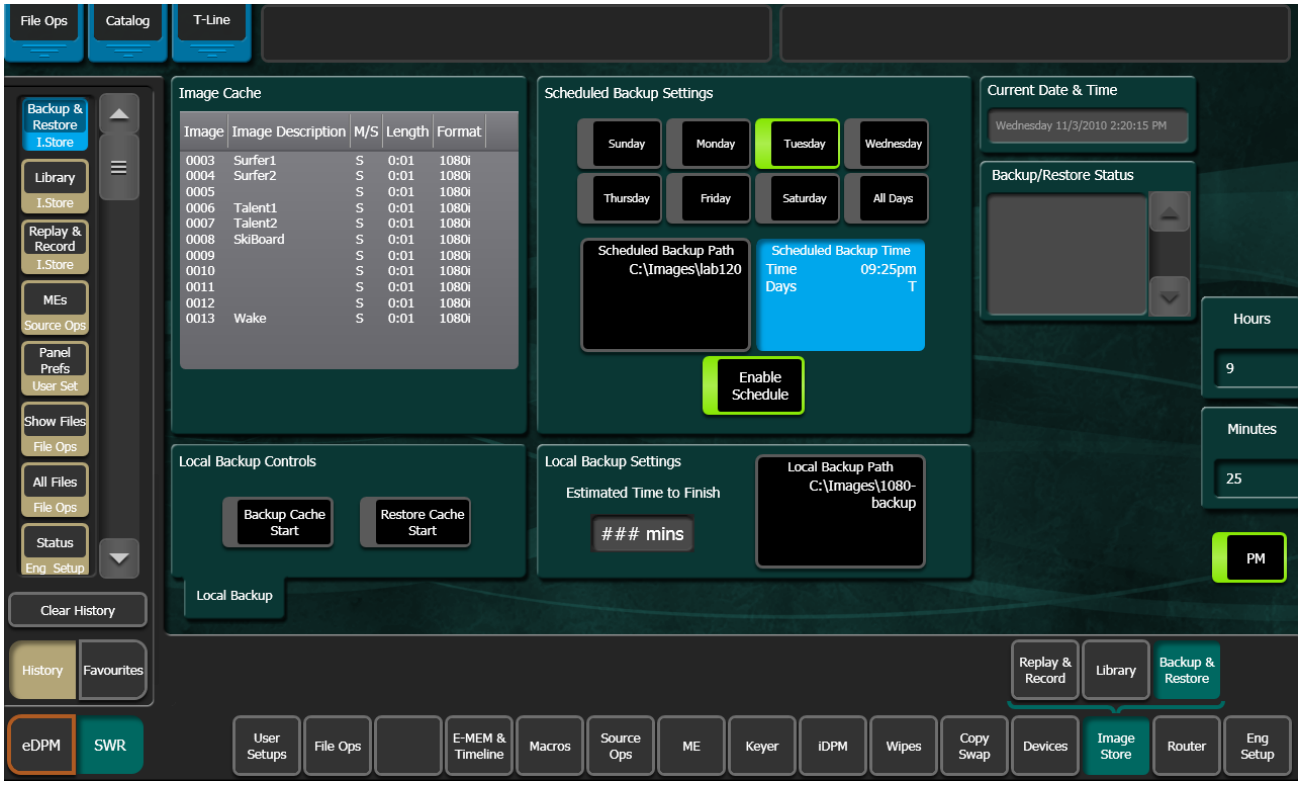
To manually backup the Image Store Cache locally (Figure 187):

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 188).

Figure 188. 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 187):

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.

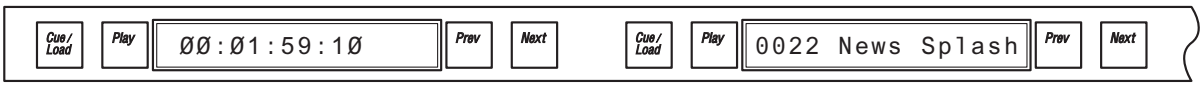
Device Control

Images can be controlled from the System Bar on the Control Panel.

System Bar Control

Image Store Channel images can be selected and loaded from the System Bar area (Figure 189).

Figure 189. System Bar area, 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.

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 *Karrera 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 Karrera 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 *Karrera 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 Karrera Menu Panel and clip stack control from the Karrera 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 Karrera 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 190), 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 190). 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 Devices* *on page 168*.

Figure 190. ClipStore in Device Menu

Karrera Control Panel Operation

As with other external devices, device control is possible through the MFM (Multi-Function area), the optional DCM (Device Control area), 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 191). 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 191).

Figure 191. Clips Menu

Folder Selection

Touch the **Current Folder** data pad located just above the scrolling clip list (Figure 191) to change the current folder. The Folders/Clips menu is displayed (Figure 192).

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 192) 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 192. 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 191),
- Touching the **Scroll Image List** data pad (Figure 191), 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 192).

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 191):

1. Turn on Auto Load by touching the **Auto Load** button.

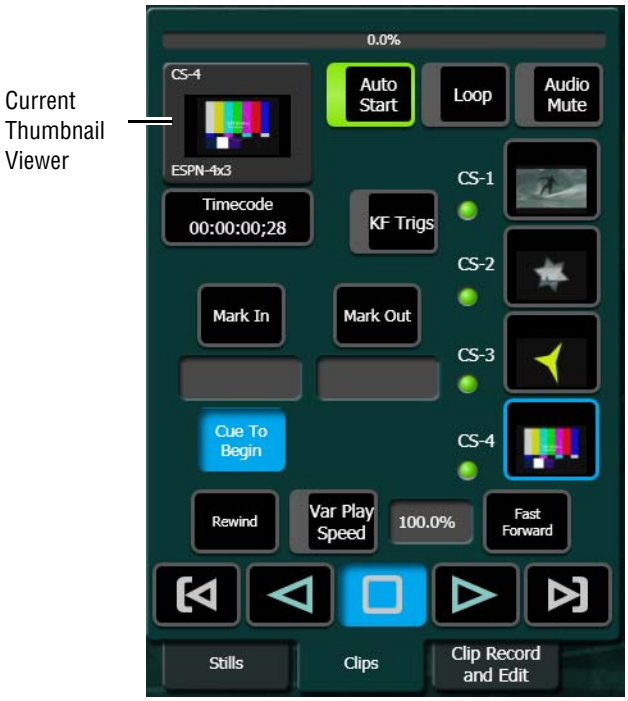
Note Auto Load must be on to load a clip.

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 193) displays the currently loaded clip in the selected channel.

Figure 193. 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 191) and the list will automatically scroll to display the selected clip.

Clip Search

You can search for clips using the **Search Clip** button (Figure 191). 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 194).

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 194). 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 194).

Other controls include (Figure 194):

- **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.

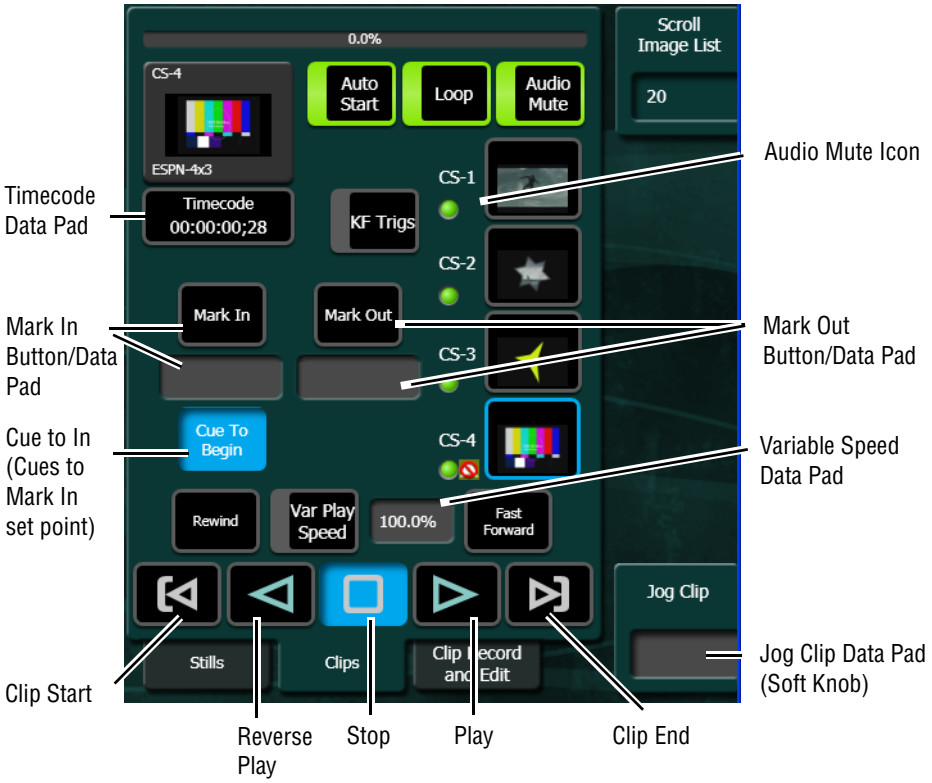
Device control buttons:

- **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 194. 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 195). The motion control buttons become jeweled toggle buttons, and **Loop Enable**, **Loop Disable** and **Cue** buttons are displayed (Figure 195). When a **Loop Enable**, **Loop Disable**, **Cue**, or motion control button is touched, that operation will be learned by E-MEM.

Figure 195. 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 196). The **Record** and **Edit** mode buttons (Figure 196) are positioned at the top right of the menu. To record, the **Record** mode button must be selected (highlighted light blue, Figure 196).

A *Record Time Remaining* indicator in HH:MM:SS format is provided in ClipStore as a reminder to maintain enough storage space for recording or adding clips. The indicator, located in the Image Store, Replay & Record menu (bottom left of the Clips scrolling window), displays the available storage remaining in the ClipStore Summit/Solo server (Figure 197).

Note The Record Time Remaining indicator is only available in the Clips and Clip Record and Edit tabs.

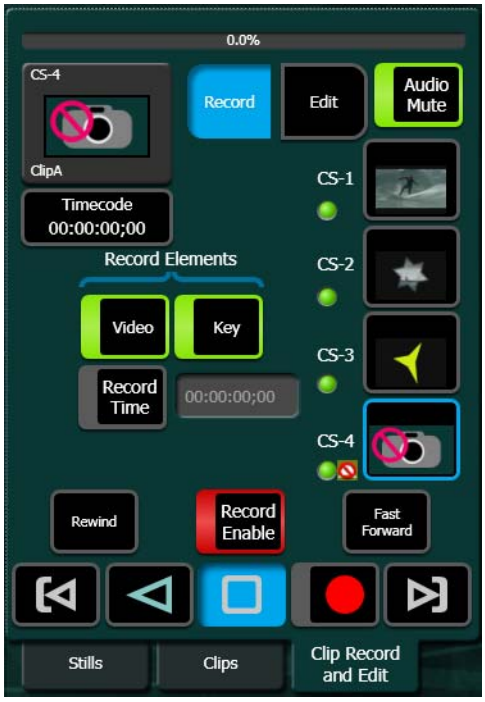
Figure 196. Record Mode

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 197). 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 192). 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 197. 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 337*). 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.

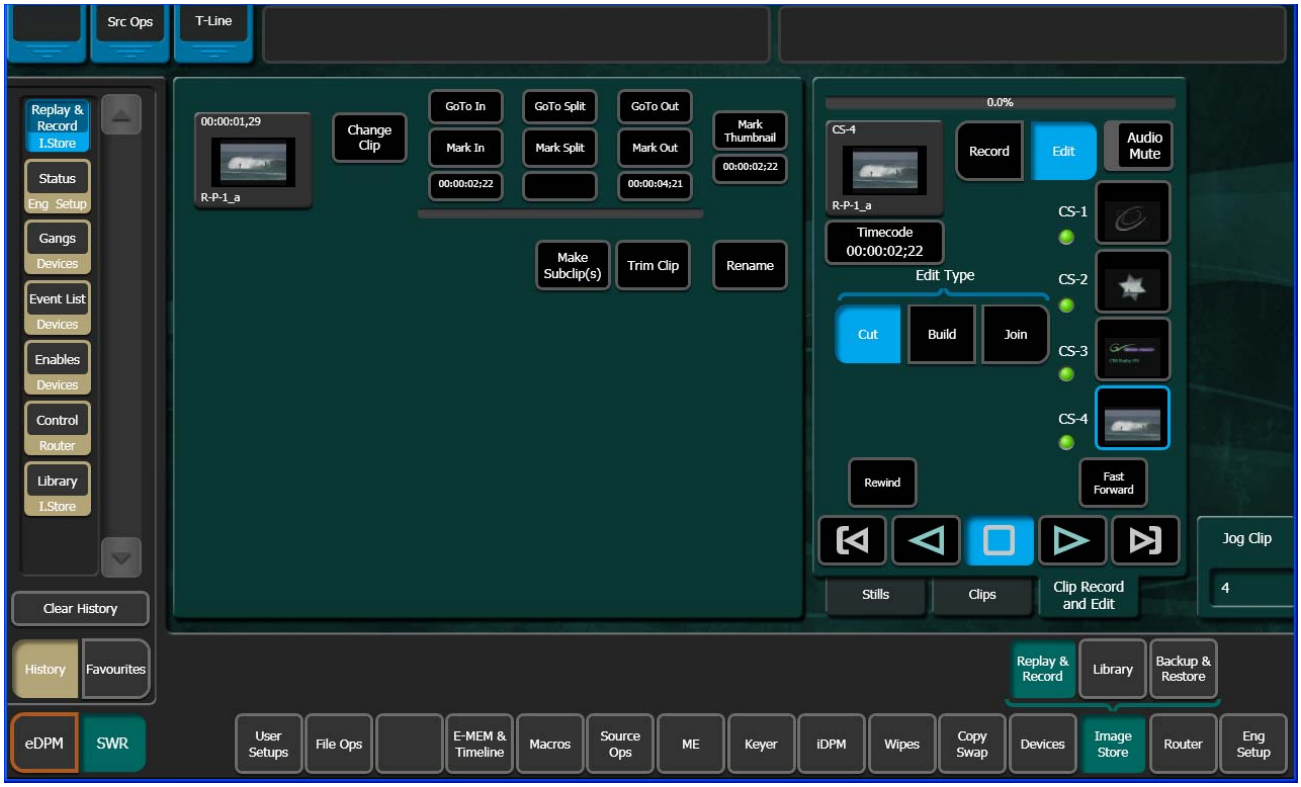
Cut Edit

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 337*),
- Trim and remove from the head of the clip to the Mark In point (*Trim and Remove* *on page 339*),
- Trim and remove from Mark Out point to the end of the clip (*Trim and Remove* *on page 339*),
- Make sub-clips (including splitting one clip into two) from the current clip (*Make Sub-clips from the Current Clip* *on page 340*), and
- Cut Edit while recording a clip (*Cut Editing while Recording* *on page 341*).

For Cut Edit, touch **Image Store**, **Replay & Record**, **Clip Record and Edit** and touch the **Cut** button in the Edit Type mode group (Figure 201).

Figure 198. 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 199).

Figure 199. Mark Thumbnail Point

1. Touch the **Change Clip** button to select a clip to edit (unless previously loaded, Figure 199).
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 199), and touch **Enter**.
4. Touch the **Mark Thumbnail** button (Figure 199).

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 200), 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 200).

Figure 200. 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 340*).

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.

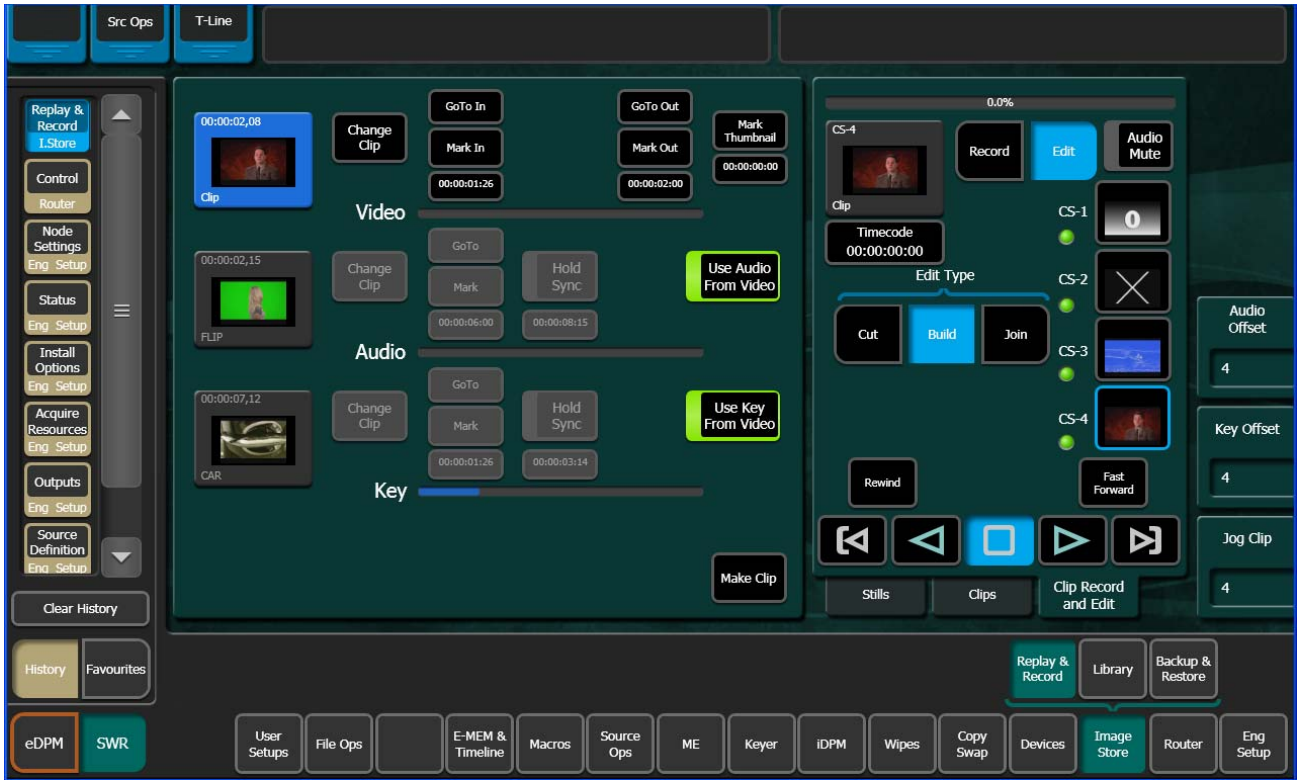
Build Editing

Build Editing (Figure 201) 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 201. 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).

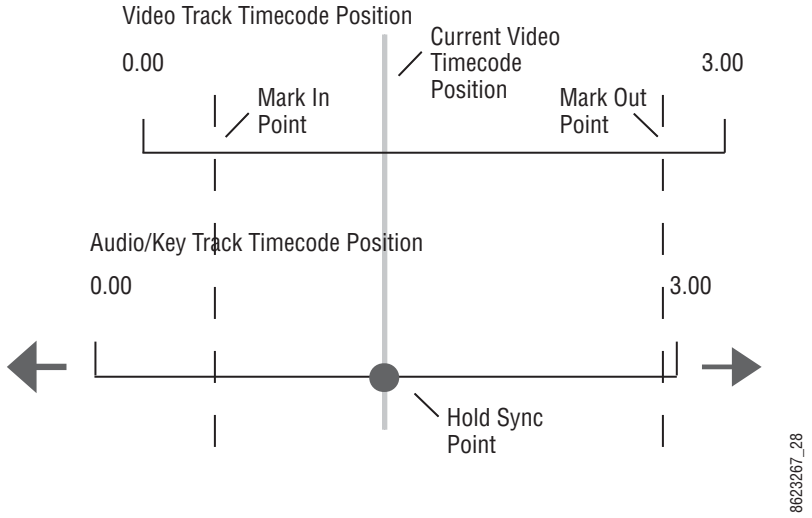
Hold Sync—Hold Sync sets the position of the Audio/Key track in relation to the Video track's current timecode position (Figure 202). The Audio/Key track's timecode can be offset in relation to the video track timecode by changing the Hold Sync Mark Point (using the **Hold Sync** data pad pop-up keypad 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 202. 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.

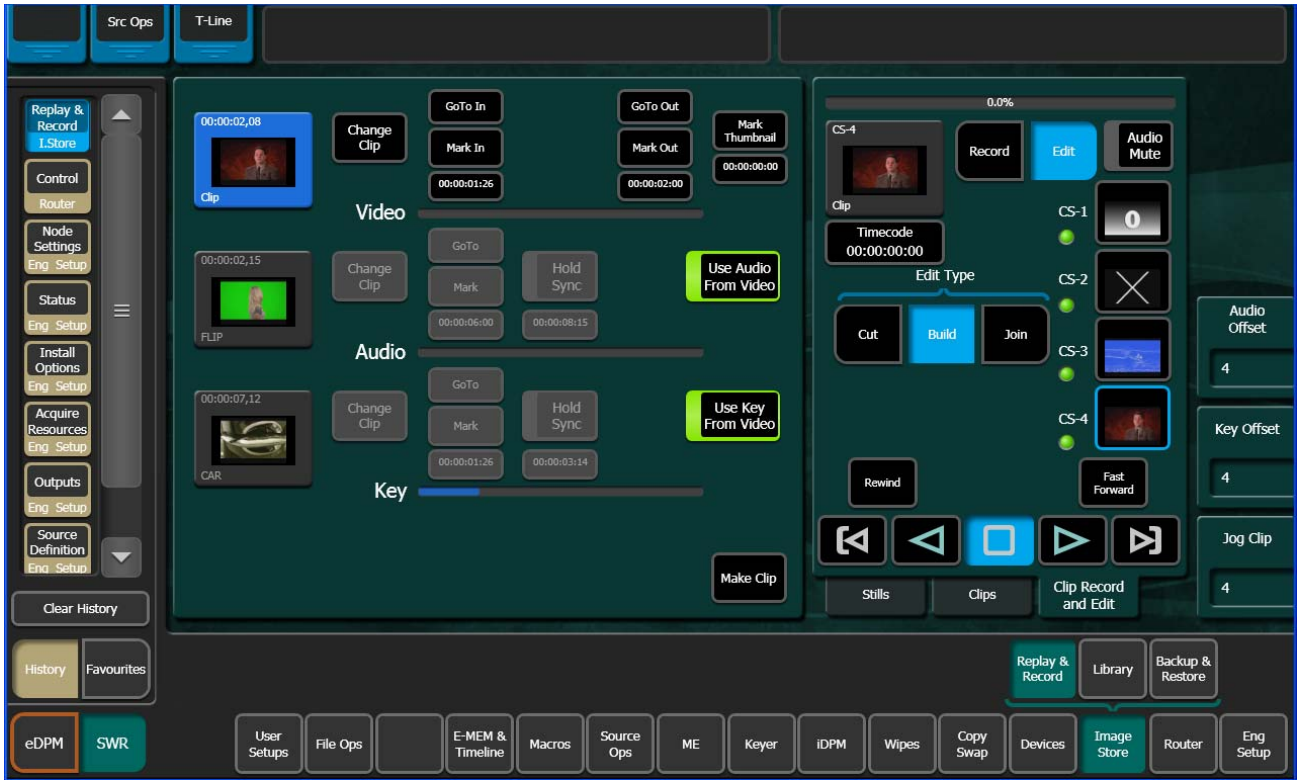
These procedures can also be used to make a composite clip of elements on one long clip, for example if both Video and Key track are recorded on one clip, the clip can be loaded as the Video track and then as the Key track, synchronized, and then a sub-clip made of the composite elements.

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 203).

Figure 203. Build Edit Mode—Video Only Edit



1. Unless the desired clip is loaded, touch the **Video Thumbnail Viewer** (Figure 203).
2. Touch the **Change Clip** button for the Video and touch the desired clip (Figure 203).
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 203) 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.

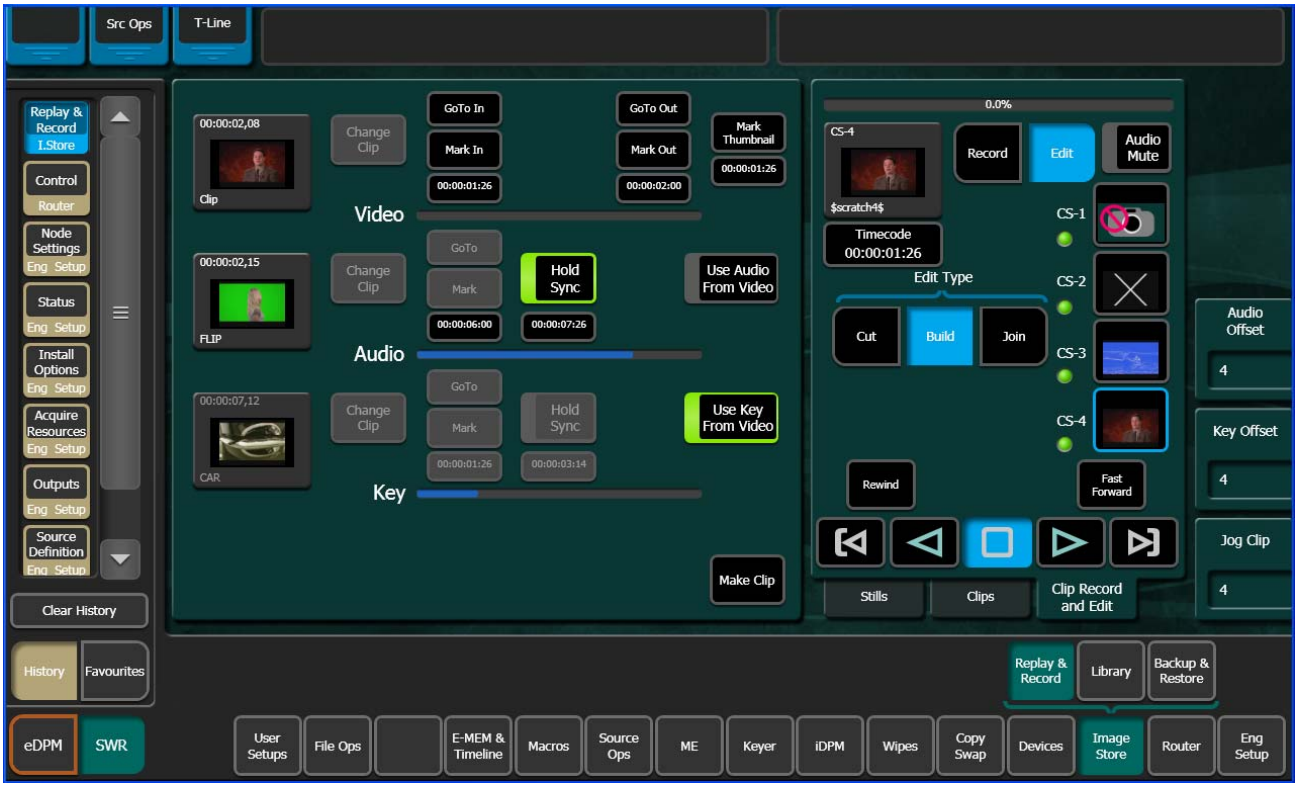
Note If Multiple sub-clips are desired from a built clip, use Build Edit to make the whole clip and then use the Cut Edit to make multiple sub-clips.

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 349*).

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 204).

Figure 204. Build Edit Mode—Audio Track Edit



2. Touch the **Change Clip** button for the Video and touch the desired clip (Figure 204).

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 204) 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 204).
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 343 for more about Hold Sync).

With the **Video Thumbnail Viewer** selected, you can test the composite elements using the motion control buttons.

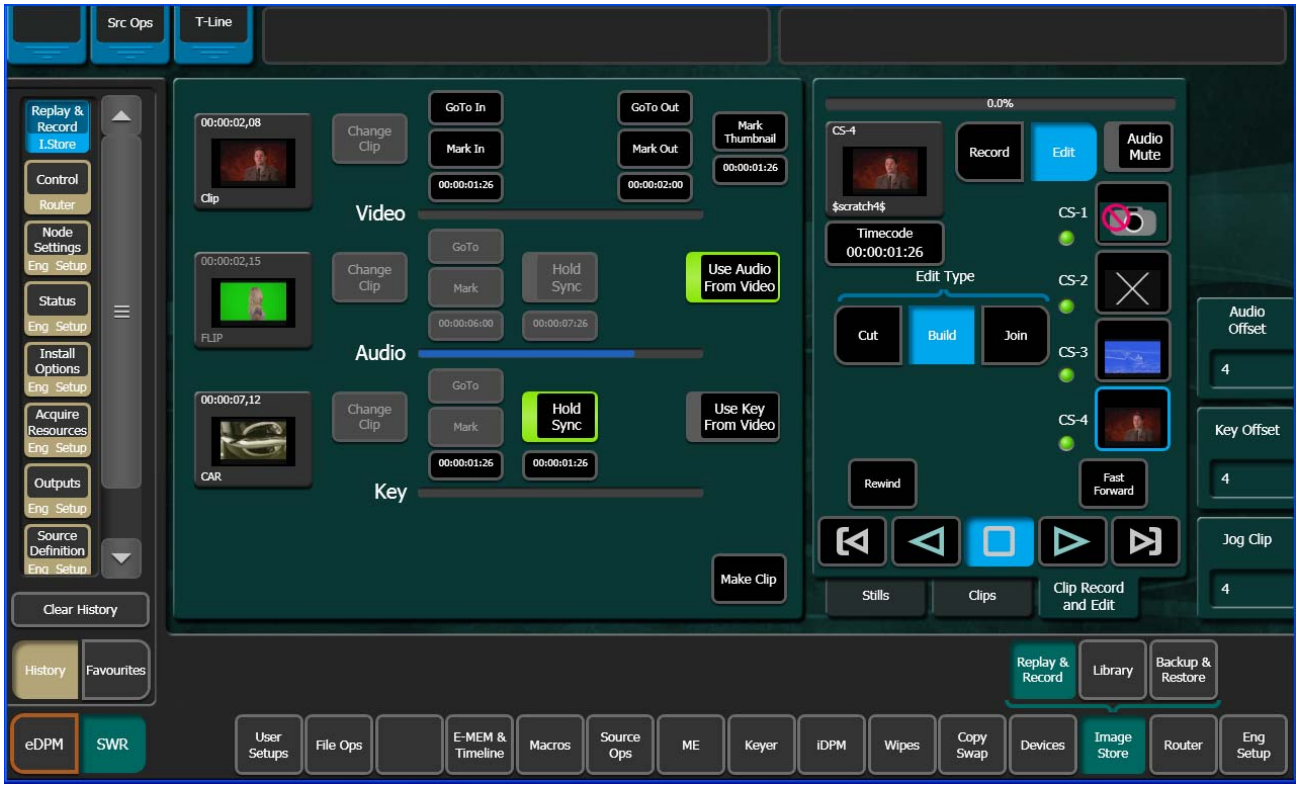
Make the Sub-clip

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 205).

Figure 205. Build Edit Mode—Key Track Edit



2. Touch the **Change Clip** button for the Video and touch the desired clip (Figure 205).
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 205) 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 343 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

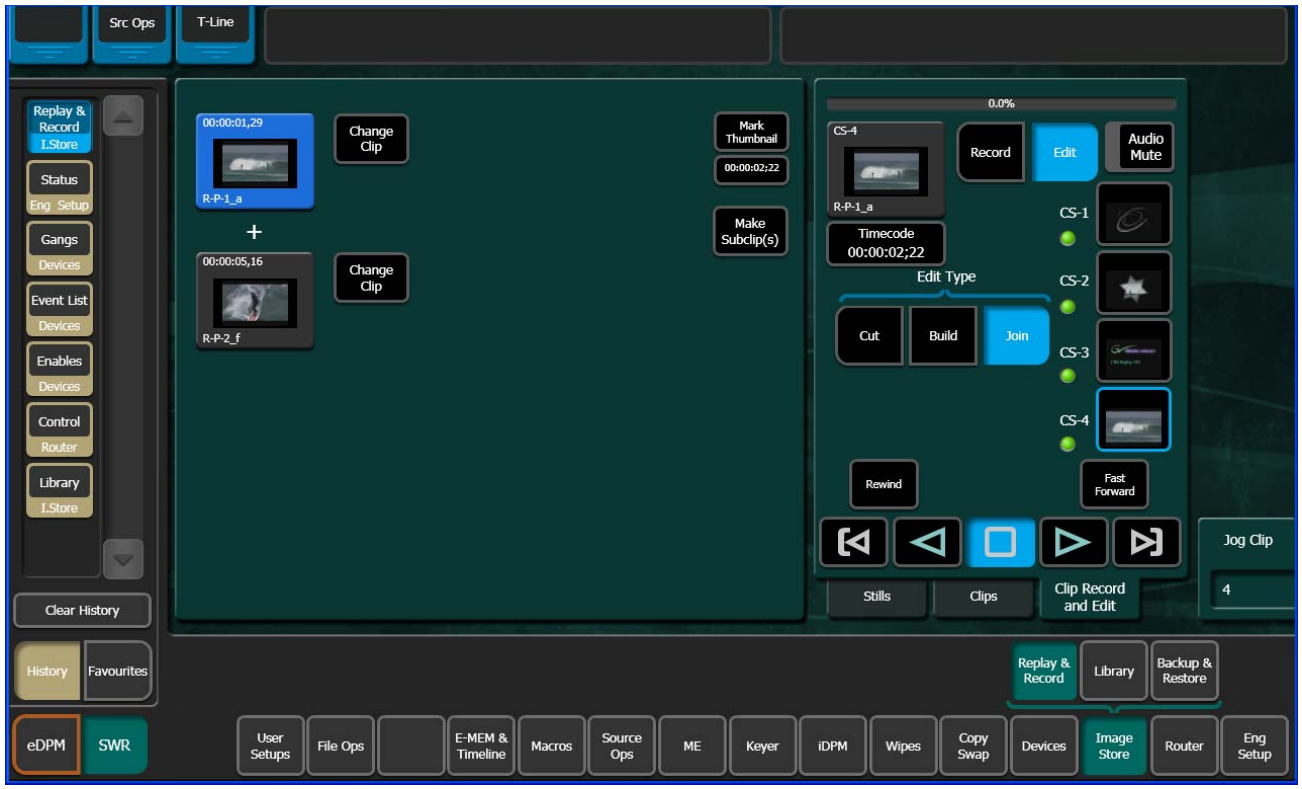
1. Touch the **Make Clip** button.
2. Enter the name of the new clip and touch **Enter**.

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 206).

Figure 206. 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 207).

Note File renaming is not supported in the ClipStore Library menus.

File transfers can be performed from/to the following locations from the Karrera Menu Panel:

- ClipStore Server,
- Image folder on the Karrera 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 Karrera 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 351*).

Figure 207. 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 207). 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 Karrera 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 “Karrera 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.

Backup & Restore

For backup and restore information, see *Backup & Restore* *on page 324*.

Device Control

Images can be controlled from the System Bar on the Control Panel, see *Device Control* *on page 326*.

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 Karrera 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 Karrera 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 Karrera system, a collection of configuration settings that establishes an essential baseline for system operation and integrates the Karrera 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 Karrera, 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 Karrera 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 Karrera 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 Karrera 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.

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