



# Kayenne XL Package

KAYAK HD DIGITAL PRODUCTION SWITCHER

User Manual  
Software Version V702



Affiliate with the N.V. KEMA in The Netherlands



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# Preface

## About This Manual

This Kayenne XL Package User Manual is designed as a reference manual for operators of Kayenne XL Packages, which include the Kayenne XL control panel and the Kayak HD video processor frame.

### Software/Manual Version

- Kayenne XL / Kayak HD Software Release V702
- Kayenne XL / Kayak HD User Manual Version V702.10

### Standard Documentation Set

The standard Kayenne XL Package documentation set consists of:

- *Kayenne XL Package User Manual (Control Panel)*
- *Kayenne XL Package Installation and Service Manual (Control Panel)*
- *Release Notes*

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

The *Installation and Service Manual* contains information about installing, configuring, and maintaining the Kayak HD mainframe and the control panels.

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

## **Other Documentation**

Communication protocols of Kayak HD Package are available upon request for developers and software engineers to use to design editor and other external interfaces to the Kayenne XL Package.

# *System Overview*

## **Introduction**

The Grass Valley Kayenne XL Package is an affordable, compact, and flexible digital production switcher system that offers an array of high-end features for everything from live studio and mobile production to small corporate studios and editing applications. The Kayenne XL Package leverages many of the features found in the Grass Valley Kayak™ switchers. The result is a compact system with superior image quality and features not found in any other product.

## **Kayenne XL Control Panel Models**

### **KHDXL-PNL-100-15**

1 M/E Kayenne XL panel with Kayak keycap legends, with 15 button source selectors, Panel Control Unit with redundant power, menu panel, 1 license (KAYN-LIC-PNL-ME), manual set and cables (pick 7.5 meter or 15 meter). Includes one 15 button source select module (KAYN-PNL-SRC-15), one Local E-MEM module (KAYN-PNL-LEM), one Master E-MEM module (KAYN-PNL-MEM), one Transition Module (KAYN-PNL-TRM), one Multi-function module (KAYN-PNL-MFM), and the System Bar. There are no option slots available in the panel trays included.

### **KHDXL-PNL-100-15-A**

Additional 1 M/E Kayenne XL panel with Kayak keycap legends, with 15 button source selectors, 1 license (KAYN-LIC-PNL-ME), manual set and cables (pick 7.5 meter or 15 meter). Includes one 15 button source select module (KAYN-PNL-SRC-15), one Local E-MEM module (KAYN-PNL-LEM), one Master E-MEM module (KAYN-PNL-MEM), one Transition Module (KAYN-PNL-TRM), one Multi-function module (KAYN-PNL-MFM), and the System Bar. There are no option slots available in the panel trays included. Does not include menu panel or Panel Control Unit.

## **KHDXL-PNL-200-25**

2 M/E Kayenne XL panel with Kayak keycap legends, with 25 button source selectors, Panel Control Unit with redundant power, menu panel, 2 licenses (KAYN-LIC-PNL-ME), manual set and cables (pick 7.5 meter or 15 meter). Includes two 25 button source select modules (KAYN-PNL-SRC-25), one 25 button local aux panel (KAYN-PNL-AUX-25), two Local E-MEM modules (KAYN-PNL-LEM), one Master E-MEM module (KAYN-PNL-MEM), two Transition modules (KAYN-PNL-TRM), one Multi-function module (KAYN-PNL-MFM), and the System Bar. There are no option slots available in the panel trays.

## **KHDXL-PNL-200-25-A**

Additional 2 M/E Kayenne XL panel with Kayak keycap legends, with 25 button source selectors, 2 licenses (KAYN-LIC-PNL-ME), manual set and cables (pick 7.5 meter or 15 meter). Includes two 25 button source select modules (KAYN-PNL-SRC-25), one 25 button local aux panel (KAYN-PNL-AUX-25), two Local E-MEM modules (KAYN-PNL-LEM), one Master E-MEM module (KAYN-PNL-MEM), two Transition modules (KAYN-PNL-TRM), one Multi-function module (KAYN-PNL-MFM), and the System Bar. There no option slots available in the panel trays. Does not include menu panel or Panel Control Unit.

## **KHDXL-PNL-200-35**

2 M/E Kayenne XL panel with Kayak keycap legends, with 35 button source selectors, Panel Control Unit with redundant power, menu panel, 2 licenses (KAYN-LIC-PNL-ME), manual set and cables (pick 7.5 meter or 15 meter). Includes two 35 button source select modules (KAYN-PNL-SRC-35), one 35 button local aux panel (KAYN-PNL-AUX-35), two Local E-MEM modules (KAYN-PNL-LEM), one Master E-MEM module (KAYN-PNL-MEM), two Transition modules (KAYN-PNL-TRM), one Multi-function module (KAYN-PNL-MFM), and the System Bar. There are no option slots available in the panel trays.

## **KHDXL-PNL-200-35-A**

Additional 2 M/E Kayenne XL panel with Kayak keycap legends, with 35 button source selectors, with 2 licenses (KAYN-LIC-PNL-ME), manual set and cables (pick 7.5 meter or 15 meter). Includes two 35 button source select modules (KAYN-PNL-SRC-35), one 35 button local aux panel (KAYN-PNL-AUX-35), two Local E-MEM modules (KAYN-PNL-LEM), one Master E-MEM module (KAYN-PNL-MEM), two Transition modules (KAYN-PNL-TRM), one Multi-function module (KAYN-PNL-MFM), and the System Bar. There are no option slots available in the panel trays. Does not include menu panel or Panel Control Unit.

**KHDXL-PNL-300-25**

3 M/E Kayenne XL panel with Kayak keycap legends, with 25 button source selectors, Panel Control Unit with redundant power, menu, 3 licenses (KAYN-LIC-PNL-ME), manual set and cables (pick 7.5 meter or 15 meter). Includes three 25 button source select modules (KAYN-PNL-SRC-25), one 25 button local aux panel (KAYN-PNL-AUX-25), three Local E-MEM modules (KAYN-PNL-LEM), one Master E-MEM module (KAYN-PNL-MEM), three Transition modules (KAYN-PNL-TRM), one Multi-function module (KAYN-PNL-MFM), and the System Bar. There is one option slot available in the panel trays.

**KHDXL-PNL-300-25-A**

Additional 3 M/E Kayenne XL panel with Kayak keycap legends, with 25 button source selectors, 3 licenses (KAYN-LIC-PNL-ME), manual set and cables (pick 7.5 meter or 15 meter). Includes three 25 button source select modules (KAYN-PNL-SRC-25), one 25 button local aux panel (KAYN-PNL-AUX-25), three Local E-MEM modules (KAYN-PNL-LEM), one Master E-MEM module (KAYN-PNL-MEM), three Transition modules (KAYN-PNL-TRM), one Multi-function module (KAYN-PNL-MFM), and the System Bar. There is one option slot available in the panel trays. Does not include menu panel or Panel Control Unit.

**KHDXL-PNL-300-35**

3 M/E Kayenne XL panel with Kayak keycap legends, with 35 button source selectors, Panel Control Unit with redundant power, menu, 3 licenses (KAYN-LIC-PNL-ME), manual set and cables (pick 7.5 meter or 15 meter). Includes three 35 button source select modules (KAYN-PNL-SRC-35), one 35 button local aux panel (KAYN-PNL-AUX-35), three Local E-MEM modules (KAYN-PNL-LEM), one Master E-MEM module (KAYN-PNL-MEM), three Transition modules (KAYN-PNL-TRM), one Multi-function module (KAYN-PNL-MFM), and the System Bar. There is one option slot available in the panel trays.

**KHDXL-PNL-300-35-A**

Additional 3 M/E Kayenne XL panel with Kayak keycap legends, with 35 button source selectors, 3 licenses (KAYN-LIC-PNL-ME), manual set and cables (pick 7.5 meter or 15 meter). Includes three 35 button source select modules (KAYN-PNL-SRC-35), one 35 button local aux panel (KAYN-PNL-AUX-35), three Local E-MEM modules (KAYN-PNL-LEM), one Master E-MEM module (KAYN-PNL-MEM), three Transition modules (KAYN-PNL-TRM), one Multi-function module (KAYN-PNL-MFM), and the System Bar. There is one option slot available in the panel trays. Does not include menu panel or Panel Control Unit.

## **KHDXL-PNL-400-25**

4 M/E Kayenne XL panel with Kayak keycap legends, with 25 button source selectors, Panel Control Unit with redundant power, menu, 4 licenses (KAYN-LIC-PNL-ME), manual set and cables (pick 7.5 meter or 15 meter). Includes four 25 button source select modules (KAYN-PNL-SRC-25), one 25 button local aux panel (KAYN-PNL-AUX-25), four Local E-MEM modules (KAYN-PNL-LEM), one Master E-MEM module (KAYN-PNL-MEM), four Transition modules (KAYN-PNL-TRM), one Multi-function module (KAYN-PNL-MFM), and the System Bar. There are two option slots available in the panel trays.

## **KHDXL-PNL-400-25-A**

Additional 4 M/E Kayenne XL panel with Kayak keycap legends, with 25 button source selectors, 4 licenses (KAYN-LIC-PNL-ME), manual set and cables (pick 7.5 meter or 15 meter). Includes four 25 button source select modules (KAYN-PNL-SRC-25), one 25 button local aux panel (KAYN-PNL-AUX-25), four Local E-MEM modules (KAYN-PNL-LEM), one Master E-MEM module (KAYN-PNL-MEM), four Transition modules (KAYN-PNL-TRM), one Multi-function module (KAYN-PNL-MFM), and the System Bar. There are two option slots available in the panel trays. Does not include menu panel or Panel Control Unit.

## **KHDXL-PNL-400-35**

4 M/E Kayenne XL panel with Kayak keycap legends, with 35 button source selectors, Panel Control Unit with redundant power, menu, 4 licenses (KAYN-LIC-PNL-ME), manual set and cables (pick 7.5 meter or 15 meter). Includes four 35 button source select modules (KAYN-PNL-SRC-35), one 35 button local aux panel (KAYN-PNL-AUX-35), four Local E-MEM modules (KAYN-PNL-LEM), one Master E-MEM module (KAYN-PNL-MEM), four Transition modules (KAYN-PNL-TRM), one Multi-function module (KAYN-PNL-MFM), and the System Bar. There are two option slots available in the panel trays.

## **KHDXL-PNL-400-35-A**

Additional 4 M/E Kayenne XL panel with Kayak keycap legends, with 35 button source selectors, 4 licenses (KAYN-LIC-PNL-ME), manual set and cables (pick 7.5 meter or 15 meter). Includes four 35 button source select modules (KAYN-PNL-SRC-35), one 35 button local aux panel (KAYN-PNL-AUX-35), four Local E-MEM modules (KAYN-PNL-LEM), one Master E-MEM module (KAYN-PNL-MEM), four Transition modules (KAYN-PNL-TRM), one Multi-function module (KAYN-PNL-MFM), and the System Bar. There are two option slots available in the panel trays. Does not include menu panel or Panel Control Unit.



## Kayak HD Mainframe Standard Features

- Switchable between several HD formats
- Supports SD production
- Fully digital 10-bit, 4:2:2 inputs, outputs
- Compact 4 RU and 8 RU lightweight frames
- Low power consumption
- Hot swappable, front removable modules and power supplies
- Intuitive menu with touch screen
- One DPM Channel standard per M/E with planar 3D effects, remaining channels optional, adding non-linear and lighting effects (Software License Key (SLK))
- 2 high-quality chroma keyers standard
- Number of M/Es:
  - 1 for Kayak HD 100C
  - 1.5 for Kayak HD 150C
  - 2 for Kayak HD 200, 200C
  - 2.5 for Kayak HD 250, 250C
  - 3 for Kayak HD 300
  - 3.5 for Kayak HD 350
  - 4 for Kayak HD 400
  - 4.5 for Kayak HD 450

**Note**      0.5 M/E (that is, half an M/E) includes cuts and mixes, no wipes or iDPM, with simple linear/luminance keyers and no chroma keys.

- Number of inputs:
  - 24 to 48 for Kayak HD 100C, 150C
  - 48 for Kayak HD 200C, 250C
  - 48 to 96 for Kayak HD 200, 250
  - 72 to 96 for Kayak HD 300, 350
  - 96 for Kayak HD 400, 450
- Number of outputs:
  - 12 to 24 for Kayak HD 100C, 150C
  - 24 for Kayak HD 200C, 250C
  - 24 to 48 for Kayak HD 200, 250
  - 36 to 48 for Kayak HD 300, 350
  - 48 for Kayak HD 400, 450
- Video outputs programmable as M/E, Program or AUX bus outputs
- GPI (General Purpose Interface) inputs:
  - 8 to 16 for Kayak HD 100C, 150C
  - 16 for Kayak HD 200C, 250C
  - 16 to 32 for Kayak HD 200, 250
  - 24 to 32 for Kayak HD 300, 350
  - 32 for Kayak HD 400, 450
- GPI/Tally Outputs:
  - 32 to 64 for Kayak HD 100C, 150C
  - 64 for Kayak HD 200C, 250C
  - 64 to 128 for Kayak HD 200, 250
  - 96 to 128 for Kayak HD 300, 350
  - 128 for Kayak HD 400, 450
- Four full-function keyers per full M/E, each with linear and luminance keying
- Five background generators include black, white, and three color backgrounds
- Test pattern generator
- Two analog reference inputs (tri-level sync and black burst) and HD/SD serial digital input reference
- White or colored pushbutton keycaps (factory installed, choose when ordering)

- Freeze frame buffer on every full-function keyer
- Two main wipe generators and four keyer wipe generators per M/E
- YUV color correction on every keyer and background bus
- Internal four-port Gigabit Ethernet (10/100/1000 base T) switch
- Eight serial ports for external machine control

## Kayak HD Options

- Internal six-channel RamRecorder option for video clips and stills
- Three additional iDPMs with 2D transforms and crops on keyers 2, 3, and 4 per M/E
- DPM Kurl per M/E. Adds Kurl effects to all of the enabled DPMs in one M/E. Includes Page Turn, Page Roll, Spheres, Ripples, Splits, Mirrors, and Slits
- DPM Spektra Lighting, Defocus, Glow, and Output Recursives. Adds Spektra effects to all of the enabled DPMs in one M/E.
- Four channels of eDPM with 2D transforms and crops that re-enter on any M/E
- Kurl for eDPM
- Spektra for eDPM
- RGB color correction option on every keyer and background bus, or per input
- Dual Chromatte™ chroma keyers, with flexible licenses allowing assignment of Chroma keys to different keyers
- Remote monitoring and diagnostic support via NetCentral software
- KHD-PSU internal redundant power supply unit
- KDD-PSU rack-mounted remote power supply unit for remote (or additional) control panels
- MatchDef™ Dual Video Source Scalar for converting 2 SD or HD sources to the production format, maximum of four for up to eight sources in the 4RU models, up to 16 sources in the 8RU models. One Mix/Effects or IOXPAND option required for every four sources. Scalars accept either HD or SD input and act as a frame-sync when not converting or being bypassed.
- DSK (Downstream Keyer)/ Half M/E option for full M/E systems (SLK)
  - Adds four DSKs for up to 20 keyers for 4.5 M/Es in the 8RU frame
  - Adds four DSKs for up to 12 keyers in the 4RU frame
  - Or Half M/E Mode with A/B background mix and four Lin/Lum keyers
- I/O Expander Module adds 24 SDI inputs, 12 SDI outputs, 8 GPI inputs, 32 GPI outputs/tallies, and optionally 4 MatchDef™ scalar inputs. Fits in any available M/E slot.
- Full M/E Upgrade Option. Adds one Mix/Effects module to any Kayak HD chassis. Order one or more options to get the total M/Es required. The 4RU chassis holds up to two M/E modules and/or I/O Expander modules. One M/E upgrade option can be added to a Kayak

HD 1-M/E or 1.5-M/E system if it does not also have an I/O Expander module. The 8RU chassis holds up to four M/E modules and/or I/O Expander modules. One or two upgrade options can be added to a Kayak HD or SD 2-M/E system, less any I/O Expander modules in the chassis.

- Upgrade Kit for minor modifications of XtenDD panels to enable control of a Kayak HD/SD video processor frame.

## RamRecorder

The HD RamRecorder is a solid state video server with six input/output channels. All stills and clips are stored within a common data pool and may be accessed by all six output channels. The HD RamRecorder supports video standards: 525, 625, 720, and 1080i.

**Note** To use the RamRecorder, a new 6910000xx or 7710060xx Controller Board in the Mainframe is required. The new 6910000xx or 7710060xx Controller Board does not support software earlier than 6.8.8.

Total HD RamRecorder storage size is based on line rate units and the installed memory size of 4 GB or 8 GB, as shown in the following table.

Table 1. HD RamRecorder Storage Sizes

Line Rate Units	4GB		8GB	
	Frames	Seconds	Frames	Seconds
525i59.9	4911	163	9822	326
625i50	4161	165	8336	332
1080i50/sf25	863	33	1726	68
1080i60/59.9/sf30/29.9	863	28	1726	57
1080sf24/23.9	863	35	1726	71
720p50	1941	38	3883	77
720p60/59.9	1941	32	3883	64

## Supported Control Protocols

- VTRs (BVW-75)
- AMP (Advanced Media Protocol). For Profile PVS, XP, K2, M Series, and Turbo DDRs. RS422 Serial supported
- Video servers (Louth VDCP, Odetics)
- Routers/Routing Control Systems (Trinix™, Venus™, Triton™, and third party routers; Jupiter™ and Encore™ router control systems)
- Control Systems (Grass Valley Andromeda™ and third-party systems)
- Grass Valley Under Monitor Displays (Serial tally for UMD. Requires Grass Valley Andromeda™ system or third-part tally box such as Tally Display Corp. or Image Video.)
- Grass Valley external Remote AUX Panels (CP-300 Series)
- ESAM II for audio-follow-video applications
- Edit controllers (native and Grass Valley Model 100 and 200 or DD35)

# *Concepts*

## **Introduction**

In general, any video switcher receives multiple video inputs, performs signal processing on selected input signals, and then outputs the processed video. Efficient real time switcher operation is essential for live production, and can save valuable time in post production environments as well.

Several innovative concepts are employed in the Kayenne XL Package to enhance its operational speed and flexibility. Understanding these concepts, as well as basic switcher fundamentals, will help you take full advantage of the exceptional power of the Kayenne XL Package.

## **Kayenne XL Package Configuration Overview**

The Kayenne XL Package is designed for operational flexibility, and can be configured to fit various applications. Different systems can have different capabilities, or the same Kayenne XL Package can be re-configured to have different capabilities at different times.

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

Kayenne XL Package configuration information is divided into three areas:

- Installation (Engineering Setups) (settings established by the engineer in charge that affect the entire system, which never need to be changed by operators),
- Configuration Settings (for example, a production that affect all the operators working in that suite, that are designed to suit a particular show or production style and ensure a consistent working environment), and

- Personality Setting (settings that give the operator the ability to customize his individual work surface to meet his personal preferences).

All Kayenne XL Package settings are non-volatile. Disk save and load operations are available via the display menu (Sidepanel) that enable users to store configuration information on the hard disk of a PC or on a movable media for easy transport and for use as backup copies.

## Installation (Engineering Setups)

Engineering Setups control how the Kayak HD Digital Production Switcher's major components behave and interact, and how the Kayenne XL Package interacts with the rest of the facility.

Engineering Setups are not likely to change on a daily basis and so are grouped separately from Configurations and Personality Settings. Facility maintenance personnel or the engineer in charge of a production truck generally manages Engineering Setups. These parameters are usually set during installation.

Engineering Setups information includes:

- Networking (IP addresses),
- Timing, type of reference signal
- External device interfaces (DDR, VTRs, DPM, Router, AUX Control Panels, etc.),
- Various other system functions

## Config — Application Control

The configuration defines how the control surfaces associated with a Kayenne XL Package suite behave. A configuration can substantially change system behavior, not just a user's view of the system. The configuration is saved in applications and is intended for day-to-day or session-to-session changes in system operating behavior. Applications are open for modification by operators.

Loading and Storing applications can be performed using the control panel or side panel operation menu (**Config**).

Config Applications include:

- EMEM
- Macros
- Key Memory
- Pattern Memory



- Safe title behavior
- Video specifications (such as aspect ratio)
- Various other suite functions

## **Personal Settings**

Personal Settings enable users to customize a Kayenne XL Package control surface to suit their personal operational style. User Preferences do not change Kayenne XL Package capabilities. Loading and Storing Personal Settings is possible via the Sidepanel Program

Personal Settings include:

- Menu delegation behavior,
- Shift preferences
- Various other user functions.

General Rule:

- All setup changes, which will not work without a physical change of a device, are part of Installation (menu).
- All setup changes, which will work without a physical change of a device, are part of Configuration (menu).

Setting up the type, the address, and the connection port for an auxiliary control panel is part of Installation. Configuring the behavior and the button assignment of this AUX CP is part of a configuration.

# Signal Routing

## Inputs and Sources

### Kayenne XL Package HD

Incoming video signals are connected to the digital video processor system via BNC connectors on the rear of the digital video processor frame. All inputs are serial digital (SMPTE 274M, SMPTE 296M, SMPTE RP211). Signals from external devices not operating in this standard will need to be converted.

Some devices (for example, a camera providing serial digital output) may provide a video signal that can be received on a single connector. However, other devices may output multiple signals.

For example, a character generator usually provides a signal with two components (commonly called *video* and *key*). Some incoming signals may also originate from devices the Kayak HD system can control (Router, DPM, DDR).

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

## Source Definition

The source definition process includes assigning a name to each input source. Once sources are defined, you can then select the source by name in the control panel menu. Sources that use separate video and key signals are coupled in the Input menu to enable a single button to select the video-key pair from the switcher control panel. Tally relays can be assigned to the corresponding inputs in the **Config - GPO/Tally** menu. All these settings are part of a configuration and may change from production to production.

## Button Assignment (Source to Button Mapping)

Source to button mapping makes it possible to organize sources on Kayenne XL Package control panels to suit your personal preferences. For example, cameras can be grouped into a set of buttons on the left side or the right side of a button row, or in any way that is desired or convenient.

Source mapping is distinct from source definition, as source mapping only involves the location of sources on the control panel and does not affect the inputs or names defined for the sources.

**Note** EMEM effects store Source IDs, not the source select buttons, so remapping sources does not change the appearance of recalled effects.

You can also assign sources to buttons using the Sidepanel program.

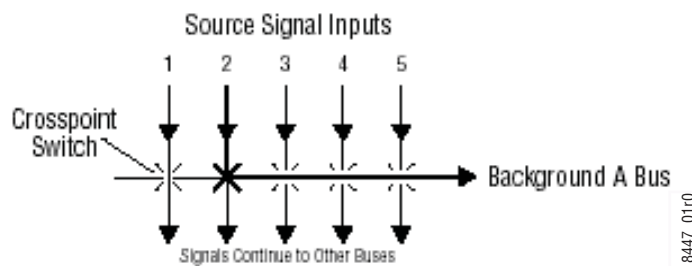
## Key Memory

Key parameters can be saved to a separate key memory for every Kayak HD system source. These parameters can be applied automatically whenever that source is selected.

## Buses and Crosspoints

A *bus* is technically defined as a signal path where one of several available inputs can be selected to feed a single output. A *crosspoint* is an electronic switch that enable a signal to pass when the switch is closed. On video switchers, a bus can be constructed containing a series of crosspoints, which permits selecting which one of several incoming signals will be sent out the bus. In [Figure 1 on page 31](#), source 2 has been selected on the background A bus. This signal can now be called *background* video and is available for further processing.

Figure 1. Buses with Crosspoints



Buttons on a control panel can be used to control the switching of crosspoints. The buttons are usually arranged horizontally, making it easy to imagine the available signals coming in from the top, and the single bus output signal going out the right side. In earlier generation switchers, the terms *crosspoint button* and *crosspoint bus* have been used in reference to control panel source selection.

For a Kayak HD system, the terms *source button* and *source bus* will be used.

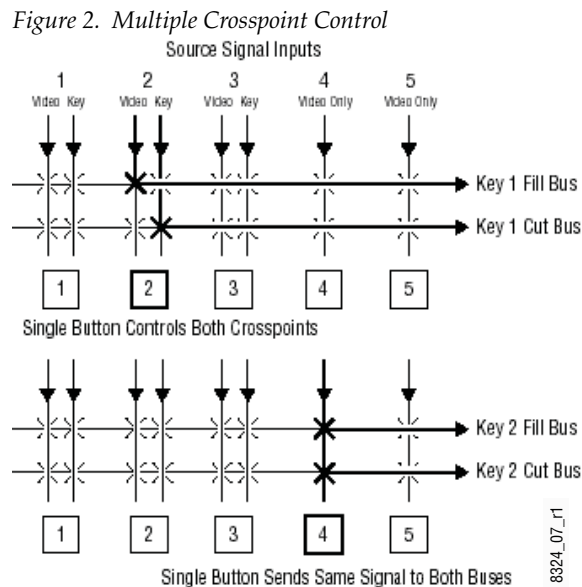
These terms better reflect a system operating philosophy that is source rather than crosspoint based.

The Kayak HD system does not directly associate a source select button with a physical crosspoint. The association goes first through source to button mapping, then through source definition to find the physical inputs.

A single source button can control crosspoints on different buses simultaneously. For example, during keying, both the video and key signals of a source can be selected with a single button press.

In this case two different crosspoints on separate buses (key fill bus and key cut bus) are actually switched when the button is pressed.

In the upper part of [Figure 2](#) below, the *video* component of source 2 in the figure has been selected on the key fill bus and becomes the *key fill* signal for subsequent keying. The key component of source 2 selected on the key cut bus becomes the *key cut* signal for keying. The lower part of [Figure 2](#) below shows how the same source (source 4) can be selected for both the key fill and key cut signals.



## Shifted Sources

An operator may need to quickly access many sources during a production. However, a control panel has size limitations, since all the source selection buttons must remain within reach. The Kayenne XL control panel provides shifted buttons to enable access to more input sources from the control panel.

For example, on the Kayenne XL Package 400 system, up to 35 sources can be mapped at one time, 14 to the unshifted source selection, and 14 to the

shifted buttons. A dedicated **Shift** button is provided as the farthest right crosspoint button (Crosspoint 15) for every bus. Two shift modes are available: **Normal** and **Latched**.

- In **Normal** mode, shifted or unshifted status of the bus is indicated by the state of the **Shift** button light. Holding down the **Shift** button while pressing a source button always selects the shifted source for that bus. The **Shift** button will light when the buttons of the row to its left are shifted.
- In **Latched** mode, the **Shift** button toggles on and off in a manner similar to the **Caps Lock** button on a standard keyboard. When on, it lights to indicate that the subsequent selection(s) on the crosspoint selector row will be made from the shifted set of sources (15 through 28). When off, the subsequent selection(s) come from the unshifted set (1 through 14). If the user toggles the **Shift** button to the state that is opposite from the shift state for the currently selected input, then the crosspoint selector button blinks to indicate this “out of sync” condition.

A useful configuration is to have sources normally used for backgrounds (for example, VTRs) mapped to unshifted buttons, and sources normally used as keys (for example, character generators) mapped to shifted buttons. Then you can then set all the background buses to an unshifted preference, and all the key buses to a shifted preference. All normal source selections can then be made without having to use the shift modifier buttons.

It is also possible to have a different assignment for background and key buses.

## Source Scalars (HD Only)

Each Mix Effects (M/E) has 4 scalars that can be used for scaling video sources of the same frame rate but different resolutions than the video being processed.

The scalars are software enabled options. Two scalars are enabled on one option, up to 2 options per M/E maximum. The scalars are fixed to a specific M/E.

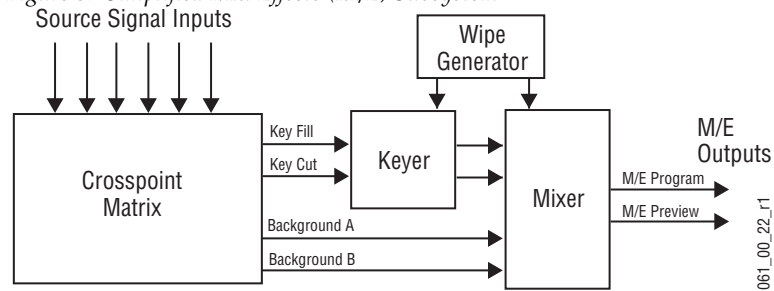
## Mix/Effects (M/E) Stage

Each M/E of the Kayak HD system can create a composite of two or more pictures. It includes multiple source selection buses and provides transition (mix and wipe) and keying capabilities on the selected signals.

The M/E can be organized with the keying circuitry separate from the mixing circuitry, which permits Effect Send capabilities (see [Effects Send on page 35](#) for more information).

A simple basic M/E used in a typical switcher will be used as an example in the following discussion. The Kayenne XL Package M/E has added capabilities, but the basic principles described here will apply.

Figure 3. Simplified Mix Effects (M/E) Subsystem



The basic M/E shown in [Figure 3 on page 34](#) has an A and a B background bus. These buses select the background video signals sent to the output of the M/E.

Generally the source on the background A bus is the current background output, and the source on the background B bus is the background video that will be used next. During most transitions, portions of both backgrounds are output simultaneously. The keyers in the M/E enable the inclusion of additional material over the background. Wipe generators also exist, which create patterns used by the mixer for wipe transitions, or used by the keyers to modify the signals it sends to the mixer.

The processed signal in an M/E is then sent to an M/E output, typically program or preview (or can be selected as input in the second M/E).

### Alternate Buses and Delegation

Many earlier generation switchers had M/Es equipped with two keyers, and each M/E could accept two background sources. This permitted mixing or wiping between two backgrounds, and keying up to two additional sources over the background. Dedicated rows of control panel buttons were used to select these key and background signals.

The Kayak HD system M/E actually has four keyers, each handling a fill and a key signal, and it can accept three background sources (A, B, and

Utility). Providing individual source selection rows for each bus is impractical, as the panel would become too large. For ease of use, Kayenne XL Package panels have alternate buses accessed by delegation, using Key and PVW/AUX delegation via the Miscellaneous Bus selection subpanels.

## Utility Bus

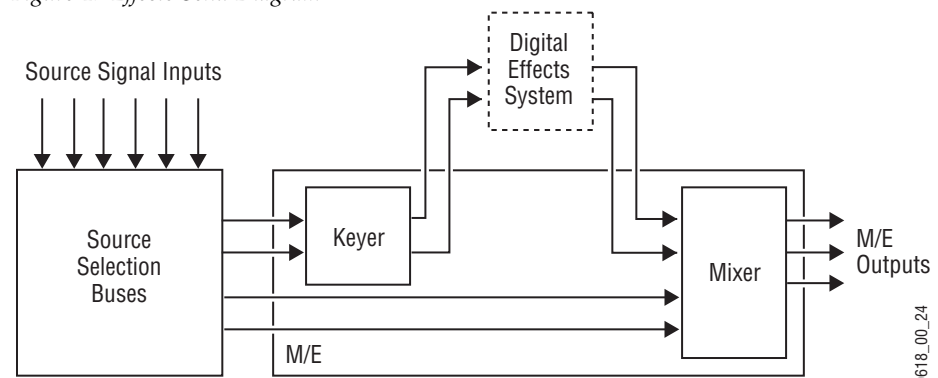
Besides the standard A and B background inputs, each Kayenne XL Package also accepts two Utility inputs. The Utility buses can be used to select signals for special purposes, and have no relation to the background buses. For example, a video signal selected on the Utility bus can be used to feed a custom pattern into a wipe generator, or create a custom border wash pattern.

## Effects Send

Effects Send provides a method of integrating digital effects devices into the M/E. Effects Send switches the key cut and key fill outputs of the keyer of the M/E to a digital effects device for manipulation. The manipulated key cut and key fill outputs are then received and sent directly to the inputs of the mixer circuits of the M/E. Effects Send enable you to process a key effect as though the digital effects circuits were located inside the M/E itself.

On the Kayak HD system, Effects Send is integrated into the M/E and is an extension of the keying control system.

Figure 4. Effects Send Diagram



If the system is equipped with the optional Digital Picture Manipulator option, the effects become part of the internal M/E's mixer.

## Kayenne XL Package Outputs

Video production switchers generate several different video outputs (such as Program, Preview, AUX buses, and others). A final program output (Main or DSK) is typically sent to the transmitter for broadcast and/or to output devices for recording.

AUX Bus outputs may also be used for special purposes.

### Kayenne XL Package AUX Buses and Output Assignments

Kayenne XL Package switchers provide 12 outputs per M/E. This means you can have up to 24 outputs in the compact frame and up to 48 in the large frame. For installed M/E boards the rear BNC outputs are active.

Any internal source can be assigned to these AUX bus outputs for monitoring. Safe Title can also be enabled on any of these AUX buses.

## Resource Sharing and Point of Use

The Kayak HD system can share some resources for use at different locations. The location where a resource is being used is called a point of use.

The wipe pattern generator resources can be used for an M/E wipe transition, as a preset pattern, as a mask, or at other points of use. It is also possible to assign the output of the same wipe pattern generator to different points of use at the same time.

For efficient operation, the Kayak HD system has divided the parameters controlling wipe pattern generators and related utility bus functions into two categories: shared generator parameters and point of use parameters.

The set of parameters for the shared generator are used by all points of use, so changing one of these parameters will affect all locations where that wipe pattern generator is being used at that time. Separate sets of point of use parameters, however, are maintained for each system point of use.

These settings are used only by each individual point of use, so changing them will not affect any other point of use.

For example, a wipe shape (box, circle, etc.) is a generator parameter, but the softness of the shape's edges is a point of use parameter. If the same wipe generator is used by both an M/E wipe transition and a preset pattern, adjusting softness at one point of use will not affect the other's softness settings. However, changing the pattern shape affects both locations.



## Transition

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

- Cut
- Mix
- Wipe
- DPM (optional)

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.

### Cut

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

The system also provides cut transitions, where the elements involved in a composite can be changed instantaneously. Different buses can be included or excluded, causing changes in the resulting composite image. Background cut transitions on the M/E are first selected on the Background B bus to enable previewing the upcoming picture before it is cut **On Air**.

### Mix

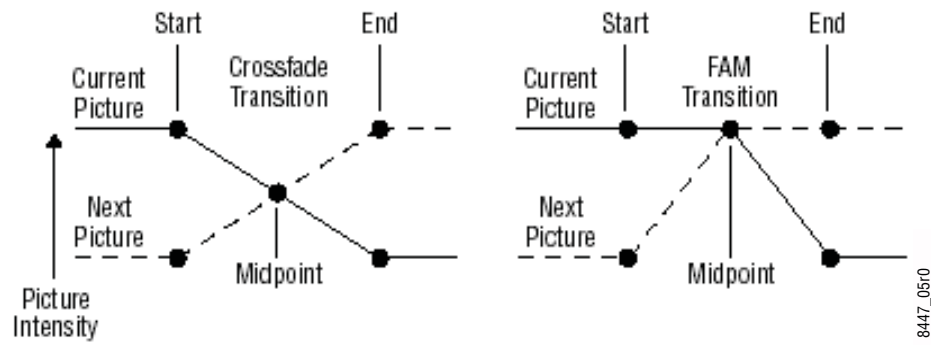
A *mix* is a transition from one picture to another where the new picture fades in as the existing picture fades out. During a standard mix transition a superimposition of both pictures, each at a lower intensity, is visible.

The Kayak HD system enables mixing from one background to another and to mix up to four separate keys on or off over a background. Background and key mixes can be done separately or simultaneously.

### Full Additive Mix

Full Additive Mix (FAM) is a special mix transition that the Kayak HD system supports besides normal crossfade transitions. Picture elements in FAM transitions are composited differently through the time of the transition.

Figure 5. Normal and FAM Mixes



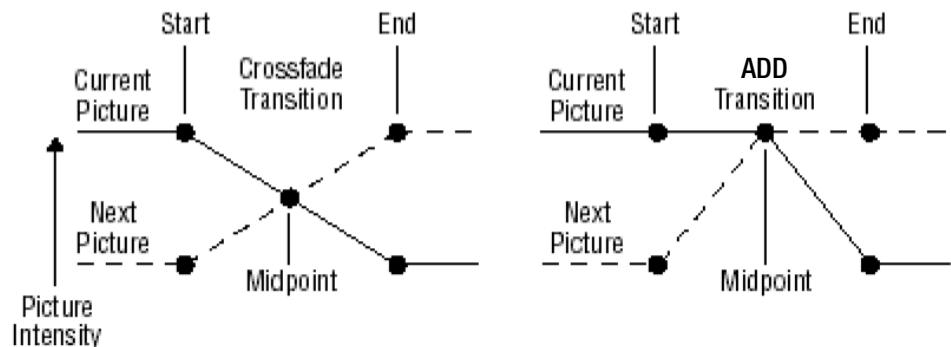
FAM transitions first fade a new picture to full intensity and then fade the old picture out, but both full intensity pictures are mixed together to the output during the transition. The resulting signal is clipped at white level to prevent generating illegal video.

## Additive Transition

As of software version V694, Kayenne XL Package features the Additive Transition mode.

Additive Transition (ADD) is a special mix transition that Kayenne XL Package supports besides normal crossfade transitions. Picture elements in Additive Transitions are composited differently through the time of the transition.

Figure 6. Normal and ADD Mixes



Additive transitions first fade a new picture to full intensity and then fade the old picture out, but both full intensity pictures are mixed together to the output during the transition. The resulting signal is clipped at white level to prevent generating illegal video.

Additive transitions can be selected either with the **ADD** button in the **Transition** modules of the control panel or the **ADD** button in the side panel's **M/E Main** menu.

## Wipes

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

Each Kayenne XL Package M/E has two separate transition wipe systems, each of which can be assigned a different wipe pattern and be adjusted independently. These systems can each use one of the two available complex wipe pattern generators with advanced capabilities. It is also possible to combine these wipes to create extremely complicated wipe transition shapes, and generally this is used only by advanced operators. Utility

bus video signals can also be used to generate a custom pattern for a wipe transition or other purposes.

## Other Wipe Pattern Generator Uses

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

## Preset Black

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

## Fade to Black

The Fade to Black control in the DSK enable the Program output of the switcher to be brought down to black at a predetermined transition rate.

## Transition Rate

Cut transitions are instantaneous, but mix and wipe transitions have durations.

Transition durations can be set in advance to a specific transition rate, and be initiated by pressing a button on the control panel. It is also possible to manually control transitions using a lever arm.

On the Kayak HD system, one transition rate can be assigned to the main transition of the M/E. This type of transition can be controlled by that M/E's lever arm. Each of the four keyers on the M/E can also be assigned its own transition rate, initiated with a separate **Key Mix** button.

## Flip Flop Background Buses

At the completion of a transition, the background buses swap their source selections (flip-flop). This makes the upper bus always act as the on-air bus, and the lower bus act as a preset bus. The operator can reliably setup the

next source on the lower bus without disturbing the source selected on the on-air upper bus.

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

## Look Ahead Preview

If a preview monitor is configured for Look Ahead Preview mode, the end result of the upcoming transition can be viewed on that monitor. This lets the operator know in advance what will occur for that next transition.

## Current and Next Stack

Kayenne XL Package uses a current and next stack approach for transitions that involve multiple elements. The current stack is the current M/E output including any keys that are on. The next stack is defined by the current stack and whatever next transition elements have been selected. Look ahead preview always displays the next stack. Next transition elements affecting stacks are Keys 1 - 4, background, and key priority.

Transitions always occur from the current stack to the next stack.

For example, if the current stack has Key 1 over Background A, and the next stack specifies Key 2 over Background B, a mix transition will occur between the composites (Key 1 over A to Key 2 over B). This is different from mixing Key 1 off, Key 2 on, and mixing between A and B at the same time, which would cause the keys to go transparent over their background during the transition.

On the Kayak HD system, opacity is retained throughout the transition, so midway through this example Key 1 remains fully keyed over Background A, and Key 2 is fully keyed over Background B. The transition occurs between these two fully keyed composites.

If multiple keys are faded in or out using the separate **Mix** button each keyer has its opacity changed with relation to all other keys. This means that keyer transitioned this way are no longer considered part of the composite and will show transparency.

## Key Priority and Transitions

The four keys on a Kayenne XL Package M/E can be assigned priorities. This determines the layering of the keys. The highest priority key appears on top, while keyers with lower priority may be partially or fully hidden

behind those with higher key priorities. The backgrounds always have the lowest priority. Changes in key priority can be included as a part of a transition.

Like any other transition, the current stack will transition to the key priority of the next stack. For example, suppose the current stack has Keys 1, 2, and 3 in that key priority order over Background A, and the next stack specifies key priority order 3, 2, 1. A mix transition will occur between the 1, 2, 3 composite order to the 3, 2, 1 composite order. All three keys will remain fully keyed over the background, and will mix to their new key priority order.

## Half M/E and DSK Option

The Half M/E and DSK option is available to add an additional M/E with cuts and mixes on backgrounds and keyers. The output of this Half M/E can be re-entered into any other M/E, and/or be assigned to an Aux output. The Half M/E is controlled by delegating any switcher bank with a single button press.

DSK capability that adds four extra keyers is also included with this option. Half M/E and DSK functionality cannot be used simultaneously, however.

# Keying

Keying inserts part of one picture into another to create a composite picture.

Keying involves three signals:

- Background,
- Key cut, used to specify where to cut a hole in the background, and
- Key fill, used to fill the hole in the background.

The fill can be an incoming video signal or it can be an internally generated matte fill. 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 Kayak HD system supports the following types of keys:

- Additive Key
- Luminance Key
- Linear Key
- Chroma Key
- Preset Pattern

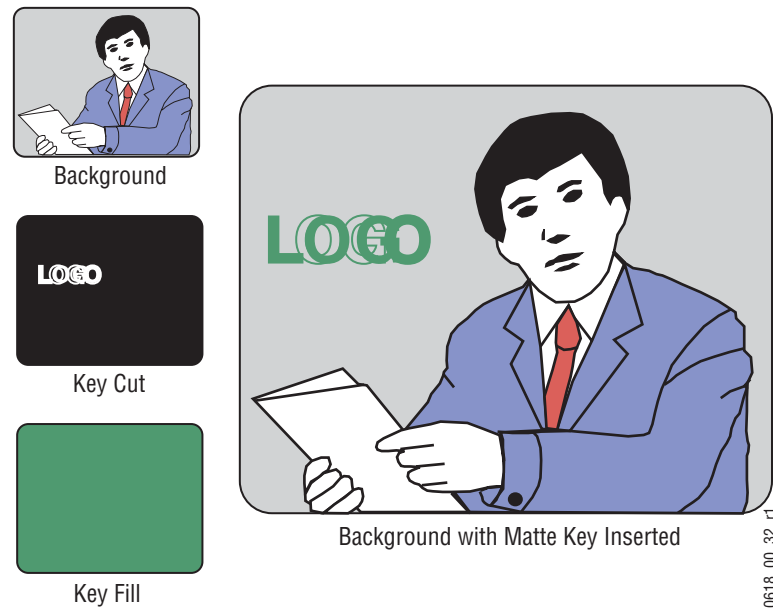
The system also supports self keys and split keys.

## Matte Fill Key Example

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

To insert a green logo into background video, the logo can be printed in white on black paper and a camera can be focused on it. The signal from the camera can be selected as the key cut signal and green matte video can be selected as the key fill signal sent to the keyer. The key cut signal is then adjusted (clipped) to ignore the black paper and use only the white logo shape to cut a hole in the background video. The keyer then shapes the key fill to precisely match the logo-shaped hole cut in the background and fills it with green matte video. This creates a green logo inserted into the background (*Figure 7*). Because luminance values of the key cut signal are used to cut the hole in the background this is called a luminance key.

Figure 7. Matte Fill Luminance Keying Example



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

## Shaping Video

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

Some external devices (for example, character generators) provide a key cut signal and an already processed companion key fill signal. A key fill signal that correctly matches the key cut signal is called *shaped* video. During keying, properly shaped key fill video can be summed with a background signal (with a hole cut) and achieve the desired result.

The appropriate key mode for this type of signal is the additive key.

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

The appropriate key mode for this type of signal is the Linear key or Luminance Key.



See the section on [Properly and Improperly Shaped Video on page 54](#) for more information.

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

Keying this signal will clean up its appearance.

## Key Control Signal Adjustment

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

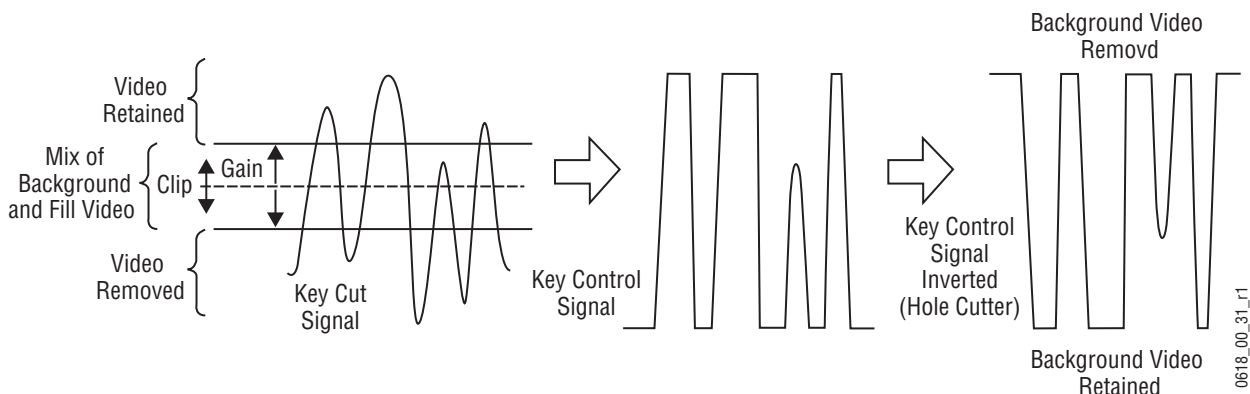
Setting Gain too high can cause ragged key edges.

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

## Clip and Gain

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

Figure 8. Key Clip, Gain, and Key Control Signal



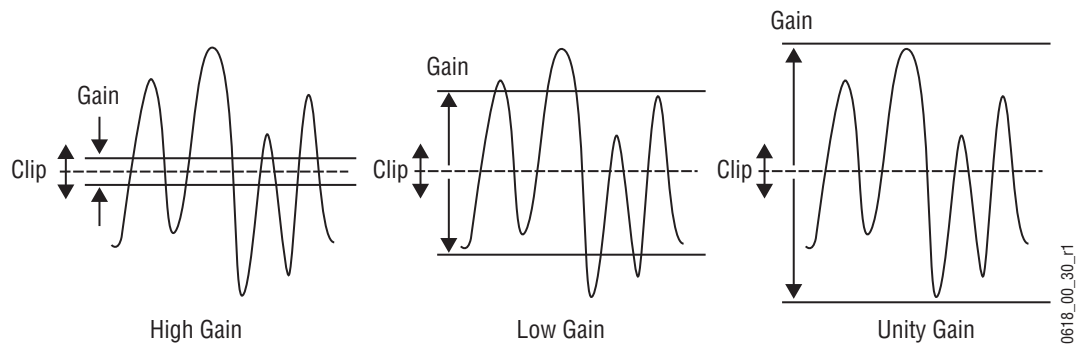
Clip and Gain control is appropriate for high gain keys (see below), to easily adjust where the relatively hard transition from background to fill occurs. In this mode, changing the Clip control moves the threshold up and

down without affecting Gain, which is adjusted separately with its own Gain control.

## High Gain, Low Gain, and Unity Gain

A high gain key has a narrow range, creating harder key edges. A low gain key has a wider range, creating softer key edges. Linear keys typically use minimal gain (also called unity gain) to completely preserve the soft edges of the keys (Figure 9). Note that the Kayak HD system also supports keys that go below unity gain.

Figure 9. Keying Gain Values

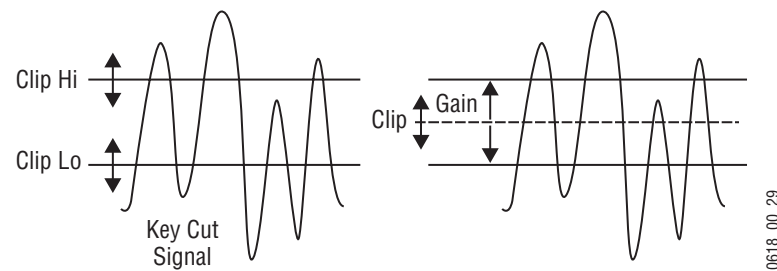


On this system, Gain has a percentage value. A Gain value of 50% requires a luminance change of 50% of the distance between black and white to produce a keying signal ranging from transparent to opaque. A gain value of 100% (unity gain) uses the entire range between black and white for this transparent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

## Clip Hi and Clip Lo

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

Figure 10. Key Hi, Clip Lo vs. Clip and Gain



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

- $\text{Clip Hi} = \text{Clip} + \text{Gain}/2$
- $\text{Clip Lo} = \text{Clip} - \text{Gain}/2$

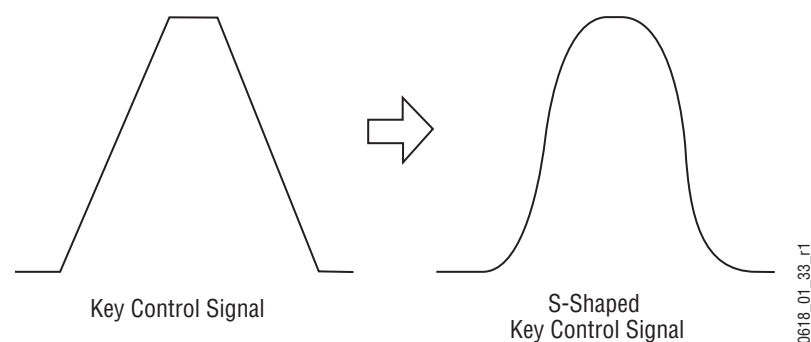
Clip Hi and Lo control is more appropriate for low gain keys, to enable independent control of the two thresholds. For example, when adjusting a linear key the operator wants to control where the fill becomes opaque (Clip Hi) and where the fill becomes transparent (Clip Low). In Clip Hi/Lo mode adjusting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

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

## S-Shaped Key Signals

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

Figure 11. S-Shaped Luminance Key Control Signal



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

## Additional Keying Controls

The following additional controls are available for keying.

### Key Invert

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

### Masking

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

With the Kayenne XL Package RamRecorder (Still Store), the mask signal can be a frozen page of video or a key fill. Complex mask shapes are often easier to draw by hand than to create with multiple wipe patterns.

### Opacity

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

### Key Positioning

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

### Key Size

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

## **Coring**

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

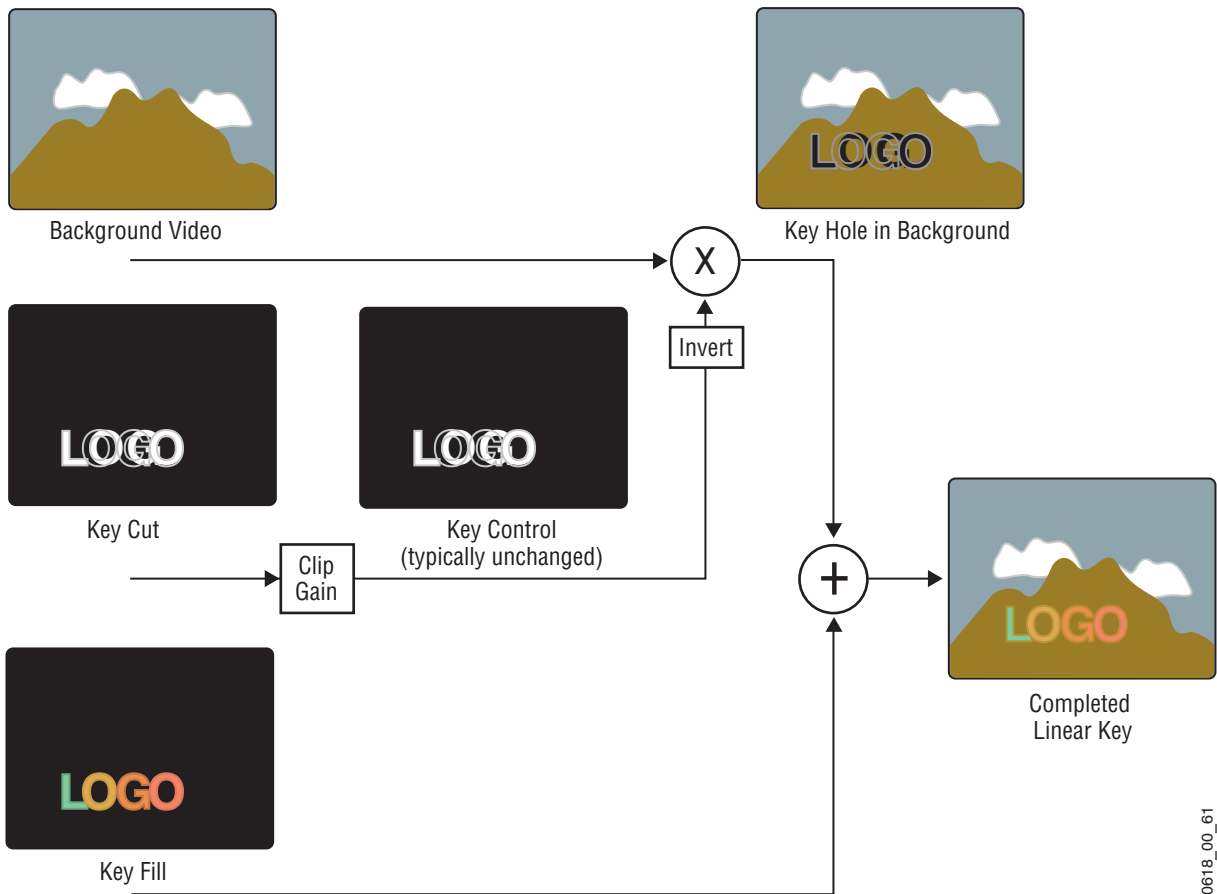
## **Show Key**

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

## **Linear Key**

A linear key typically uses separate key cut and key fill input signals that are intended to be used for linear keying. The key cut and key fill are usually anti-aliased (soft edged) shaped signals created by a character generator or graphics system. There may also be translucent areas intended to enable some background to show through the key (watermarks). The level of the key cut signal determines where and how deeply the hole will be cut into the background. The intended soft edge and translucency of the key can then be faithfully reproduced.

Figure 12. Linear Keying



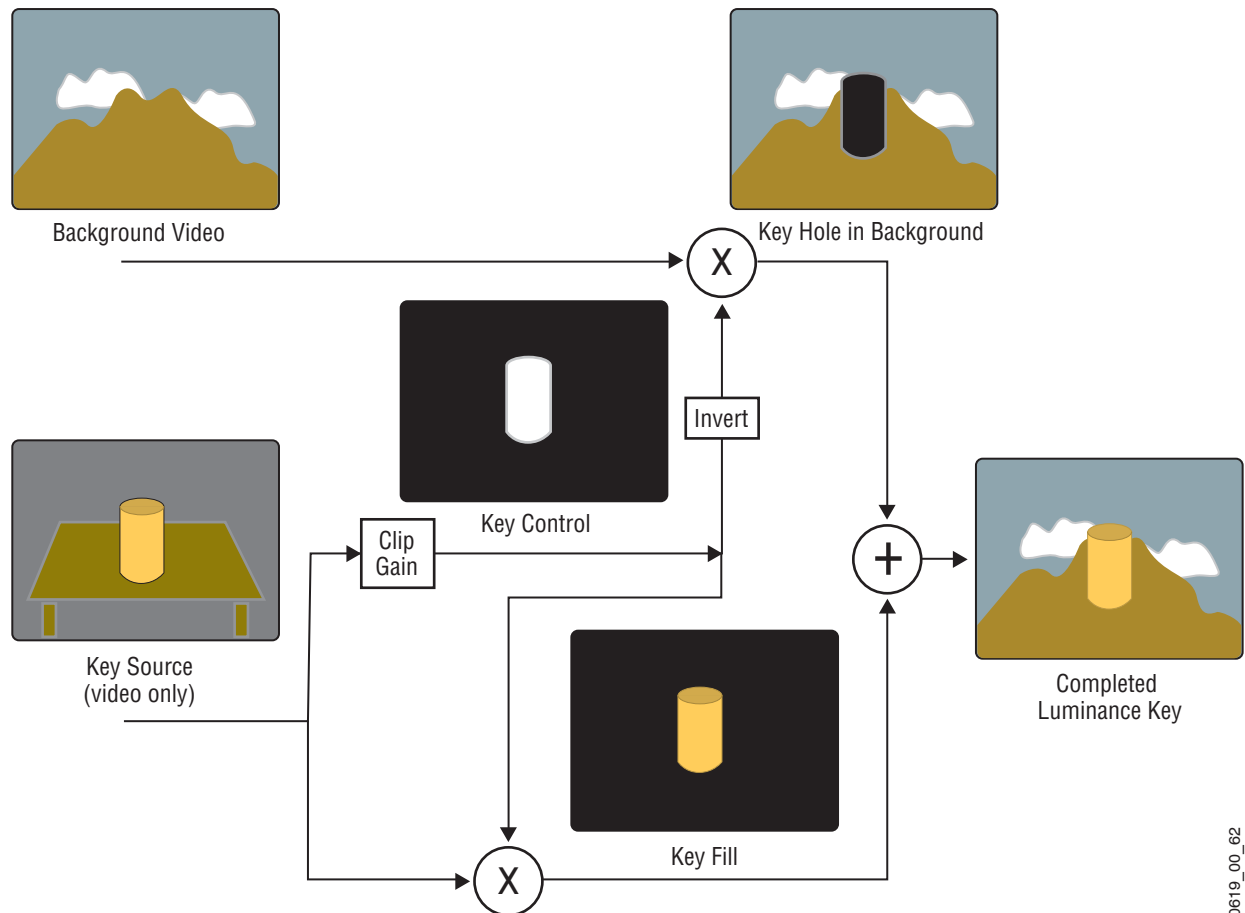
0619\_00\_61

**Note** The soft edges in the illustrations in this part of the manual are simulated. The key edges are actually gradients, which enable these edges to blend smoothly with the background. In the Kayak HD System the Linear Key is just a special parameter setup of the Luminance Key

## Luminance Key and Self Key

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

Figure 13. Luminance Keying (Self Key)

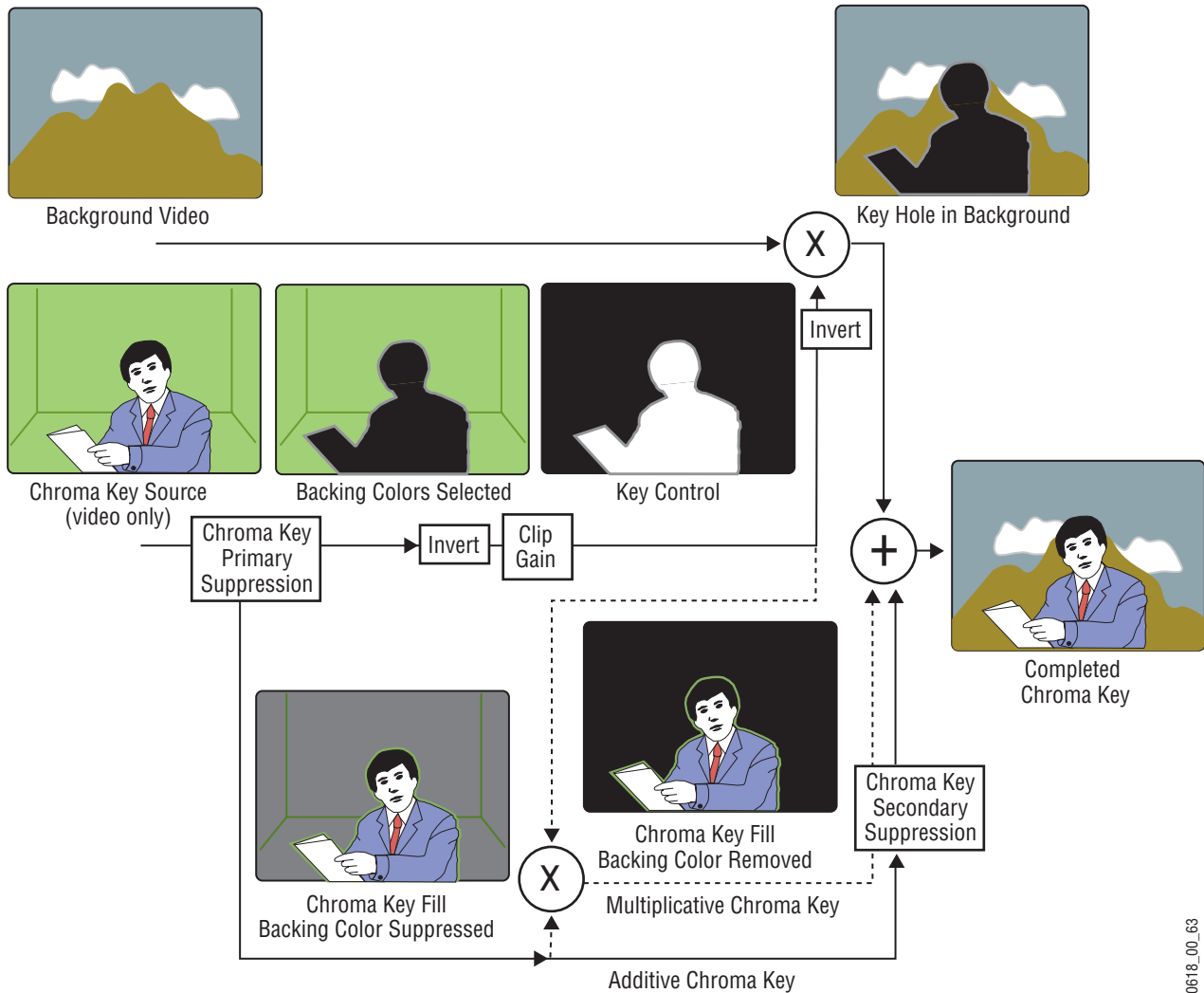


Clip and Gain (or Clip Hi/Lo) controls for luminance keys offer wide adjustment ranges. On the Kayak HD, an S-shaping function is also applied to the edges of luminance keys.

## Chroma Key

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

Figure 14. Chroma Key (Additive or Multiplicative)



0618\_00\_63

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



Chroma keys are performed by suppressing the backing color in the foreground scene, cutting a hole in the background, and then combining the two processed signals. When conditions are ideal, complete suppression of the backing color is possible and the hole cut in the background will match the suppressed foreground, permitting these two signals to be added successfully.

This is called an additive chroma key (used when the system Foreground Reshaping feature is off). When conditions do not permit adequate backing color suppression, the foreground with its backing color suppressed can be multiplied by the keying signal to prevent contaminating areas of the background outside the keyed area. This is called a multiplicative chroma key (used when the system Foreground Reshaping feature is on). Setting up a successful chroma key setup involves many more adjustments than other keys. No amount of adjustment, however, can overcome problems caused by an improperly set up studio chroma key scene.

## Primary and Secondary Color Suppression

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

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

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

## Flare Suppression

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

## Chroma Key Shadow Generator

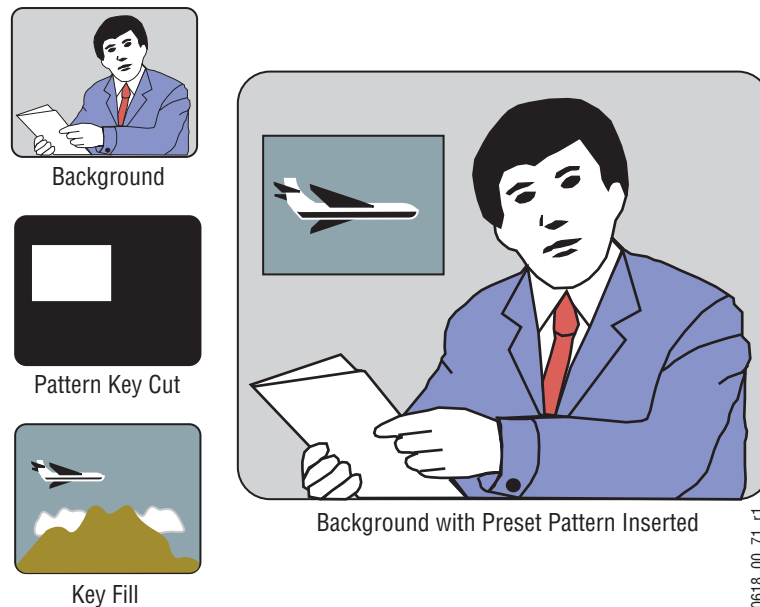
The Kayak HD system has a shadow generator that can be used to include shadows that fall on the backing area of the scene in the background.

Shadow offset, range, and density controls are also available that offer control over the placement and appearance of the added shadow.

## Preset Pattern

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

Figure 15. Preset Pattern



## Split Key

A split key uses an alternative key cut signal for keying. On the Kayak HD system, a key split is performed by holding down the **Key Split** button and selecting the desired key cut signal.

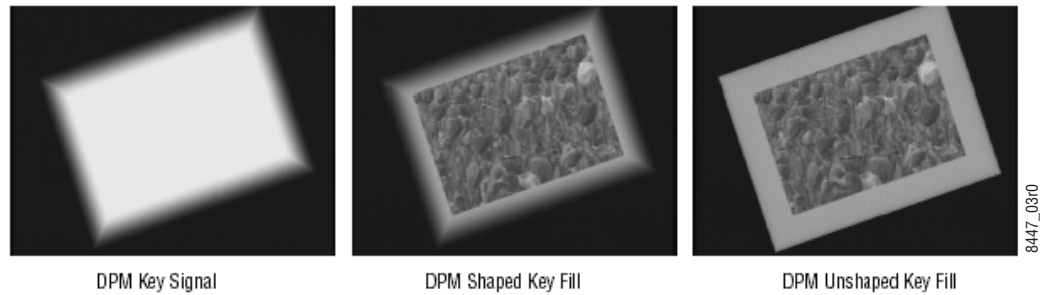
Split keys should normally treat the fill as unshaped since by definition a split key uses a fill that is not related to the cut; that means the normal mode for keying is Luminance or Linear Key Mode.

## Properly and Improperly Shaped Video

The following illustrations show the results of using correctly and incorrectly shaped video. In these examples, the video fill comes from a DPM that provides both a key signal and a fill video signal (a linear key). The

DPM's key signal, fill video that has been set as a shaped output, and fill video set as unshaped is shown in [Figure 19 on page 56](#).

Figure 16. Video and Key Signals from DPM



When the shaping is done properly (using either shaped (Additive Key) or unshaped (Luminance Key) key fill), the desired output is the result ([Figure 13 on page 51](#)).

Figure 17. Correctly Shaped DPM Key Example

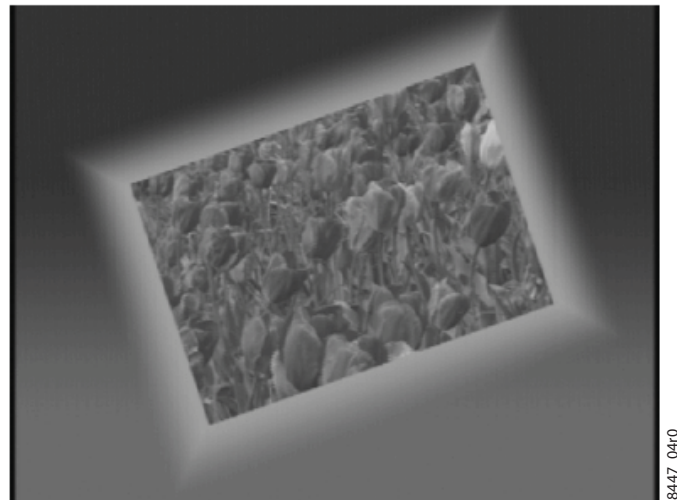
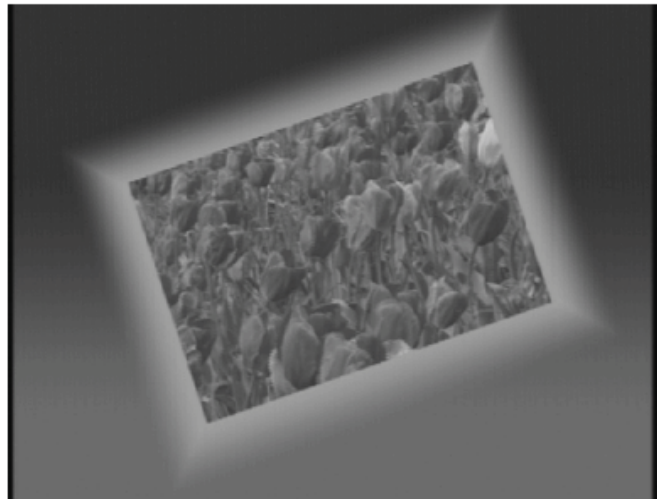
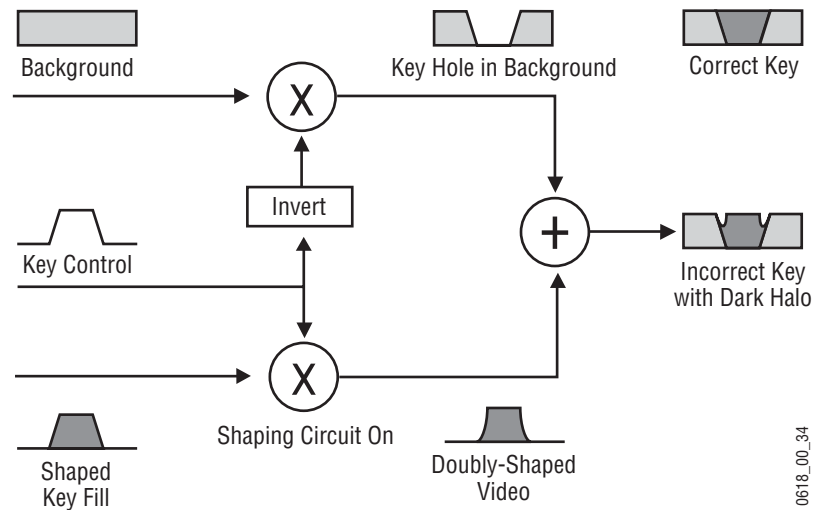


Figure 18. Incorrect Key with Dark Halo



8447\_0610

Figure 19. Incorrect Keying with Shaped Input

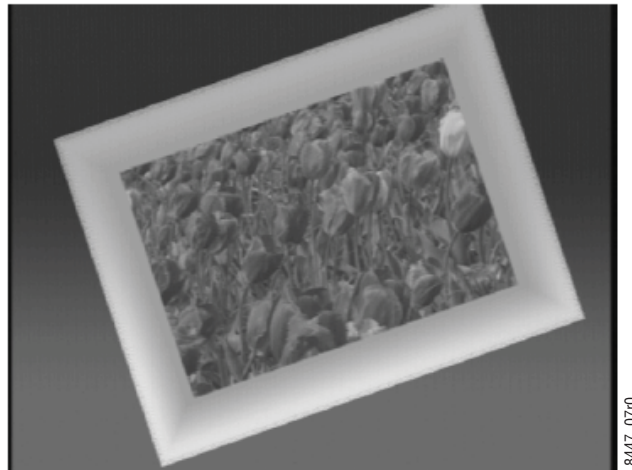


0618\_00\_34

In this case the shaped input is incorrectly shaped again, sometimes called a double-multiply. Luminance Key was used for shaped key fill signal.

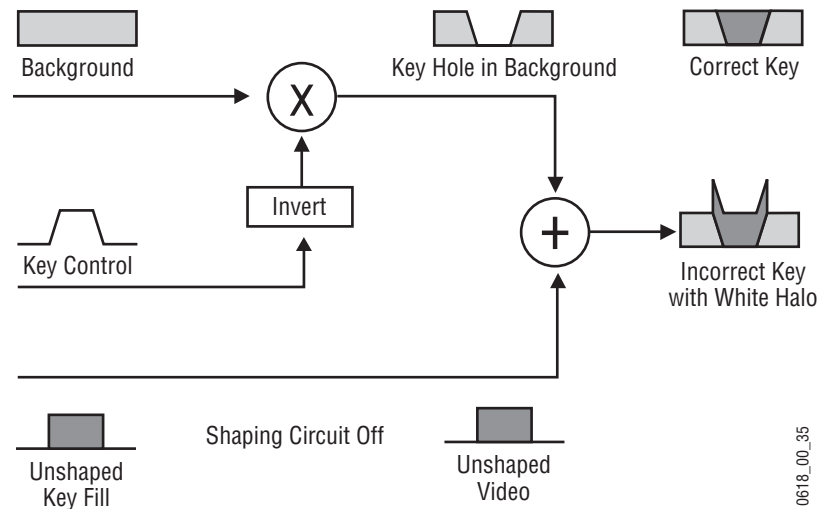
When the DPM provides an unshaped video output but the key is processed as though it were shaped, excessive luminance occurs where the key fill video and key hole edges overlap, producing a white halo around the key. Additive Key was used for unshaped key fill signal.

Figure 20. Incorrect Key with White Halo



In this case the unshaped video fails to be shaped at all.

Figure 21. Incorrect Keying with Unshaped Key Fill



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

## Downstream Keyers (Half M/E and DSK Option)

Besides the six standard full-function keyers, an additional four simple (Linear and Luminance only) Downstream Keyers are available as an option (as part of the Half M/E and DSK Upgrade). These DSKs can be coupled to any M/E in the system to operate downstream of that M/E. The DSKs do not support chroma keys or DPM effects.

A Half M/E that provides additional mix and cut functions is also included with this option. Half M/E and DSK functionality cannot be used simultaneously, however.

## **Flexible Chroma Keyers**

Additional Dual Chromatte flexible chroma keyers are also available as an option. Two chroma keyers are included with each option. Each chroma keyer can be flexibly assigned to any desired keyer in any M/E.

## 3-D Digital Effects Concepts

The Kayak HD Digital Picture Manipulator options provide 3-D planar image translation and transformation from within each M/E of the system. Image translation has special basic concepts and terminology you should understand in order to get the most out of using the option.

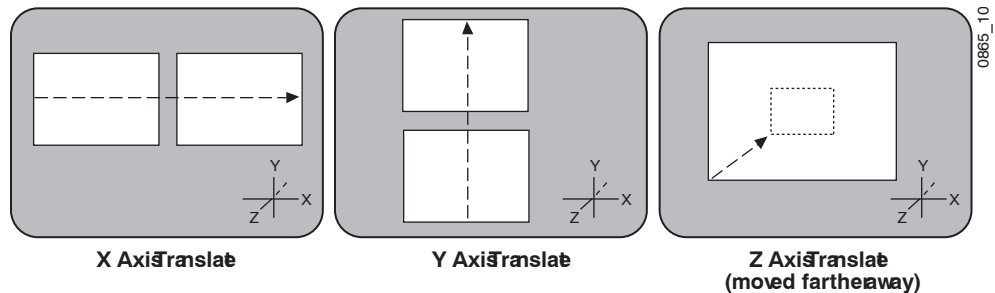
### Definition of Terms

- iDPM - internal Digital Picture Manipulator using M/E resources
- eDPM - expanded (external) Digital Picture Manipulator without using M/E resources. The Kayenne XL Package 8 RU mainframe provides an expansion slot that can house a single M/E Board. This hardware option can be utilized to provide up to 4 channels of Expansion Video/Key DPM (DVE) known as **eDPM**.

### Translation and Transformation

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

Figure 22. Picture Translation



Transformation includes translation, and also includes these other functions:

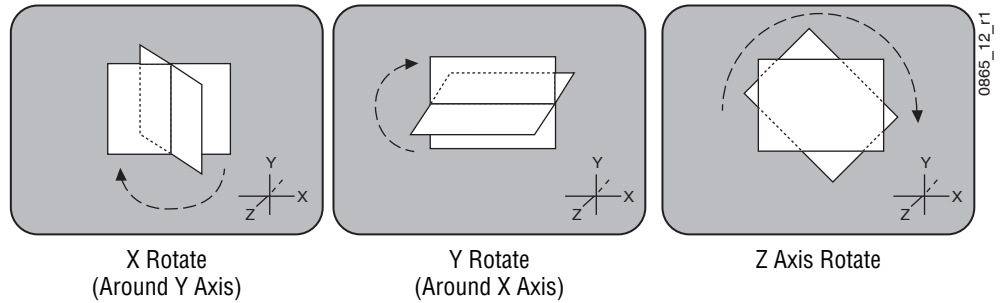
### Size

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

## Rotate

Picture rotation about the reference axis in the X, Y, and Z dimensions (*Figure 23*). Rotate is limited to  $\pm$  one half revolution, and will always take the shortest path to the new position. Rotate uses Quaternion mathematics to calculate the move with increased accuracy. Multiple rotations are performed with the Spin function.

Figure 23. Rotate

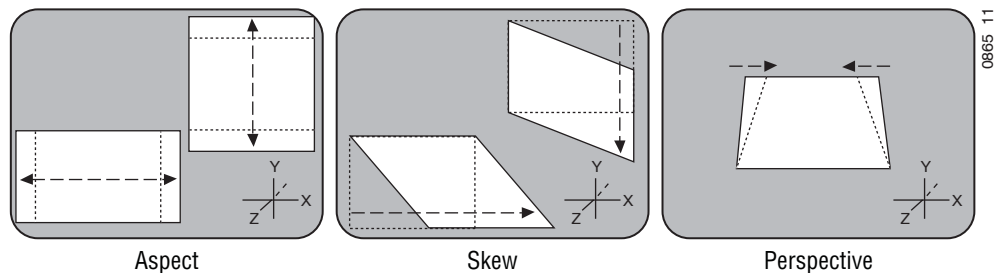


## Spin

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

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

Figure 24. Aspect, Skew, Perspective



## Aspect

Scaling the X or Y components of the picture. X axis changes affect horizontal size, Y axis changes affect vertical size (*Figure 24*). Z axis changes affect both X and Y dimensions, and is the same as Size.



## Skew

Slanting the picture in the X (horizontal) and Y (vertical) directions (Figure 24).

## Perspective

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

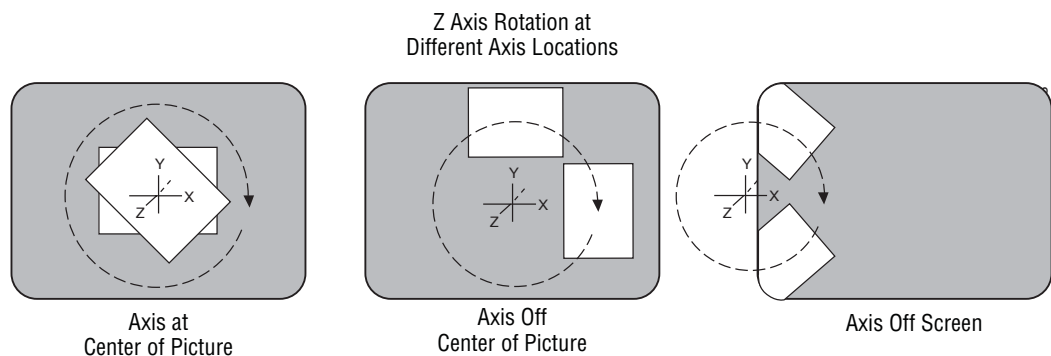
The farther portion appears smaller than the closer portion, and the amount of perspective controls how much smaller the distant part is (Figure 24 on page 60). Multi-channel perspective is discussed later in this section.

## Axis Location

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

### Z Axis Rotation at Different Axis Locations

Figure 25. Frame of Reference Axis Locations



## Source and Target Space

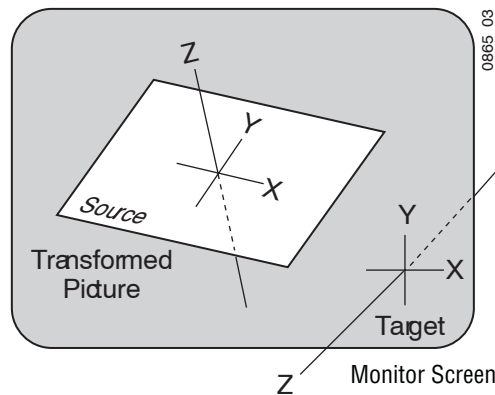
The Kayenne XL Package Digital Picture Manipulator uses source and target space frames of reference.

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

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

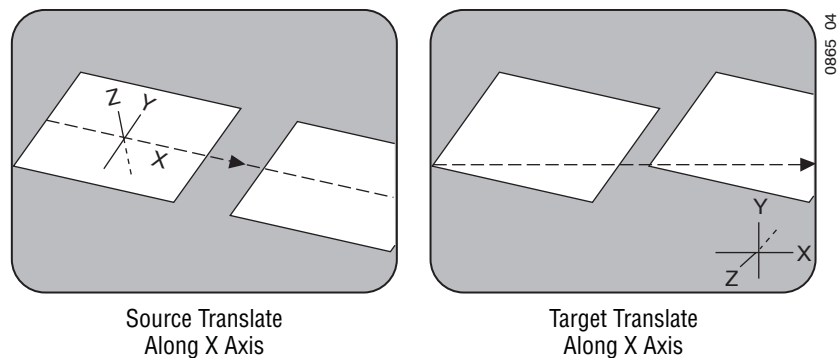
The simplest example for source and target space concerns a channel that has been rotated while the global channel remains unchanged.

Figure 26. Source and Target Space



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

Figure 27. Source and Target Space Translation



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

Figure 28. Channel Translate with Global Rotated

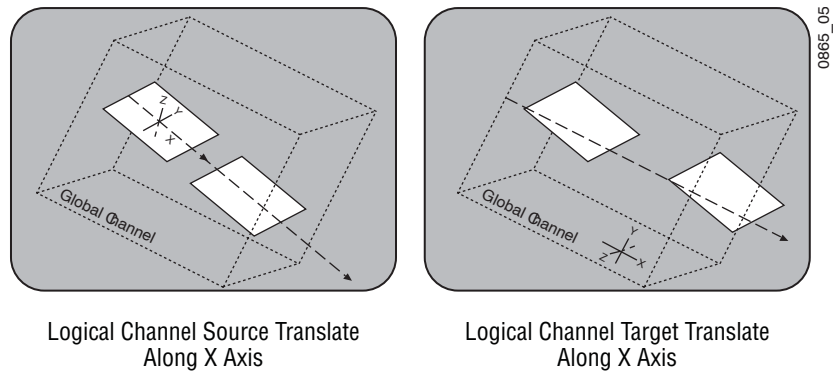
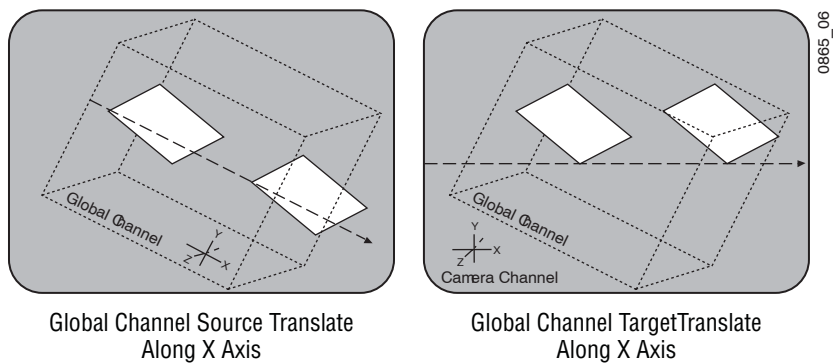


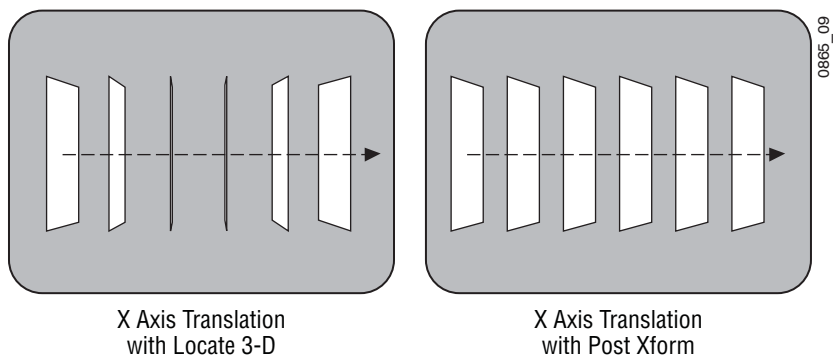
Figure 29. Global Channel Translate with Global Rotated



## Post Transform Space

Post transform (Post Xform) is a special transform function that only affects size and location operations. It does not change the perspective of the image (Figure 30). This can be used as a convenient method to quickly project pictures onto new locations of the screen. For example, if an image has the right perspective but is partially off screen, it can be brought back on screen without changing the perspective.

Figure 30. Post Transform Translation



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

## Front and Back, Near and Far

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

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

## Transform Numbering Systems

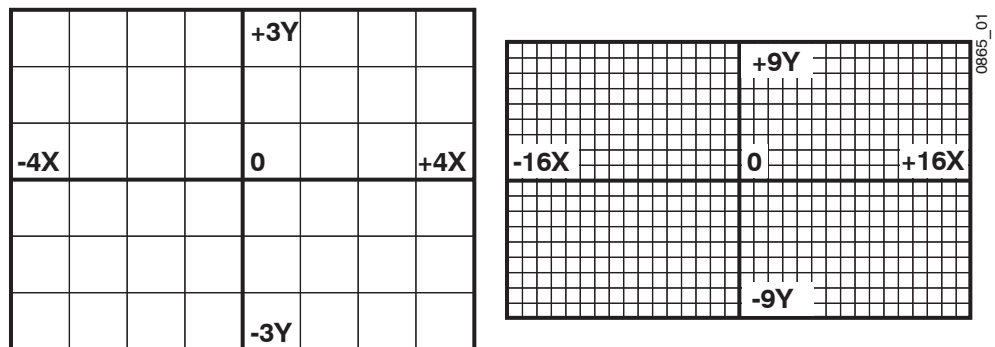
The Kayenne XL Package Digital Picture Manipulator uses the following numbering systems to precisely define picture locations, picture size, and picture rotation and spin.

## Screen Coordinates

The Kayenne XL Package Digital Picture Manipulator accommodates two different aspect ratios, 4 x 3 and 16 x 9, selectable via the Video Standards menu. In 4 x 3 mode, the screen is six units high and eight units wide. In 16 x 9 mode, the screen is 18 units high and 32 units wide. The numbering system begins in the center of the screen, and has the standard horizontal X axis and the vertical Y axis (Figure 31). For simplicity, examples in this manual use the 4 x 3 aspect ratio.

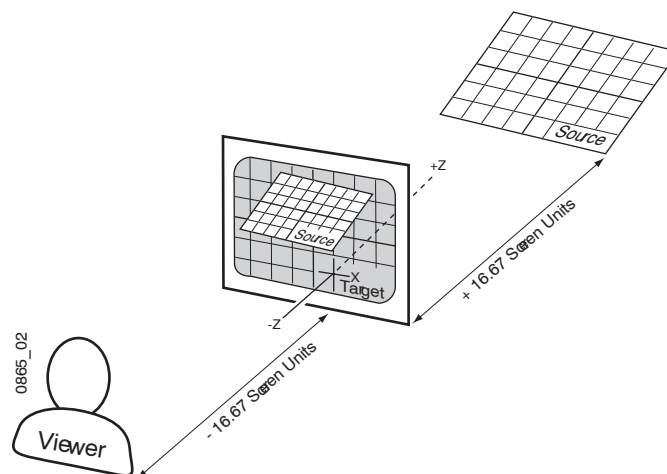
These coordinates can be used for monitor screen locations (channel target space with default global channel), or they can be applied to picture locations (channel source space).

Figure 31. Screen Coordinates



Screen units are also used to define Z axis dimension depth in 3-D space. Positive Z axis values are back behind the picture, and negative values are in front of the picture (Figure 32).

Figure 32. Viewer Location in 3-D Space



For perspective calculations the factory default viewpoint places the viewer -16.67 screen units from the monitor screen surface (4 x 3 aspect

ratio). In this case, moving a full screen image 16.67 screen units back behind the screen makes the picture appear half its normal size to the viewer.

## Size

Picture size is defined relative to picture screen units. A size of 0.50 indicates a picture is one-half its full size in linear edge measures. It is one quarter of its full size area.

## Rotation

Rotation is measured fractionally with respect to 360°. A value of 0.25 indicates a rotation of 90 degrees; 0.50 indicates 180 degrees (maximum rotation).

Rotation values can be positive or negative, which determines the direction of rotation.

## Spin

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

## Skew

Skew supports values of  $\pm 999$ , though extreme values will probably rarely be used.

## Aspect

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

## Perspective

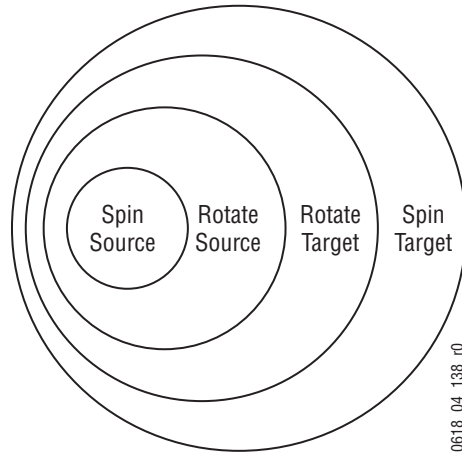
Perspective supports values from 0-100, with 0.06 as the default in 4x3 operation and 0.015 in 16x9.

## Spin and Rotation Relationship

It is possible to use both Spin and Rotation at the same time in an effect. When both are used, the transforms are nested so that the values of one transform are applied after the previous transform values have been calculated.

This nesting provides increased control of the effect dynamics. Source and Target space also affects the transform nesting order.

Figure 33. Spin and Rotate Transform Nesting



# Path Control

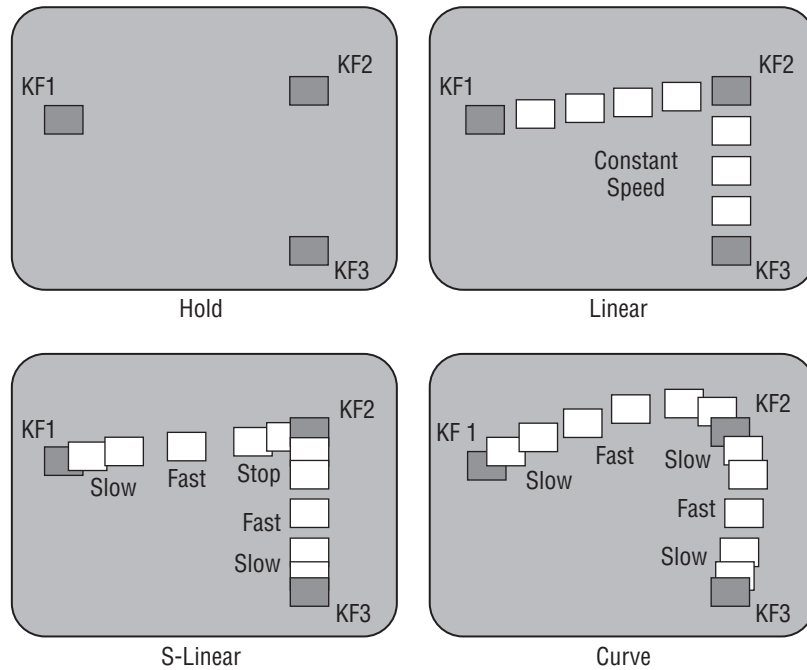
## Paths

Keyframes specify parameter values at specific times in an effect. Most of the duration of an effect, however, occurs between these keyframes. The Kayak HD system interpolates parameter values between keyframes (in-betweening).

The trajectory, or path, a manipulated picture travels between keyframes is determined by how these in-between values are interpolated. The system offers you several path controls (Figure 34 on page 68):

- **HOLD** — No interpolation. Keyframes hold their values for their durations, then change all at once for the next keyframe.
- **LINEAR** — Applies a linear interpolation between keyframes; no acceleration or deceleration is applied. Movement is mechanical with a constant velocity.
- **S-LINEAR** — Applies a linear or straight line motion between keyframes, with acceleration and deceleration applied at the beginning and end of each keyframe. At each S-Linear keyframe the motion is stopped for two fields.
- **CURVE** — This selection causes a rounded path through the keyframe. Paths are user adjustable with path modifiers (tension, continuity, and bias) described below.

Figure 34. Path Types



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

## Tension, Continuity, and Bias Controls

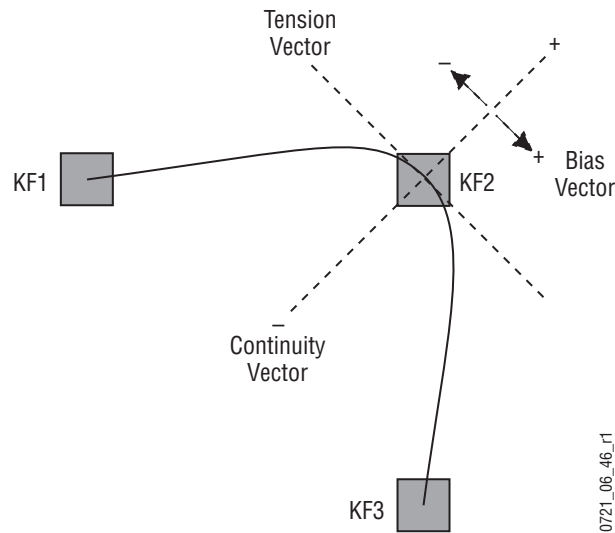
When the Curve parameter is selected, additional fine-tuning path controls become available:

- **TENSION** — Controls the length of the tension vector. At a setting of 0.0, this imaginary line extends an equal distance into and out of the keyframe, and the path through the middle keyframe is curved.
- **CONTINUITY** — Determines the angle of the path into and out of the keyframe.
- **BIAS** — Determines whether the path will be pulled towards the previous or the following keyframe. In the following examples, a physical path is shown between three keyframes. The first keyframe (KF1) is the upper left square; the last keyframe (KF3) is the lower right square. The adjustments in these examples are applied to the middle keyframe only (KF2).

## Path Vectors

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

Figure 35. Path Vectors



## Vector Values

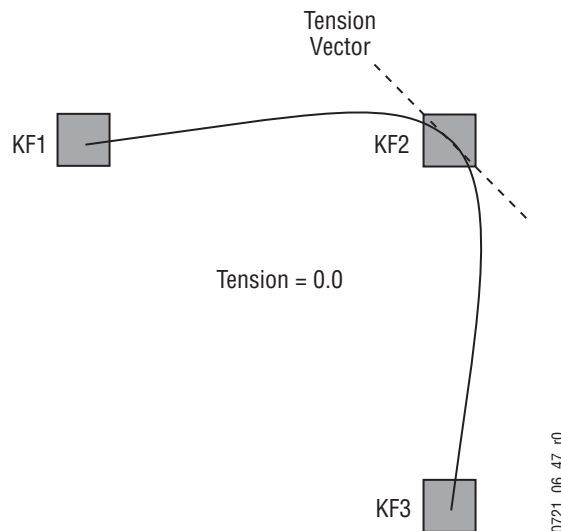
Path vector setting values of  $\pm 1.0$  are available, same as the Thomson Grass Valley Kaleidoscope DPM.

## Tension Control

In the example below, the keyframes comprise a right angle, so the **TENSION** control operates on a 45° line drawn through the keyframe. This line is referred to as the Tension Vector and is parallel to a line drawn between adjacent keyframes (Figure 36).

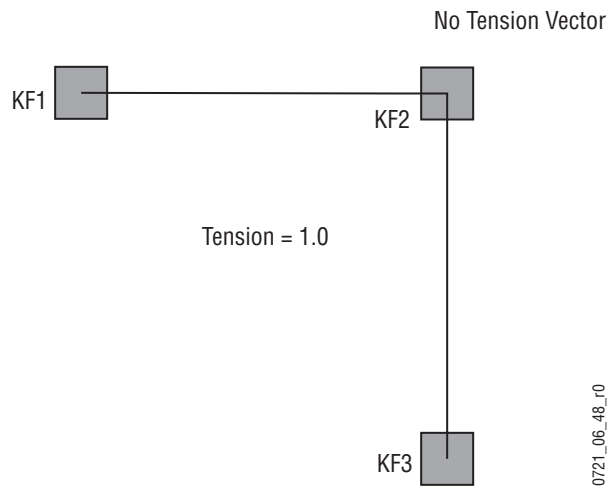
The **TENSION** soft knob controls the length of the tension vector. The length of the tension vector is inversely proportional to its parameter value. For example, at a Tension setting of 0 (zero), this imaginary line extends an equal distance into and out of the keyframe, and the path through the middle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

Figure 36. Tension Control Setting Zero



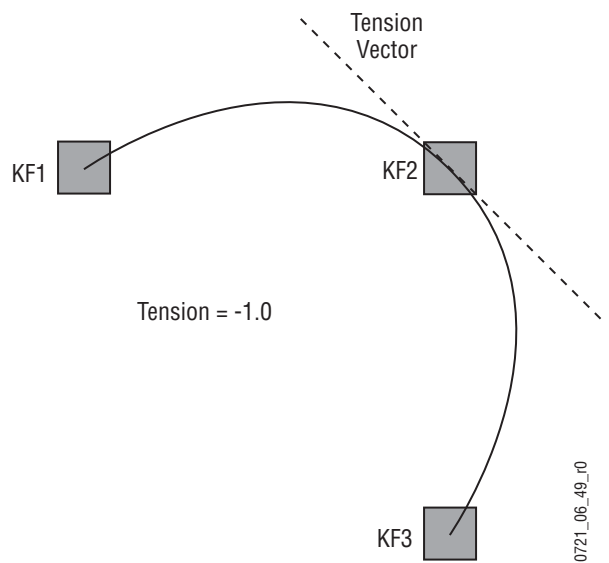
In the example below, the **TENSION** control is increased to 1.0, so that the Tension vector is shortened to non-existence through KF2 (Figure 37). The path enters and leaves the middle keyframe in a straight line as it takes on an S-Linear motion; decelerating as it enters the middle keyframe and accelerating as it leaves.

Figure 37. Tension Control Setting 1.0



In the example below, the **TENSION** control has been set to -1.0. This lengthens the Tension vector, causing the path through the middle keyframe to be longer and broader (Figure 38). The longer path will appear to make the image speed up through KF2 as it travels from KF1 to KF3.

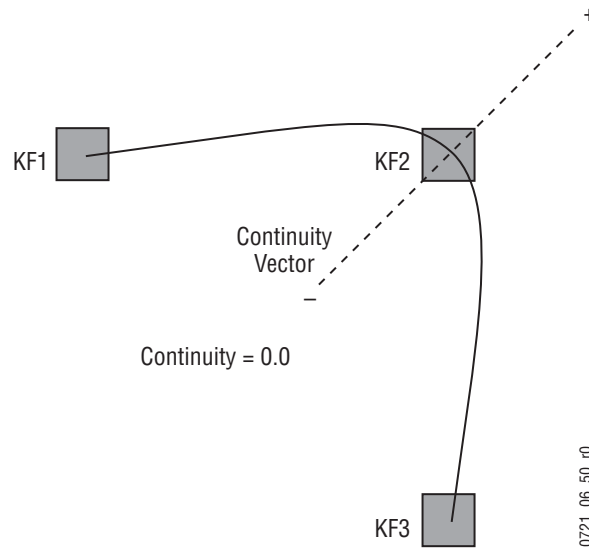
Figure 38. Tension Control Setting -1.0



## Continuity Control

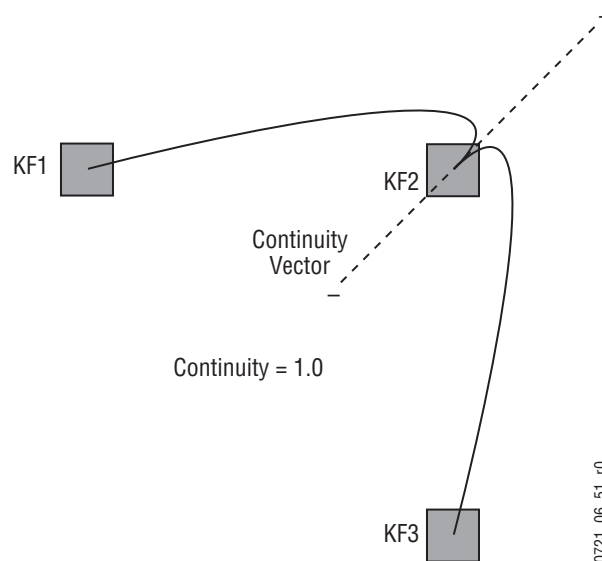
The continuity adjustment determines the angle of the path into and out of the keyframe. It is represented by a vector 90 degrees to the tension vector (Figure 39). The unmodified path shown is identical to the unmodified path of the other controls.

Figure 39. Continuity Control Setting Zero



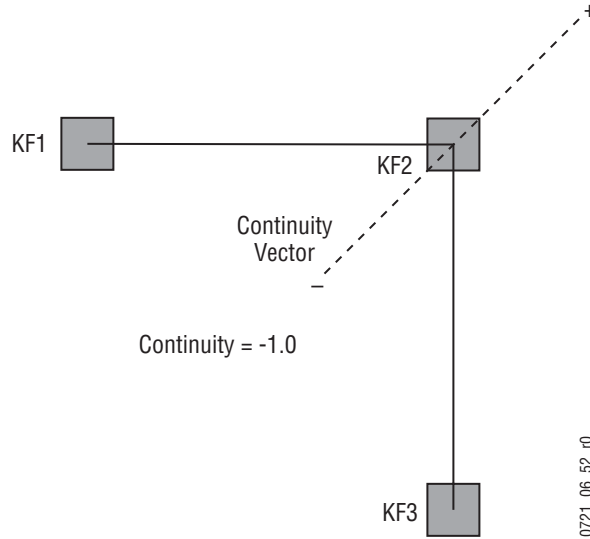
With continuity set to 1.0, the entry path through the keyframe is pulled positively along the continuity vector. The effect of 1.0 continuity is that of motion dropping into and then out of the keyframe, similar to a bouncing ball (Figure 39 on page 73).

Figure 40. Continuity Control Setting 1.0



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

Figure 41. Continuity Control Setting - 1.0

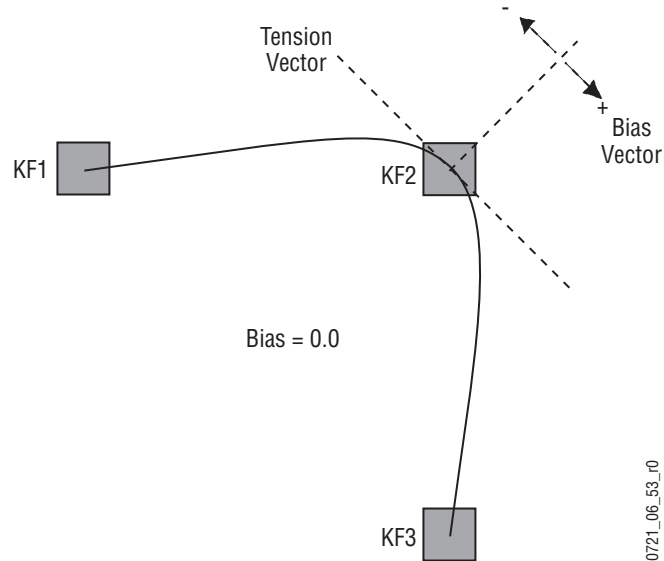


## Bias Control

The **BIAS** control determines whether the path will be pulled towards the previous or the following keyframe. With extreme settings, all of the biasing will occur either before or after KF2. With bias set to 0 (zero), the curve through the keyframe is gentle as shown in [Figure 42](#).

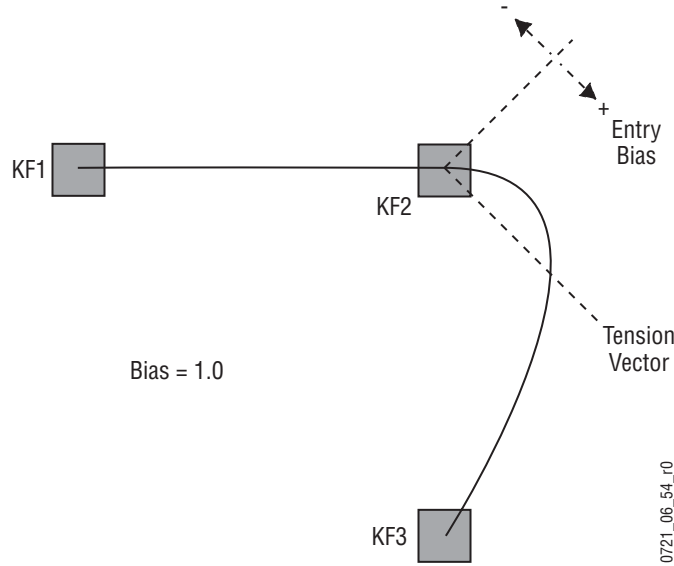
**Note** A Tension vector must be present for Bias control to be available.

Figure 42. Bias Control Setting Zero



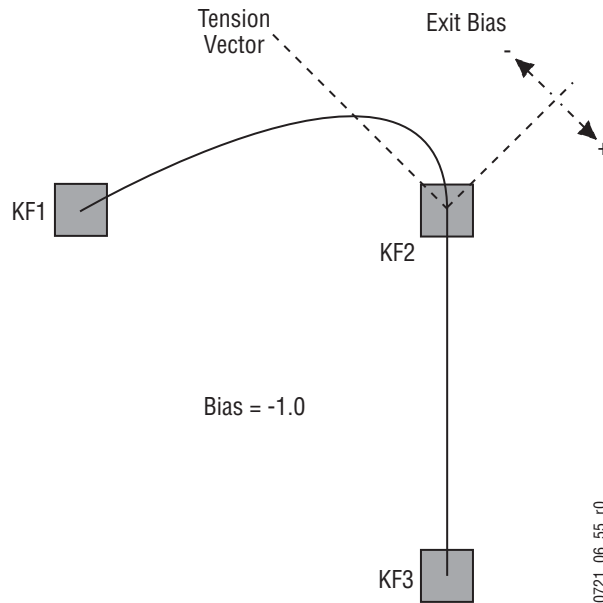
With the bias set to 1.0, the path is pulled towards the following keyframe. Entry into and exit from the keyframe is a straight line from the previous keyframe, and the path of the effect travels completely through KF2 before turning towards KF3.

Figure 43. Bias Control Setting 1.0



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

Figure 44. Bias Control Setting - 1.0





## Sure Touch

Sure Touch changes the way in which effects behave during recall and playback, providing more control and flexibility. An effect can be safely recalled using two new modes which eliminate abrupt changes: hence the name Sure Touch is being used. When using a Sure Touch mode, the effect adapts itself to the switcher's current state. Upon recall of any effect, no changes are made to the current state, regardless of the nature or the composition of the effect. Then, when the effect is run, the relative changes from the interpolated effect are applied instead of the traditional absolute output. Only elements which changed over the course of the original effect are affected.

One way of thinking about safe touch is to think of it as running an effect in "relative" mode.

These changes can be applied in different ways, allowing the effect to interpolate on a path parallel to the original effect (**Parallel** mode), or on a path that converges the changing state smoothly to the actual end state of the original effect (**Converge** mode). A safe touch mode can be "forced on" just prior to recalling an effect, or it can be saved with the effect to be used automatically.

This feature changes the paradigm of control for effects, allowing effects to be applied under more flexible set of conditions and also to be used as specialized functions to perform specific actions.

Within the DPM timeline system, when an effect is first created, a snapshot of all values is saved. For any subsequent keyframes, only values which have changed are then saved. Those values that have changed are referred to as "bound elements" and are subject to interpolation as the effect runs.

When an effect is recalled in a sure touch mode, the current states of the bound elements are read by the timeline system. These values are compared with the original first keyframe (snapshot) of the effect, and an "offset" or "new zero" is established for each bound element of the effect. This "offset" is then applied during all subsequent fields of the effect. A new "offset" is established each time the effect is recalled. The result is that a "new effect" is established each time the effect is recalled.

The essential result is this: When an effect is recalled in a safe touch mode, only those values which underwent changes after the first key-frame of the original effect are touched, and only changes in values are applied.

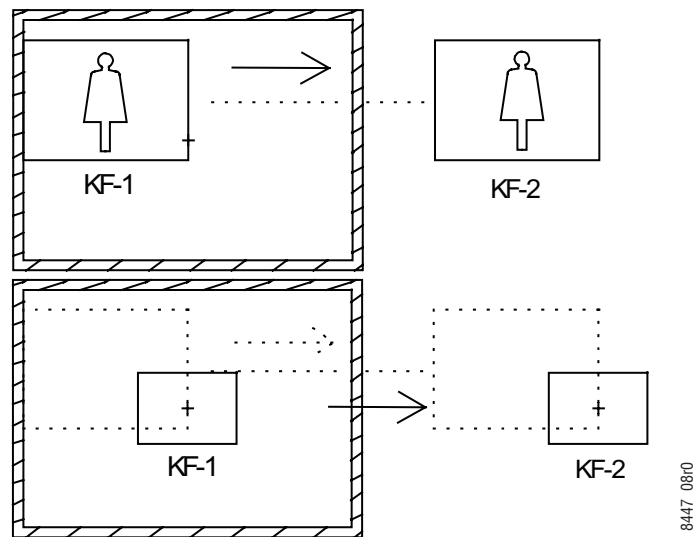
## Parallel Mode Example

For example, suppose we have the following effect.

- Effect 3: The channel is at 50% size and on screen in the upper left. It is moved off screen to the right.
- Keyframe 1: locate  $X = -2.0$ , locate  $Y = 1.0$ , size = 50%.

Keyframe 2: locate  $X = 8.0$ .

Figure 45. Parallel Mode Example



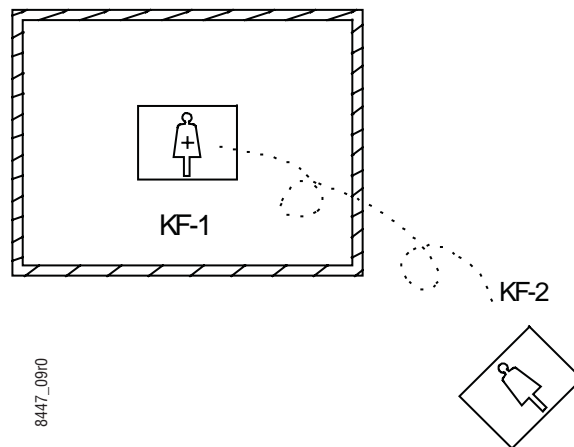
Now suppose that the image is centered and size = 30%. Next, effect 3 is recalled in sure touch “parallel” mode.

## Converge Mode Example

Sure touch converge mode begins in the same way as parallel mode, but the effect converges to the absolute end state of the effect over the course of the effect.

- Effect 2: Starts with the image centered and 30% size. Image is spun off screen to the right and down
- Keyframe 1: size = 30%
- Keyframe 2: locate X = 8.0, locate Y = -6.0, spin Z = 1.875.

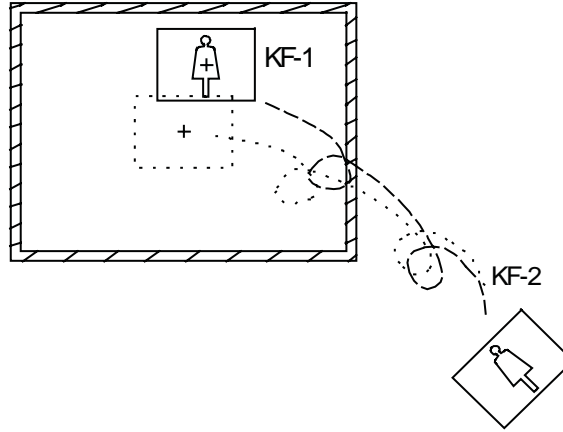
Figure 46. Converge Mode Example



Now suppose the starting image is moved up and right and then effect 2 is recalled with sure touch “converge” mode. The result would appear as shown here. The effect converges towards the original effect over the dura-

tion of the effect. The final keyframe of the effect would set the location and spin Z to exactly the same values as in the original effect.

Figure 47. Converge Mode Example (continued)



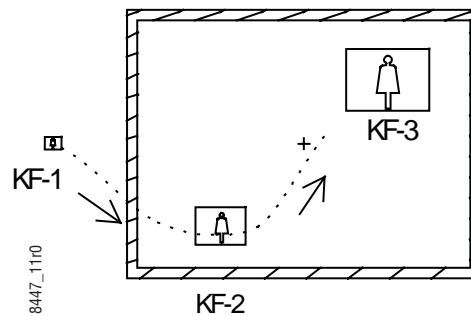
8447\_100

## Comparing Parallel and Converge Modes

Suppose we have an effect 5 which is as follows:

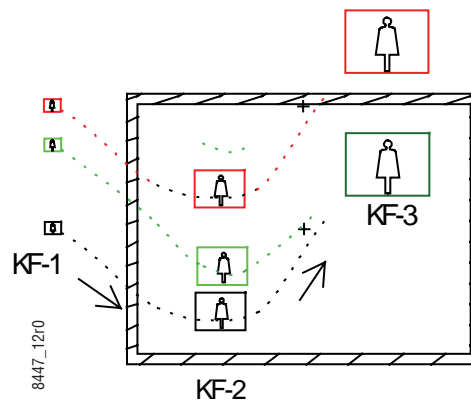
- Effect 5: The channel is 5% size, off screen to the left, and moves in a sweeping path towards the lower left screen and finally ending in upper right at 25% size.
- Keyframe 1: size = 5%, locate X = -6.0.
- Keyframe 2: size = 15%, locate X = -2.0, locate Y = -2.0.
- Keyframe 3: size = 25%, locate X = 2.0, locate Y = 1.5.

Figure 48. Comparing Parallel and Converge Modes



The result of moving the starting image location and recalling this effect in parallel mode (red) and converge mode (green) is shown here.

Figure 49. Comparing Parallel and Converge Modes (continued)



Obviously, there are ways to use sure touch which would create a bad result, as in the red case.



# Control Panel

The Grass Valley Kayak HD family of multi-format digital production switchers provides powerful, ground-breaking features designed to meet the widest range of requirements for live studio, mobile, and post-production applications. Available in configurations ranging from 1-M/E to 4.5-M/Es, Kayenne XL Packages combine features available in the Grass Valley Kalypso and Kayak HD switchers along with additional capabilities previously unavailable in any video production switcher by any manufacturer.

A Kayenne XL control surface consists of a Control Panel, a Menu Panel with an included articulated support arm, a Panel Control Unit frame, and optional Satellite panels. This control surface has an innovative modular design, permitting customized operator control layouts.

## Control Panel Modules

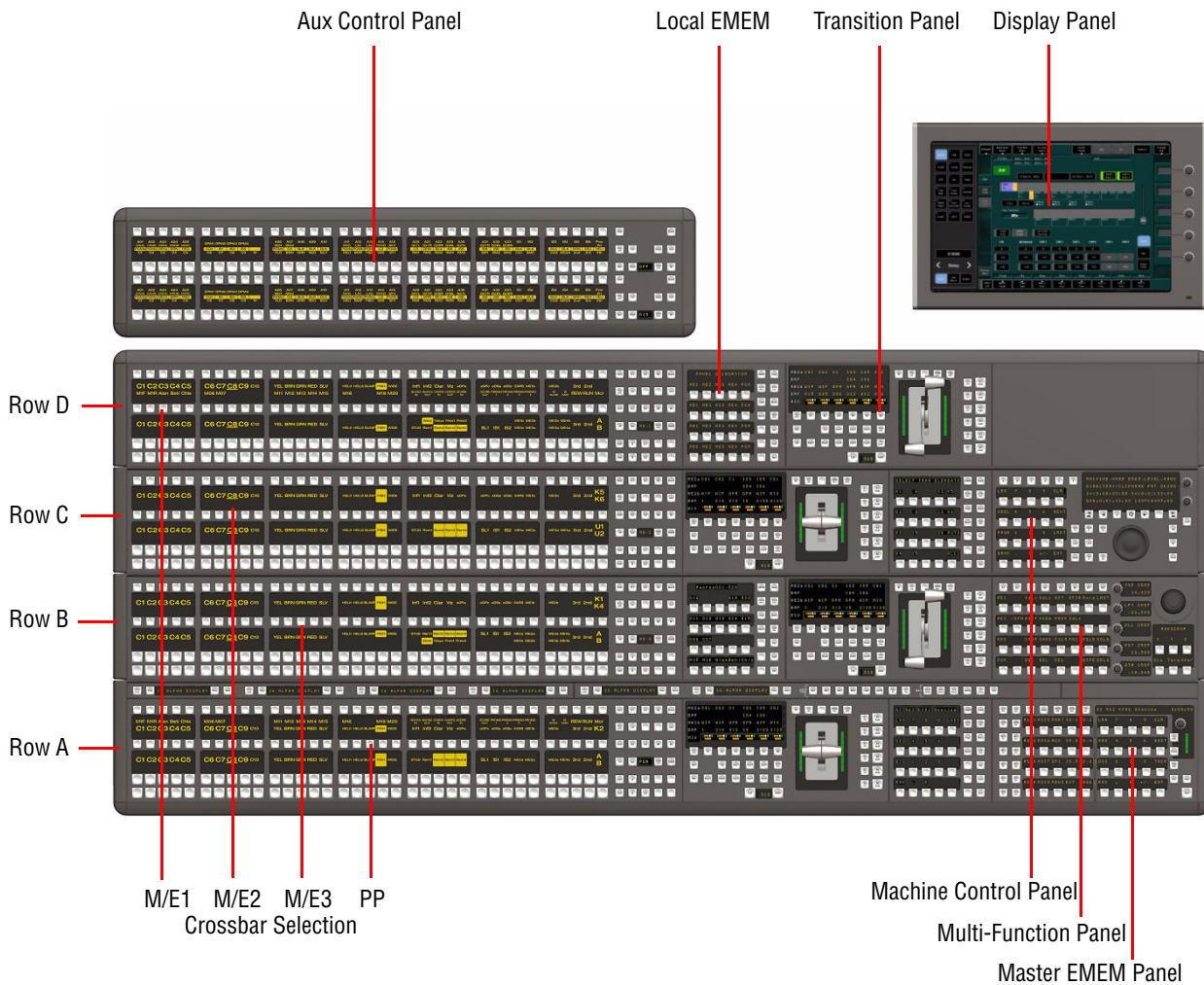
The following Kayenne XL Control Panel and Satellite modules are available:

- KAYN-PNL-TRM - Transition Module, used to control M/E transitions and keying.
- KAYN-PNL-LEM - Local EMEM Module, used to control EMEM effects on that M/E stripe.
- KAYN-PNL-M/EM - Master EMEM Module, used for delegated EMEM control of any or all system M/Es.
- KAYN-PNL-MFM - Multi-Function Module, used for delegated control of various functions.
- KAYN-PNL-DCM - Device Control Module, used for internal and external device control.
- KAYN-PNL-SRC-35, 25, 15 - Source Module, available in 35, 25, and 15 button widths, used for M/E source selection.
- KAYN-PNL-BAR-35, 25, 15 - Panel Bar, available in three sizes to match various control panel widths, used for device control and macros.

- KAYN-PNL-AUX-35, 25, 15 - Local Aux Module, available in 35, 25, and 15 button widths, used for Aux Bus control.

Representative Kayenne XL 4M/E control surfaces are shown in the [Figure 50 on page 84](#).

Figure 50. Overview of Kayenne XL Package Control Panel



- Row A:
  - 35 button source and bus select
  - Transition
  - Local EMEM
  - Master EMEM



- Row B:
  - 35 button source and bus select
  - Transition
  - EMEM
  - Multi-function module with Joystick
- Row C:
  - 35 button source and bus select
  - Transition
  - EMEM
  - Machine control
- Row D:
  - 35 button source and bus select
  - Transition
  - EMEM
  - Optional panel
- System bar with 6 device control sections
- 35 button source for local aux panel
- Display panel

## **Touch Screen Menu Panel and PC Menu Control**

Each Kayenne XL control surface includes a Menu Panel that features a wide format touch screen display. An articulated arm is also included, offering a wide variety of installation options.

An additional touch screen Kayenne XL Menu Panel is available as an option. It is also possible to run the Kayenne XL menu application on a standard PC, permitting mouse and keyboard control from a laptop, or remote control from any location on the network.

## Kayenne XL Features

The following features are available:

- up to 4.5 M/E switcher
- 6 keys per M/E (half M/E 4 keyer)
- 2 frames of V/K storage per keyers on M/E1/M/E2/M/E3 and PP
- 16 integrated DPMs (4 per M/E on M/E1, M/E2, M/E3 and PP)
- 4 channels of expansion DPM (M/E board in the Expansion slot)
- 1000 EMEMs
- 1000 macros
- Multi-format input and output conversion (MatchDef and SetDef)
- FlexiKey (4 PGM, 2 PVW per M/E 2PGM 1 PVW on the half M/E)
- Define EMEM
- Macro Editing

## Button Color Definitions

### Color Codes

#### Green low/highlight

- Static function selection/toggle with indication when function is enabled (On/Off).

#### Yellow lowlight

- Available functions with subselection (2nd page) via button "Next" or double-click.

#### Yellow highlight

- Function is enabled but not delegated.

#### Orange lowlight

- Available sub-selection(s) (2nd page) with On/Off status indication.

#### Orange highlight

- Sub-selection(s) (2nd page) are enabled but not delegated.

#### Blue lowlight

- Delegation buttons for embedded menu controls.

#### Blue highlight

- Indicates selection.

#### Magenta lowlight

- Indicates preselection and available digipot delegations. Enables next level of controls.

#### Magenta highlight

- Indicates activated/enabled selection and digipot delegations.

#### White lowlight

- Available selection and static On/Off.

#### White highlight

- Confirmed selection.

# Source Selection

Figure 51. Kayenne XL Source Select Panel

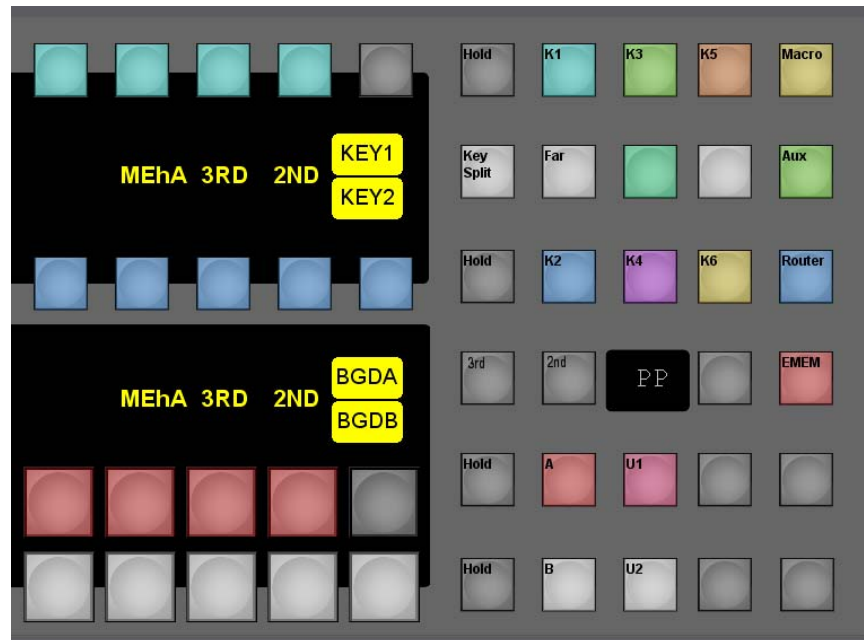


## Overview

The functionality described in this section refers to the following groups of buttons groupings and status displays:

- Source select buttons
- Source name displays (SNDs)
- Shift buttons
- **Hold** buttons (not yet implemented)
- Row delegation buttons
- Row select buttons:
  - M/E bus select buttons: **K1**, ..., **K6**, **A**, **B**, **U1**, **U2**
  - Aux bus select button: **Aux**
  - Macro select button: **Macro**
  - Router select button: **Rtr**
  - EMEM select button: **EMEM**
  - eDPM select button: **eDPM**
  - Define Memo select button: **Define Memo**
- Other buttons: **Far**, **Key Split**

Figure 52. Kayenne XL Source Select Panel Right Part



## Source Select Buttons

Depending on the panel type modules are available with 15, 25 or 35 source selection buttons per row.

The source select buttons can be mapped as:

- Switcher sources
- Shift function
- Row delegation function

By convention, it is assumed (but not required) that starting from the right and working to the left source select buttons will be mapped as:

- 0 or 1 row delegation buttons
- 0 to 3 shift buttons
- Primary source select buttons

The default mapping of a 4M/E switcher will be, from right to left:

- Button 35: Row delegation button
- Buttons 33 and 34: Shift Buttons
- Buttons 30, 31, and 32: M/E re-entry buttons

The button of the selected input is highlighted. If the input is assigned to a button in a non-selected level, the button is blinking. That feature can be disabled ("Shift level hidden source blinking").

## Row Delegation

- Row delegation buttons are generally mapped to the rightmost source select button.
- The color of each delegation button is set to indicate the current delegation. Its color is set to match the color of the bus select button, aux select button, macro select button, router select button, etc.
- The Source Name Display associated with the row delegation button indicates the name of the bus or the function (for example **KEY2, MCRO, BGDB, UTIL2**).
- Initially the rows are delegated as follows:
  - Row 1: **KEY1**
  - Row 2: **KEY2**
  - Row 3: **BGDA**
  - Row 4: **BGDB**

The following rows can be selected by pressing the corresponding row selection button: **Macro, Aux, Router, Define Memo, eDPM**

The previous selection occurs by pressing that button again.

For **KEY1...KEY6, BGDA, BGDB, UTIL1, UTIL2, EMEM** the row will be delegated temporarily as long as the selection button is pressed. A static delegation can be done by pressing the row delegation button and the row selection button simultaneously.

## Shift Level Delegation

### Standard Latch Mode

- If a shift level button is pressed, the row will be permanently delegated to that shift level.
- If the **4th** level button is not assigned, both shift level buttons (**2nd** and **3rd**) have to be pressed to reach the level.

### Manual Latch Mode

By pressing a shift level button, the row will be temporarily delegated to that level. For a static delegation a double-click has to be done.

The **1st** level can be reached by pressing the selected shift level button (temporarily) or by double-clicking on it.

If the **4th** level button is not assigned, the level can be temporarily reached by pressing the **2nd** and **3rd** level button at the same time.

For a static delegation of the **4th** level a double-click of the **2nd** level button and a double-click of the **3rd** level button have to be done.

To reach the **1st** level, one of the selected shift level buttons has to be double-clicked twice.

## Auto Latch Mode

In auto-latch mode, taking a source at a certain shift level automatically causes a delegation of the source row (and source name displays) to the new shift level and tallies the shift buttons for the new shift level. This means the bus stays delegated to the shift level.

To delegate a bus to a shifted level, push the shift button. The shift button is high tallied and the source name displays show the source names for the selected shift level. The bus now remains in this shifted state.

## Delegation to Aux Bus Selection

Aux bus delegation supports the selection of sources for any aux bus, eDPM, iDPM and RamRecorder bus.

To functionally delegate the row 1 and/or 2 to aux bus selection:

- Press the aux bus select button (toggle it on).

For each set of controls:

- Pressing a button on the top row of buttons selects an aux bus (destination).
- Pressing a button on the bottom row selects a source for the aux bus selected on the top row.

The source name display between these two buttons has four lines displaying the following:

- **Line 1:** Aux bus number
- **Line 2:** Aux bus name
- **Line 3:** Current Aux Bus source
- **Line 4:** Sources

Holding down the aux bus select button and pressing the row delegation button (or vice versa), delegates that row to an aux source row. In that case the aux bus can be selected by holding down the row delegation button.

The source selection buttons will be switched to the aux bus selection and an aux bus can be delegated.

## Delegation to Macros

- To delegate both rows 1 and 2 to macros, press the **Macro** button (toggling macro on).
- To delegate a single row (either row 1 or row 2)
  - Hold down the **Macro** button and then press a bus delegation button.
  - Or, hold down a bus delegation buttons, and then press the **MACRO** button.

Macros are shown in groups depending on the shift level, row, and M/E.

For each M/E, each shift level for rows 1 and 2 is assigned a macro starting number. The default condition is that all shift levels for all M/Es are assigned to start with macro 1.

- Pressing the Macro button a second time, turns it off and the bus (or buses) revert to previous delegations.

## Delegation to Routers Source Selection

Router control involves selecting a router destination and then being able to select a router source for this destination.

- To delegate both rows 1 and row 2 to router selection, press the **Router** button (toggling router on).
- The top row shows all configured router delegations (external aux buses).
- The bottom row shows available router sources for the router destination selected on the row above.
  - So multiple source selections can be made for the same destination if wanted.



## Delegation to EMEM Selection

- Pressing the **EMEM** button where there are bus delegation buttons defined causes temporary delegation of rows 1 and 2 for quick EMEM selection/recall.
- Pressing the **EMEM** button and then row 1 or row 2 bus delegate button delegates the row to EMEM selection. One or both rows may be delegated at the same time.
- Pressing the **EMEM** button and then either the row 3 or row 4 bus delegation button causes BOTH rows 3 and 4 to be delegated to EMEM selection.
- Delegated rows show the names of the EMEM on the source name display.
- The functionality differs depending on which rows are delegated.

Delegation of rows 1 and 2 to EMEM selection enable EMEM to be directly recalled.

Delegation of rows 3 and 4 puts the system into '**transitional EMEM selection mode**' where EMEM selection and recall can be controlled in conjunction with the transition module.

- Selection on row 3 is equivalent to selection on rows 1 or 2 as already described.
- Selection on row 4 prepares the EMEM.
  - Pressing the **Cut** button on the transition module causes the EMEM to be recalled, as already described
  - Pressing the **Auto** button on the transition module causes an effects dissolve to the EMEM register at the auto transition rate.
  - Moving the lever arm on the transition module causes a dissolve to the EMEM with a percentage related to the lever arm position, that is, a manual effects dissolve.

EMEMs which are parked on the first keyframe, can now be run using the local EMEM panel.

## Delegation to eDPM

When the eDPM is delegated, the upper key row is used to show the eDPM channels.

On the lower key row the sources for each channel can be selected.

## Delegation to Define Memo

When the define **memo** delegation button is pressed, both key rows will be delegated to the local EMEM. In this case the source select buttons are used to select the parts of the switcher whose signals be stored in the EMEM. The assignment of the buttons corresponds to the EMEM/Define Memo menu (local EMEM).

## Split Key

To create a split key, select a source for the fill signal, hold down the key-split button, and select a source on a row delegated to the key bus. The selected source will become the key (cut) selection for that key bus using the currently selected keyer mode.

- If a bus is temporarily delegated to control a keyer, then the split key button becomes an on/off toggle, so that again source selection can be made using two hands.

## FAR Button Operation

- When **Far** is off (inactive), taking a source sets both near and far sides.
- The **Far** button is active when held down.
- The **Far** modifier is used for DPM rotation transitions. During DPM operations the side that is seen by the user is defined as the near-side, the invisible other side is defined as the far-side.
- To set the far side for the current delegation of a bus, press and hold the **Far** button, select a shift level if necessary, and make a source selection for that side.

## Button and Bus Indication

### On Air

Input buttons and the bus row delegation button which are involved in the output picture are indicated with a red.

### Uncalibrated /Asynchronous Sources

Asynchronous sources will slowly flash their source name displays between normal text and reverse-video text.

Sources which are **uncalibrated** will be indicated by having the source name underlined.

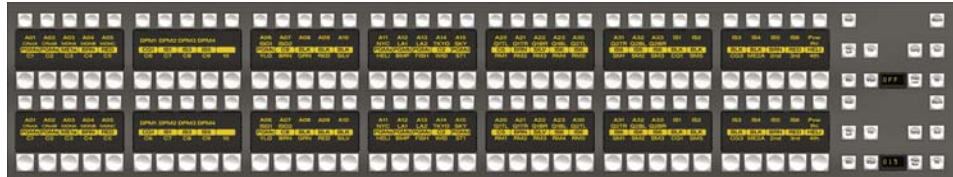
### M/E Delegation Indication

- There is a four character LED display between the K4 and U1 buttons.
- This display shows the current delegation of the panel row to the logical M/E:
  - M/E1, M/E2, M/E3, PP, M/E-H

# Aux Bus Control

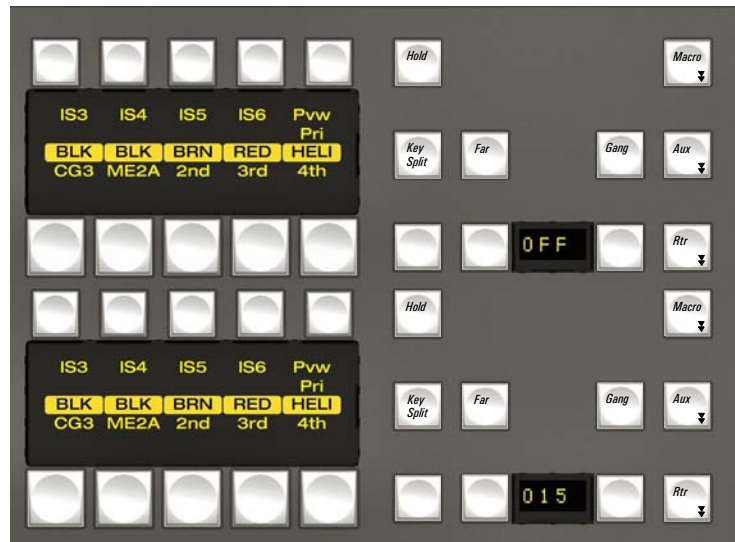
There are two identical sets of aux bus controls, the upper and the lower. Both sets operate identically.

Figure 53. Kayenne XL AUX Control Panel



Aux bus mode of operation is the default for the two sets. If **Macro**, and **Rtr** are off, the set of controls is in Aux Bus control mode, the default mode.

Figure 54. Kayenne XL AUX Control Panel - Right Part



For each set of controls:

- Pressing a button on the top row of buttons selects an aux bus (destination).
- Pressing a button on the bottom row selects a source for the aux bus selected on the top row.
- The source name display between these two buttons has four lines displaying the following:
  - Line 1: Aux bus number
  - Line 2: Aux bus name
  - Line 3: Current Aux bus source
  - Line 4: Sources
- The **Split** button acts in the same way to modify source selection as described in [Split Key on page 94](#) when the eDPM is selected.
- The **Far** button acts in the same way to modify source selection as described in [FAR Button Operation on page 94](#) when the eDPM is selected.
- The two four-digit displays show the selected aux bus.

## Router Control

There are two identical sets of router controls, the upper and the lower. Both sets operate identically as described in the source select section.

## Macros

- Pressing each of the two **Macro** buttons delegates two rows of source selectors to macro functionality.
- Pressing a macro causes it to execute.
- To learn a macro, use the macro editing buttons on the system bar.
- The two four-digit displays show **MCRO**.

**Note** The other buttons are not used.

# Transition Control

## Overview

Figure 55. Kayenne XL Transition Panel



Figure 56. Kayenne XL Transition Panel - Module Detail 1



Dedicated buttons for **Cut** and **Auto** Keyer transitions.

Figure 57. Kayenne XL Transition Panel - Module Detail 2



- **Limit**  
Set , Enable and disable Transition Limit.
- **User Next**  
Not yet implemented.
- **DPM**  
Delegate DPM Transition to Lever/Fader Arm.
- **EMEM**  
Delegate EMEM Transition to Lever/Fader Arm.
- **Trans Rate**  
Enable Transition entries.



Figure 58. Kayenne XL Transition Panel - Module Detail 3



Split Lever/Fader Arm with progress bars.

Available Transitions Types.

Figure 59. Kayenne XL Transition Panel - Module Detail 4



**Note** Key Wipe is only available when Multimix is enabled.

Figure 60. Kayenne XL Transition Panel - Module Detail 5



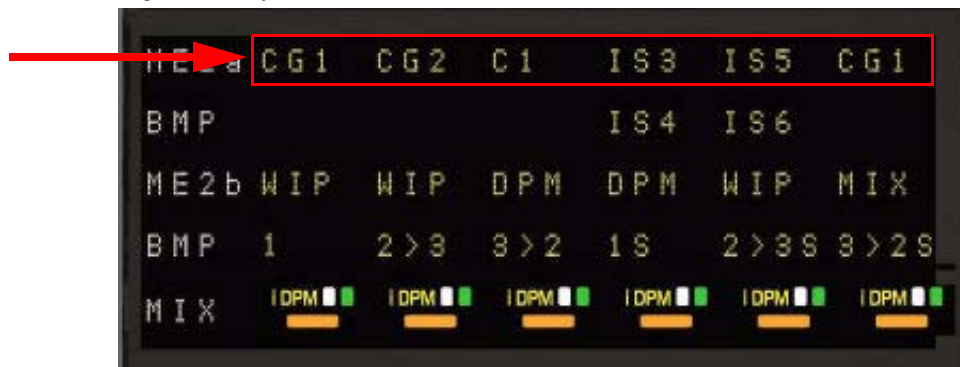
- **Key Prior**  
Dissolve from "Current" to "Next" Priority stack.
- **Blk Pst**  
Enable "Black Preset transition".
- **Loop**  
Determines if eDPM transitions remain in signal path.
- **Trans PVW**  
Enables Transition PVW for the next transition on designated PVW out.

Figure 61. Kayenne XL Transition Panel - Module Detail 6



Source Name Display for selected crosspoint on designated Bus/M/E .  
Source on Program-Bus, Preset-Bus, Utility1- and Utility2-Bus.

Figure 62. Kayenne XL Transition Panel - Module Detail 7



Source Name Display for selected crosspoint on designated Bus/M/E.  
Source on : Key-Fill Bus 1-6 and Key-Key Bus 1-6.

Figure 63. Kayenne XL Transition Panel - Module Detail 8



Selectable Transition Components. **Misc 3 - 6** components are available via Menu. For multiple selections press designated buttons simultaneously or you can select and deselect multiple components while pressing and holding one of the components and add others by single selections.

Figure 64. Kayenne XL Transition Panel - Module Detail 9



Transition Type for Background Transition.

Figure 65. Kayenne XL Transition Panel - Module Detail 10



Keyer indicators for "On Air" and DPM Loops.

Figure 66. Kayenne XL Transition Panel - Module Detail 11



Display shows the Key Priority.

Figure 67. Kayenne XL Transition Panel - Module Detail 12



Individual Transition Types for Key Transitions while **MultiMix** is enabled.

Figure 68. Kayenne XL Transition Panel - Module Detail 13



Key-Key Bus 1-6

Figure 69. Kayenne XL Transition Panel - Module Detail 14



**Cut** and **Auto** Transition for all selected components enabled/selected for "Next Transition".

Figure 70. Kayenne XL Transition Panel - Module Detail 15



Transition Duration Rate (used by **Auto**) for selected components enabled/selected for "Next Transition".

## Transition Elements

The **Key 1 – 6** and **BGD** buttons select the elements that will change during the next transition. Pressing these buttons does not change the current output of the switcher, but prepares for a change (the next transition).

Pressing one transition element button automatically turns off the others in this group. More than one transition element can be selected by holding down one button while pressing another in the group. Elements not selected remain in their current state when the transition is performed. For example, if **Key 1** is on and is not selected as part of the next transition, it will remain on during and after the transition.

The **BGD** button selects a change in the background buses. The result will be a transition from the current source on the PGM bus to the source selected on the PST bus. After the transition, the buses will flip-flop, so the PGM bus always remains the on-air bus. The PGM bus selection remains the background source if this button is not selected as part of the next transition.

The **Key 1 - 6** buttons select the keyers that will be involved in the next transition. The keys currently visible on the output of the switcher are identified by the **On** indicator lights below each button. Note that a key may be on but not visible (for example, half way through a preset black transition).

The **Key Prior** button selects a change in the key priority. The layering order (stack) of the keys will transition from the current stack to a new stack specified by the operator. The new key priority stack is defined using the Keyers subpanel or via a menu.

## Transition Types

The **DPM**, **Mix**, and **Wipe** transition type buttons select what type of transition will be used on the elements selected above for the next transition. Pressing these buttons does not change the appearance of the current output of the switcher. Only one transition type can be selected at a time.

- The **DPM** button is only available for Key Transitions. If the Background is selected for next transition in combination with keyers, the background will perform an add/mix/wipe transition, depending on the last transition type selected prior to the DPM selection. This type will be indicated in the display above the **BGD** button.

The behavior of a **DPM Key Transition** is as follows:

In a mix/wipe transition the **Lever Arm** or the **Auto Trans** control the video amount of the keyer. In a DPM transition the **Lever Arm** or the **Auto Trans** controls the timeline of the DPM effect selected for this keyer.

When the key was off at transition start, the video amount of the keyer is fully switched on at transition start, allowing to fly the key in.

When the key was on at transition start, the video amount of the keyer is fully switched off at the end of the transition, allowing to fly the key out.

**Note** The DPM effects used for transitions should be built in a way that the last key-frame is out of screen or size zero.

- The **Mix** button selects a mix as the next transition.
- The **Wipe** button selects a wipe as the next transition. Each wipe is pre-defined using either the complex wipe generators or the Utility buses as the wipe shape. Wipe pattern selections are made in the Wipe menu.

## Performing Transitions

The **Cut** and **Auto Trans** buttons and the Transition Lever Arm are used to perform main transitions. After a transition completes, the background source selections flip-flop, readying the PST bus for the next source selection. The progress of a transition is indicated by the LED bars beside the lever arms.

The **Cut** button instantaneously replaces the selected elements with their new sources or states, regardless of the transition type selected. The button will light briefly to confirm the operator's action.

The **Auto Trans** button starts an automatic transition of a predetermined rate. The button will light during the transition. Pressing **Auto Trans** a second time during a transition stops the transition at that point. The transition can then be completed by pressing the button a third time or by moving the **Transition Lever Arm** to its opposite limit or by pressing the **Cut** button.

The **Transition Lever Arm** is used to manually perform a transition. You can move the lever in either direction to run a transition due to the flip-flop architecture of the buses. Moving the lever from one limit to the other performs a complete transition. It is possible to start a transition with the lever, then stop moving the lever at any point, reverse its direction, and even return it to the original limit without completing the transition.

If the **Transition Lever Arm** is not in an end position when recalling an effect or performing an **Auto Trans**, the lever arm is resynchronized by recalculating the resting lever arm way to complete the transition in the direction of the arrow. Moving the lever arm in the opposite direction enable the operator to resynchronize the arm to an end position without affecting the output signal.

## Preset Black

The **Preset Black** button modifies a main transition so that it will go through black, instead of going directly to the new state. This is an alternate action button (pressed to turn it either on or off). The **Preset Black** button lights when it has been selected.

Two successive transition commands (**Auto Trans** button, or **Transition Lever Arm** action) are used for a complete preset black transition.

The first command transitions the switcher to black (first stage). When in black, both the **PGM** and **PST** bus selections will go low tally. The second command transitions from black to the final stage, completing the preset black transition.

The preset black function is canceled automatically at the end of the second transition.

The transition type can be changed when the M/E has reached its first preset black stage, allowing for example a wipe to and a mix from preset black. While in preset black, the key ON indicators report the states the keys will have when the second transition command completes. The keys involved can be changed at this time, if desired. The source on the **PST** bus can also be changed while in the preset black stage.

A preset black transition can be canceled by pressing the **Preset Black** button a second time. If cancelled while at the preset black stage, the system will switch back the original signal. Pressing a source button on the **PGM** bus will also cancel a preset black transition. The source pressed on the A bus will immediately be placed on air without any keys, even if the next transition had specified key changes.

## Transition Preview

The transition preview feature enable a main transition to be previewed without affecting the program output. A transition preview cannot be performed if the Transition Lever Arm or main transition is off limit, if an auto transition is in progress, or when Preset Black has been selected.

Pressing **Trans Pvw** routes the main transition video to preview output and disables program transitions on that M/E, leaving the existing program output unchanged. Pressing **Auto Trans** or moving the Transition Lever Arm with **Trans Pvw** active will show the transition only on preview, allowing the setting of wipe parameters or adjusting auto transition times before actually performing that transition. Transition preview overrides whatever preview mode is currently selected.

Transition preview may be canceled at any time by pressing the lit **Trans Pvw** button. If an auto transition preview is in progress, it will be aborted. If the transition lever arm was used for the transition preview, canceling the preview part way through will cause the lever arm to resynchronize by recalculating the resting lever arm way to complete the transition in the direction of the arrow. Moving the lever arm in the opposite direction enable you to resynchronize the arm to an end position without affecting the output signal.

## Transition Rates

Auto transition rates are set using the **Trans Rate** button at Transition panel and keypad located at the Local EMEM panel.

When the **Trans Rate** button is pressed, the **Auto** button in the Main Transition subpanel and the six **Key1 - 6 Mix** buttons will flash and the display in the local EMEM subpanel prompts "select component". A flashing button indicates the status of this component unselected. Select the components where you would like to change the Transition Duration, enter the new



Transition Rate using the numeric key pad at local EMEM panel and press the save button. All selected components (Status for selected is a none flashing button) are now changed to the new Transition Rate.

## Other Transition Control Interactions

The Transition Lever Arm can be used in combination with the **Auto Trans** or **Cut** button to perform a main transition. For example, you can start the transition by moving the lever off its limit, and finish the transition by pressing **Auto Trans**. Moving the lever part way, then pressing **Cut** will complete the transition with a cut. The lever arm will be resynchronized by recalculating the resting lever arm way to complete the transition in the direction of the arrow. Moving the lever arm in the opposite direction enable you to resynchronize the arm to an end position without affecting the output signal.

## Positioner Subpanel

Figure 71. Multifunction Panel



The Positioner subpanel is used to control positioner functions of the Digital Picture Manipulator image and wipe pattern placement, size, angle, and other attributes in conjunction with the menus for the Digital Picture Manipulator.

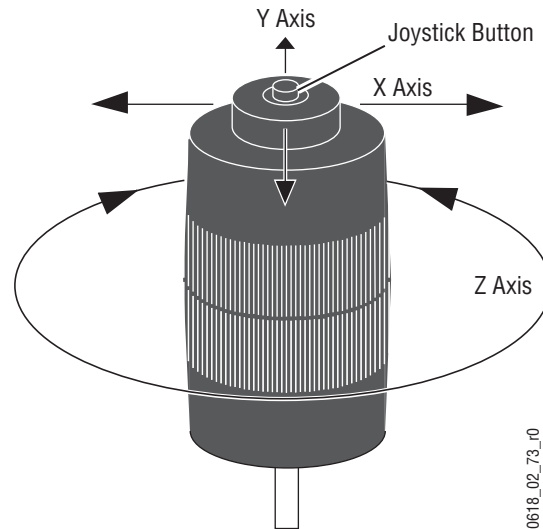
The positioner is particularly suitable for adjusting position and rotation parameters and can also be used to select a color from an image (for example, chroma key backing color) using an on-screen cursor.

Operating the positioner subpanel involves delegating a resource and a set of associated parameters to the positioner. The positioner then provides control of the delegated parameter values.

## Positioner

The system positioner is a precision three-axis device. Moving the positioner towards or away from you controls the Y-axis, moving the joystick left and right controls the X-axis, and rotating the joystick controls the Z axis.

Figure 72. Positioner



## Positioner Button

The **Positioner** button on the top of the Joystick can be used to accelerate the change of the delegated parameter, to enable quicker placement on the screen. The **Positioner** button is also used to pick a backing color when auto setting up a chroma key.

## Positioner Delegation

Because the Positioner is used for many different functions, multiple stages of delegation can be required to access and control a specific set of parameters.

There are two ways of delegation:

- Delegation by menu: A selection in the menu delegates the corresponding digipots parameters to the positioner, if the parameters are suitable to be positioner controlled.
- Delegation by hardware buttons: The Positioner subpanel has 4 main delegation buttons. These buttons are used for delegation in combination with delegation buttons in other subpanels of the switcher.

## DPM (Digital Picture Manipulator)

The **DPM** button can be combined with the delegation buttons **Key1 - 6** in the Keyer Subpanel. To toggle through the different sets of parameters of an corresponding DPM channel (Digital Picture Manipulator), just press the **DPM** button or the relative **Key Delegation** button several times. Since there are a lot of sets of parameters per DPM channel, it can be more efficient to use the menu delegation to delegate a specific set of parameters.

## Key Wipe, Wipe1, Wipe2

These wipe generator buttons can be combined with the delegation buttons Key1-4 in the Keyer Subpanel and the **Wipe** button in the Transition Subpanel.

There are different location/size parameters per wipe generator for every point of use. For example, **Wipe1** can be used as background transition color wash control for the background wipe border pattern key inhibit or force mask color wash control for the keyer matte.

If you combine a wipe generator button with one of the other delegation buttons, the system checks whether there is a point of use for the corresponding wipe generator. In this case the corresponding set of parameters is delegated to the Positioner.

Pressing the **Keyer Delegation** button (or the wipe transition button) repeatedly toggles through the different points of use of the wipe generator for the selected delegation.

Pressing the wipe generator button repeatedly toggles through all points of use of the delegated wipe generator.

Pressing down more than one delegation button at the same time delegates the Positioner to control multiple objects simultaneously.

The display in the Positioner Subpanel always shows the delegated set of parameters and the point of use.

The Auto Delegation Function can be disabled by the **Delegate Lock** button.

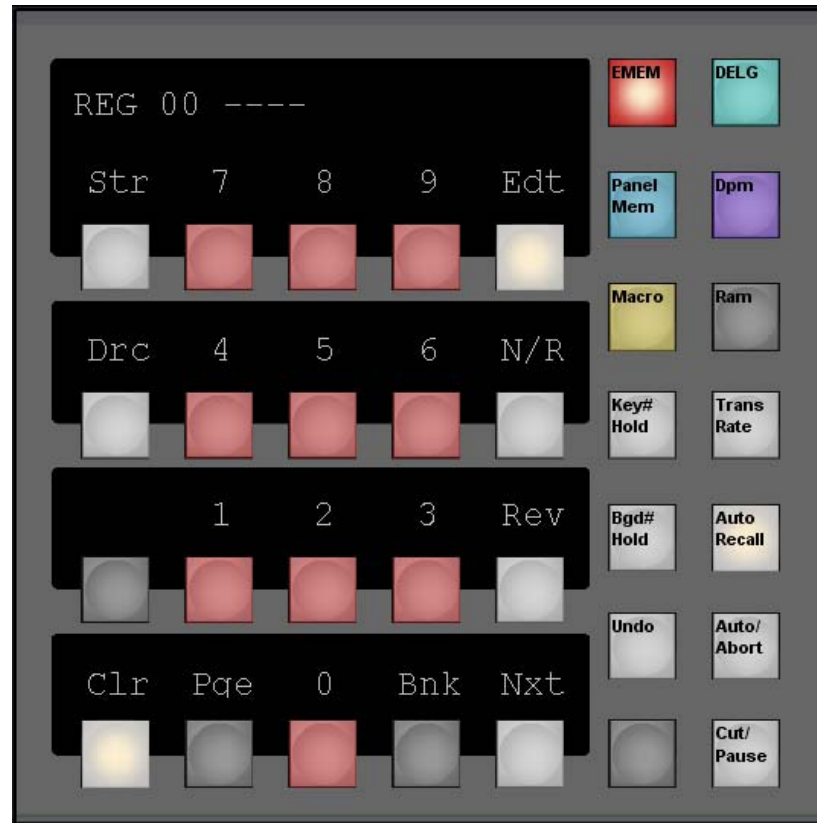
## Axis Lock Buttons

Activating the **X**, **Y**, and **Z** axis lock buttons individually or in any combination locks parameter changes for the selected axes. For example, if the **X** button is active while the Positioner is moved, then only **Y** and **Z** axis deflection can be performed. Axis locking also applies to centering functions.

The **Center** button is used to apply the default (center) value to the delegated parameter.

# Local EMEM

Figure 73. Local EMEM Kayenne XL Package



The Local EMEM subpanel is a multi-purpose section of the control panel.

To perform the different tasks, the subpanel has six delegation buttons:

- **EMEM**  
Store, edit, recall EMEM registers
- **DELG**  
Delegation of the panel row to the logical Mainframe M/E
- **DPM**  
Store, edit, recall DPM effects
- **MaKe**  
Record, play macros
- **Ram**  
Store, recall RamRecorder stills, play RamRecorder clips
- **Key Hold#**  
If enabled the Key cross bar (key and fill sources) will not changed by EMEM recall
- **Bgd Hold#**  
If enabled the program and preset cross bar will not changed by EMEM recall
- **Auto Recall**  
If enabled EMEMs will be recalled and played as they were stored or edited. The EMEM will play to that Define Memo which is stored within EMEMs.  
If disabled EMEM will play according to the current setting of Define Memo.
- **Undo**  
Undo recalls the state before the last EMEM recall.
- **Auto/Abort**  
If a EMEM is selected and then the Auto button is pressed, the selected EMEM will be played in the Trans Rate given Transition Duration.  
Abort will stop a current running time line.
- **Cut/Pause**  
Cut recalls a selected EMEM immediately.  
Pause pauses a running time line at the current position and if Pause is pressed again the timeline will continue their end position.

## Panel Delegation

Figure 74. Panel Delegation

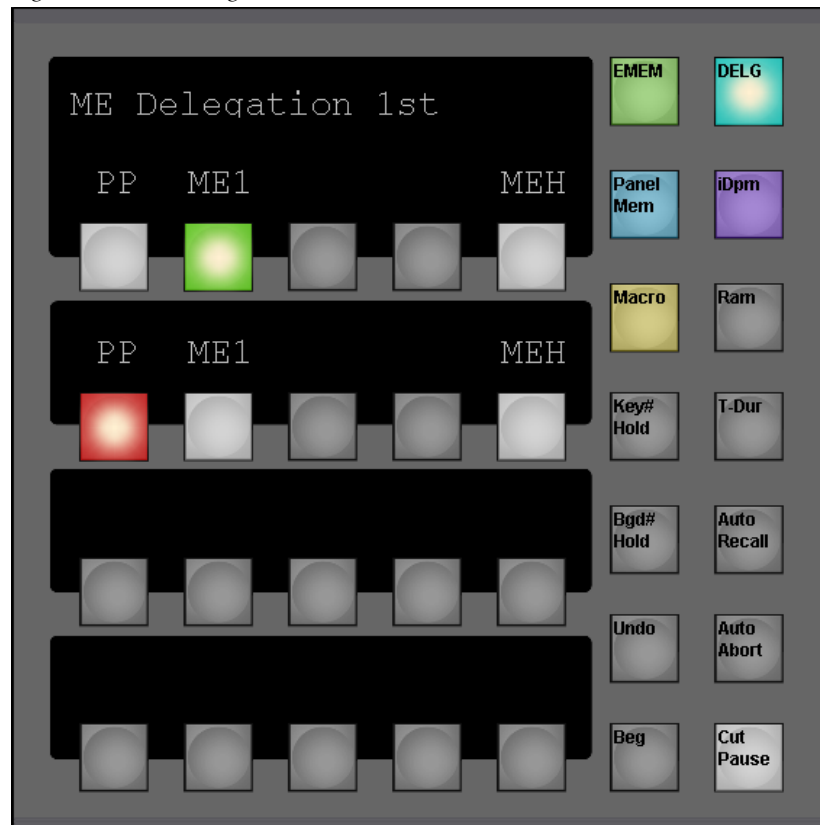


Figure 74 on page 115 shows a Local EMEM module delegated to Panel Delegation. This module is in a 2 M/E Panel and connected to and 2.5 M/E Kayak HD.

Pressing the light blue colored **DELEG** button delegates the module to **Panel Delegation** mode, showing M/E1 through M/E4 plus PP for the four bottom most rows of the panel surface. If there are less than 4 stripes, then only the appropriate number of rows will be shown. If there are more than four stripes, then a push of the **DELEG** button will show the M/E delegations for those additional stripes.

In Panel delegation mode all buttons are colored low tally white if the M/E exists in the suite, otherwise the buttons are off. Current selections are high tallied with the defined M/E color.

All button rows are radio buttons. Pressing a button delegates that row of the panel to the selected M/E.

It is possible to have the same selection on more than one row.

## Panel Memory

Figure 75. Panel Memory

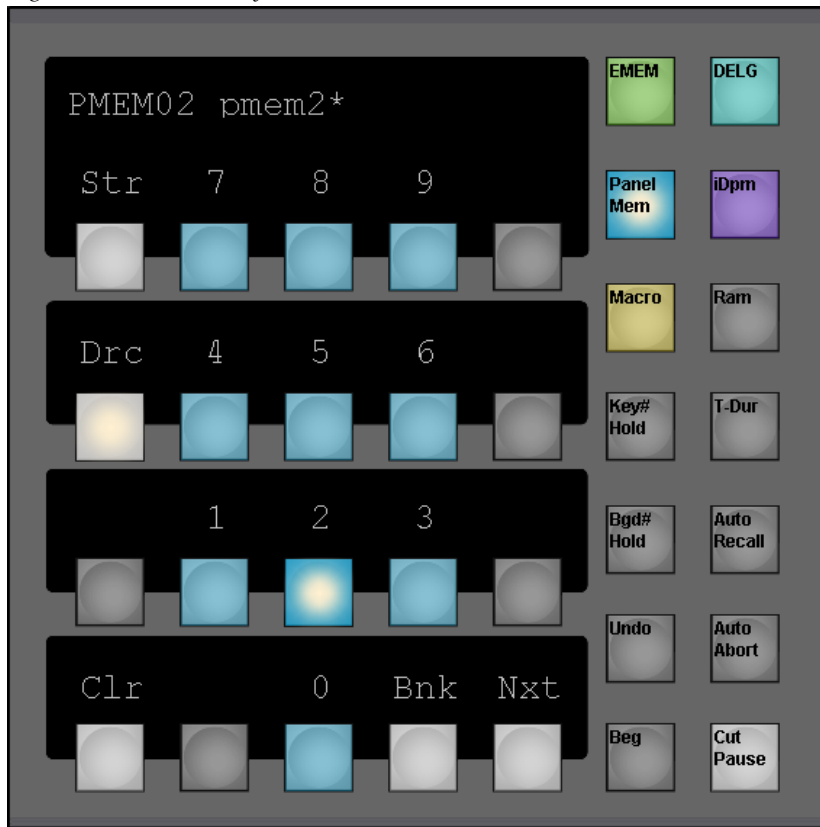


Figure 75 on page 116 shows a local EMEM module delegated to Panel Memory, and Register 2 was recalled in Direct Mode.

The local EMEM module is delegated to the panel memory function by pressing the **Panel Mem** button. Panel Memory can be used to readily change bus row delegations for a single M/E stripe, or to change M/E delegations and M/E bus row delegations for several (or all) M/E stripes simultaneously.

There are 99 panel memory registers which are shared for the workplace.

The use of the Panel Memory is similar to EMEM operation (recall, store, Direct Mode, etc.).



## DPM (Digital Picture Manipulator)

In DPM mode the local EMEM panel serves for recalling and editing DPM effects. For general information on the DPM structure in the Kayak HD system, refer to [DPM Menu on page 486](#).

### Recalling a Register

Effects can be recalled in two different modes:

- **Register Mode** is an input mode for the register number in the Effects subpanel, in which the number is entered in one-digit (0 ... 9) or two-digit format (10 ... 99). Subsequently the **Cut** button is pressed. Do not use the **Enter** button for confirmation.
- **Direct Mode** is an input mode for the register number in the Effects subpanel. The bank number 0 ... 9 corresponds to the tens digit of the register number. When the units digit of the register number is entered, the corresponding effect is recalled immediately.

To run an effect in either mode, just press the **Cut** button.

**Note** In register mode the first press of the **Cut** button (after you have entered the digits) recalls the effect. The next press of the **Cut** button runs the effect. While the effect is running, consecutive pressing of the **Cut** button toggles between Pause and Play.

For more detailed run controls please use the menu.

### Enabling and Disabling Direct Mode

The Direct Mode permits access to a stored effect with a single key (hotkey). The bank number is the tens digit of the register. The hotkeys are the units digits of the register. The Direct Mode may be enabled during storing, but this does not have any particular benefit.

#### Enabling Direct Mode

The **Drc** button toggles between on and off. If the direct mode is on, the **Bnk** button becomes active. Press this button to select a bank.

**Example:**                                  **EFF   05   eff05   ----**

#### Disabling Direct Mode

Press the lighting **Drc** button.

## Display

If no editing function or store function is selected, the ?? digit display of the subpanel may show the following indications:

- Register 24 is selected. The register is empty: **iDPM24 ----**
- Register 5 is selected. The register contains an effect and has no particular name: **iDPM05 eff05**
- Register 5 is selected. The register contains an effect with the name ABCDEFGH: **iDPM05 ABCDEFGH**

**Note** The name can only be entered in the menu.

## Selecting a Register for Storing / Editing

When you press the **Store** or the **Edit** button, the current register is prompted in the display. If you want to use this register, just press the **Enter** button for confirmation. Or select another register by entering a one- or two-digit number on the numeric keypad and press the Enter button.

If you wish to select the next free register, press the **FREE** button.

### Edit

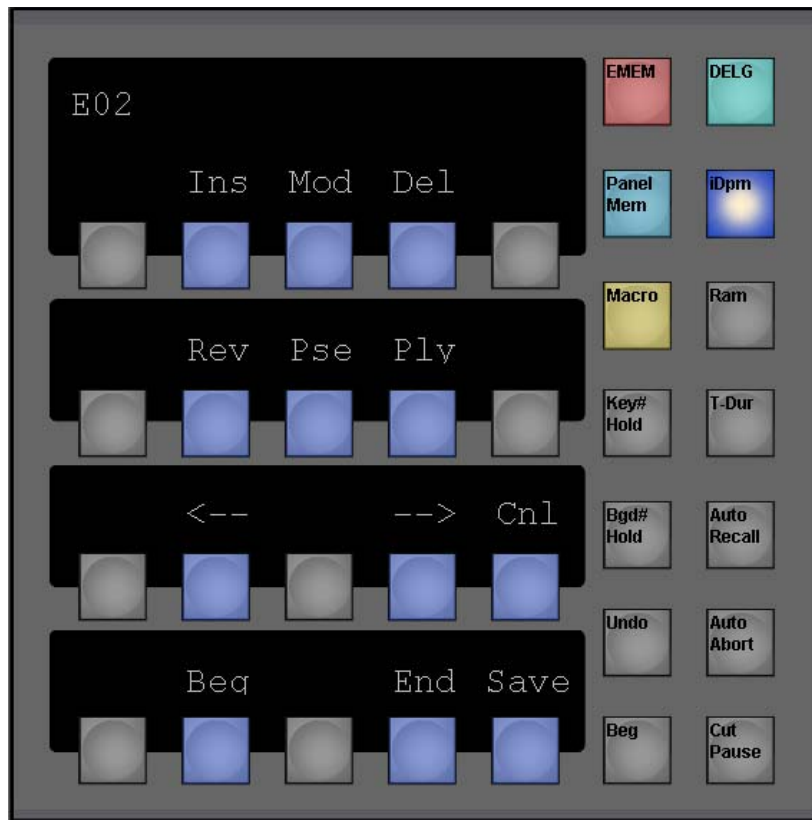
Select the register as the current one.

### Store

Select the register as the current one, clear the register and insert one keyframe with the current state of the enabled Digital Picture Manipulators.

During edit mode the digit buttons of the numeric keypad have the following functions (see figure below):

Figure 76. Editing Mode



To leave the edit mode, just press the **Save** or **Cnl** button.

## Deleting a Register

1. Press **Clear**.
2. Select other register (0 ... 99). Only if not already displayed.
3. Press **Enter**

The buttons **Auto Recall**, **Undo**, **Auto/Abort** do not have a function in DPM mode.

## RamRecorder

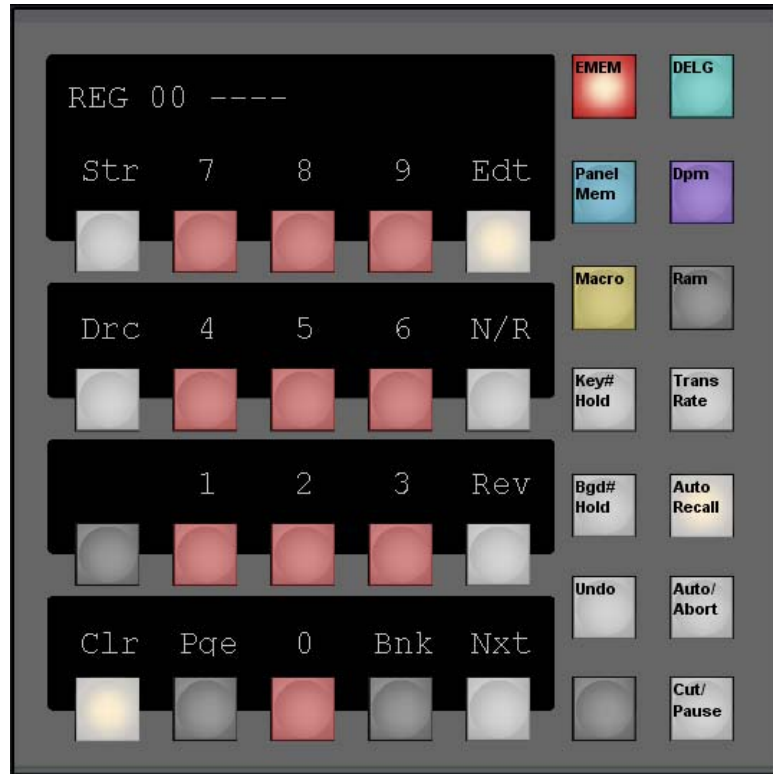
In Ram Mode, the Effects Subpanel serves to control the internal RamRecorders.

To select the desired RamRecorder channel for control, either toggle through the channels by repeatedly pressing the **Ram** button, or hold down the Ram button and select the related channel number.

## EMEM

In **EMEM** mode the subpanel serves for storing and recalling switcher statuses and processes.

Figure 77. Local EMEM



EMEM thus permits storing and recalling individually prepared operating statuses and timelines with different background, key sources, borders, wipe pattern positioning, coloring, etc.

The memo system is used for storing and recalling static settings (statuses, snapshots) and interpolated timelines.

The snapshots and timelines are identified with numbers (Register 0 ... 99).

EMEM can be operated in two ways:

- Operation via the buttons of the Effects panel section
- Operation via the menu panel

The number of keyframes in a timeline is only limited by the storage capacity of the respective switcher computer and the number of mixing levels and storable functions. The operator can edit a timeline in order to produce more sophisticated effects.

## Definition of Terms

Table 2. Terms and Definitions

Term	Definition
SNAPSHOT (SNAP)	Switcher status or the status of a switcher part.
KEYFRAM/E (KF)	Static switcher status within one timeline.
TIM/ELINE (TIML)	Stored sequence of switcher statuses (keyframes).
DISSOLVE	Dissolve between static switcher statuses. The analogue values are dissolved, the switching functions are switched at the end of the dissolve procedure.
DISSOLVE TIM/E	Time for dissolving between two static switcher statuses.
STORE	Storing of a static switcher status.
RECALL	Reproduction of a stored static switcher status.
EDITING (EDIT)	Creation or the processing of a timeline outside real-time.
PLAY	Play of a stored timeline.
TRAJECTORY	"Trajectory" between keyframes.
REGISTER	Memory location where a snapshot or a timeline can be stored. Registers are identified with a number between 0 ... 99.
REGISTER MODE	Input mode for the register number in the Effects subpanel, in which the number is entered in one digit (0 ... 9) or in two digits (10 ... 99) followed by functional selections such as Enter, Cut or Auto.
Direct Mode	Input mode for the register number in the Effects subpanel. The bank number 0 ... 9 corresponds to the tens digit of the register number. When the units digit of the register number is entered, the corresponding snapshot or timeline is triggered immediately.

The **Store**, **Bank** and **Edit** buttons have different functions in the various operations.

## Display

If no editing function or store function is selected, the ?? digit display of the subpanel may show the following indications:

Register 24 is selected	<b>REG</b>	<b>24</b>		
Register 05 is selected. The register contains a snapshot and has no particular name.	<b>SNAP</b>	<b>05</b>	<b>SN05</b>	<b>----</b>
Register 05 is selected. The register contains a snapshot with the name "ABCDEFGH". The name can only be entered in the menu.	<b>SNAP</b>	<b>05</b>	<b>ABCD</b>	<b>EFGH</b>
Register 16 is selected. The register contains a timeline and has no particular name.	<b>TL</b>	<b>16</b>	<b>TL16</b>	<b>----</b>
Register 16 is selected. The register contains a timeline with the name "KLMNOPQR". The name can only be entered in the menu.	<b>TL</b>	<b>16</b>	<b>KLMN</b>	<b>OPQR</b>

## Enabling and Disabling Direct Mode

The Direct Mode in the EMEM panel permits access to a stored snapshot or timeline with a single button (hotkey). The bank number is the tens digit of the register. The hotkeys are the units digits of the register. The Direct Mode may be enabled during storing, but this does not have any particular benefit.

### Enabling Direct Mode

The **Drc** button toggles between on and off. If the direct mode is on, the **Bnk** button becomes active. Press this button to select a bank.

Example: **snap b05 sn05 ----**

### Disabling Direct Mode

Press the lighting **Drc** button.

## Selecting a Register While Storing

During the storing of snapshots or timelines the register to be used for storage must be selected. The procedure is the same for both cases.

However, the indication in the display differs:

For Snapshots      **STOR**

For Timelines      **EDIT**

If the register number is to be taken over that was shown before the actuation of the **Store** or **Edit** button, no further selection is necessary.

During storing, the contents of the register is overwritten.

If you wish to select the next free register, press the **FREE** button.

If you wish to select a particular register, enter a one- or two-digit number with the numeric keypad. Errors can be deleted with **Clear**.

**Note**      Should the register be assigned, the contents is overwritten when storing.

## Selecting a Register While Recalling

When a snapshot or a timeline is recalled, there are several ways to select a corresponding register.

If the register shown in the display is to be used, no further selection is necessary.

To select the next used register, press the **NEXT** button. To select a particular register, enter a one- or two-digit number with the numeric keypad. If a two-digit number is entered (for example, 15), the related register (1) appears in the display when the first digit (1) has been entered. The desired register (15) appears after the input of the second digit.

The input of the figures *need not* be confirmed with **Enter**.

## Storing a Snapshot

1. Set the switcher in the desired operation mode.
2. Set Define memo.
3. Press **Store**.
4. Select register with numeric key pad.
5. Press **Enter**.

## Deleting Snapshots and Timelines

1. Press **Clear**.
2. Select other register (0 ... 99). Only if not already displayed.
3. Press **Enter**.

## Dissolve Functions Depending on Snapshot or Timeline Preselection

Table 3. Table Dissolve Functions

Button	Snapshot preselected	Timeline preselected
Auto	Dissolve to the snapshot in the time set with Trans dur.	Playing the timeline in the time set with Trans dur.
Cut or Hotkey in Direct Mode	Recall the snapshot	Playing the timeline in the stored time.

**Note** Timelines that contain an endless loop or that are waiting for an event (GPI, Time) can be recalled only with **Cut**.

## Other Button Functions

### Trans Dur

Entry of the Auto transition duration.

1. Press **T-Dur** button.
2. Select transition components in Transition Module.
3. Enter transition duration with numeric keypad.
4. Complete the entry with **Enter** or cancel the operation with **Cancel**.

### Auto Recall

When Auto Recall is active, the recall of a snapshot or timeline will restore the Define Memo in the same state, which was active when the register was stored.

### Undo

If you press this key, the status before the last recall of a snapshot or a timeline can be restored even if several other operations have been performed in the meantime.



## Cut / Pause

Function of the button:

- If the EMEM is not playing a timeline and a snapshot register is selected, **Cut** recalls the snapshot.
- If the EMEM is not playing a timeline and a timeline register is selected, **Cut** starts playing the timeline.
- If the EMEM is playing a timeline, **Cut** pauses playing the timeline; another **Cut** continues playing the timeline.
- If the EMEM is playing a timeline and the timeline is waiting, **Cut** continues playing the timeline.

## Auto / Abort

Function of the button:

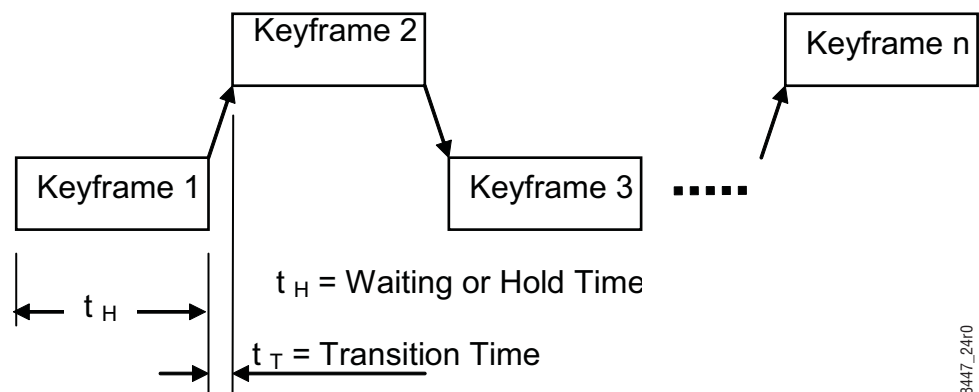
- If the EMEM is not playing a timeline and a snapshot register is selected, **Auto** interpolates to the snapshot in a fixed period of time (Set by Trans Dur).
- If the EMEM is not playing a timeline and a timeline register is selected, **Auto** starts playing the timeline in a fixed period of time. This only works if the timeline has no endless loops or waits and a transition duration other than 0 has been selected.
- If the EMEM is playing a timeline, **Auto** aborts playing the timeline. A timeline played with **Auto** cannot be stopped/continued with **Cut**.

## Timeline Editing

### Components of a Timeline

A timeline is stored as a chain of keyframes with related transitions between the keyframes and other timeline objects (for example, waits, triggers).

Figure 78. Components of Timeline



8447\_2410

The dissolve between the keyframes is set to linear for default.

In the display of the Effects subpanel the following components of a timeline can be displayed:

<b>Timeline start symbol</b>	Start
<b>Timeline end symbol</b>	End
<b>Internal stored keyframe</b>	Kfnnn
<b>Ext. stored keyframe, snapshot in register nn</b>	SNnn
<b>Ext. stored timeline, timeline in register nn</b>	TLnn
<b>Loop begin symbol</b>	Loop
<b>Loop end symbol</b>	ELoop
<b>Wait for a user input</b>	User
<b>Wait for a number of frames</b>	Hold
<b>Wait for a special time of day</b>	TOD
<b>Wait for a special timecode of a conn. machine</b>	TC
<b>Trigger MaKE Memo nn of the panel where the timeline was stated</b>	MaKnn
<b>Wait for GPI n</b>	GPI n
<b>Wait for GPO n</b>	GPO n
<b>Trigger external GPO n</b>	EGPO n
<b>Wait for panel GPI n</b>	PGPI n
<b>Trigger panel GPO n</b>	PGPO n
<b>Trigger GPI n</b>	TGPI n
<b>TMC stop</b>	Stop
<b>TMC play</b>	Play
<b>TMC record</b>	Rec
<b>TMV variable</b>	Var
<b>TMC fast rewind</b>	Frew
<b>TMC fast forward</b>	Ffwd
<b>TMC cue to specified timecode</b>	Cue
<b>TMC cue to in point</b>	CueIn
<b>TMC cue to out point</b>	CueOut
<b>TMC joggle</b>	Jog
<b>TMC step</b>	Step

Due to a limited number of buttons only some of the objects described above can be inserted and edited by the Effects subpanel. For full timeline edit control please use the menu panel.

## Generating a Timeline

To generate a timeline, the following steps must be done:

1. Ensure that no transition or anything else is running at the EMEM.
2. Press **Edit**.
3. Select register.
4. Press **Enter**.
5. Insert timeline objects (such as keyframes or loops).
6. Press **Edit**.

The timeline is stored as a chain of keyframes, snapshots, or loops with related dissolves (transitions) between the keyframes.

## Modifying a Timeline

The following procedure is used for all modifications of a timeline:

1. Ensure that no transition or anything else is running at the EMEM.
2. Press **Edit**.
3. Select **Register**.
4. Press **Enter**.
5. Insert, delete, or modify timeline objects (such as keyframes or loops).
6. Press **Edit**.

The timeline is stored as a chain of keyframes, snapshots, and loops with related dissolves (transitions) between the keyframes.

**Note** Modifications of an existing timeline always relate to the last timeline object indicated in the display.

## Functionality of the Buttons in the Edit Mode

**Note** Modifications of an existing timeline always relate to the last timeline object indicated in the display. This object is the currently selected timeline object.

Table 4. Edit Mode Button Functions

Button	Functionality
<b>INS</b>	Inserts a keyframe (with the related transition) in the timeline.
<b>MOD</b>	The functionality depends on the type of the currently selected timeline object. KF: The selected keyframe is changed to the current state of the switcher. LOOP: Change of the loop counter (000 = endless loop). ELOOP: Change of the loop counter (000 = endless loop).
<b>DEL</b>	Deletes the currently selected timeline object. Depending on the type of the timeline object there are the following relationships. LOOP: The related ELOOP object will also be deleted. ELOOP: The related LOOP object will also be deleted.
<b>HTM</b>	Changes the hold time of the selected snapshot or keyframe. The default hold time is always 0 frames.
<b>TTM</b>	Changes the transition time of the selected keyframe object. The default transition time is set to the current transition duration of snapshot dissolves.
<b>TRJ</b>	Changes the trajectory of the selected transition object. Possible are Linear, S-Linear, Curve, S-Linear to Pause, and Curve to Pause.
<b>&lt;--</b>	The button permits a successive selection of the individual objects of a timeline. Changes the cursor position to the previous object.
<b>VIEW</b>	With the VIEW function enabled (button lights up) the switcher is switched to the status stored in the keyframe.
<b>--&gt;</b>	The button permits a successive selection of the individual objects of a timeline. Changes the cursor position to the next (following) object.
<b>BEG</b>	The button <b>BEG</b> enables you to jump to the begin of a timeline.
<b>LOP</b>	If the currently selected object is not inside of a loop (button LOOP is off), a loop object will be inserted before the currently selected object. The related ELOOP object is inserted before the next LOOP or ELOOP object or at the end of the timeline. The cursor will be set to the ELOOP object. If the currently selected object is inside of a loop, the ELOOP object is moved to the current cursor position.
<b>END</b>	The button <b>END</b> enables you to jump to the end of a timeline. While changing times, etc. it serves always for confirmation.

### Changing the Hold Time of a Snapshot or Keyframe

The following procedure is used:

1. Select **Keyframe / Snapshot** (button <-- and -->).
2. Press **HTM**.
3. Enter hold time with numeric keypad.
4. Press **Enter**.

**Note** Errors can be deleted with Clear.

### Changing the Transition Time of a Snapshot or Keyframe

The following procedure is used:

1. Select transition object.
2. Press **TTM**.
3. Enter transition time with numeric keypad.
4. Press **Enter**.

**Note** Errors can be deleted with Clear.

### Inserting a Loop in a Timeline

If a loop is inserted in the Effects subpanel, always an endless loop (loop counter = 000) is inserted for default. To change the loop counter, follow the steps in the section [Modifying a Loop in an Existing Timeline on page 130](#).

**Note** It is possible to insert loops (max. 99) into other loops. This functionality is only available with the menu operation.

### Entering a Loop During the Generation of a Timeline

The following procedure is used:

1. Enter last timeline object before the loop.
2. Press **LOOP**.
3. Enter first timeline object in the loop.

**Note** The loop end is before the next ELOOP or LOOP object or the end of the timeline if no other loop follows. If the button **LOOP** is pressed before the end of the loop, the ELOOP object is moved to that position in the timeline. If the loop is an endless loop, the timeline ends with the end of the loop.

### Inserting a Loop in an Existing Timeline

The following procedure is used:

1. Select the timeline object after which the loop should start, or select the transition before which the loop should start.
2. Press **LOOP**.

**Note** The loop end is before the next ELOOP or LOOP object or the end of the timeline if no other loop follows. If the button **LOOP** is pressed before the end of the loop, the ELOOP object is moved to that position in the timeline. If the loop is an endless loop, the timeline ends with the end of the loop.

### Modifying a Loop in an Existing Timeline

The following procedure is used:

1. Shift **LOOP** or **ELOOP** indication to the end of the display.
2. Press **MOD**.
3. Enter the loop counter value with the numeric keypad.
4. Press **Enter**.

**Note** Errors can be deleted with Clear.

If the loop counter is 000, the loop is an endless loop.

### Delete a Loop in an Existing Timeline

The following procedure is used:

1. Shift **LOOP** or **ELOOP** indication to the end of the display.
2. Press **DEL**.

**Note** The related end or the begin of the loop is also deleted.

### **Delete a Timeline object in an Existing Timeline**

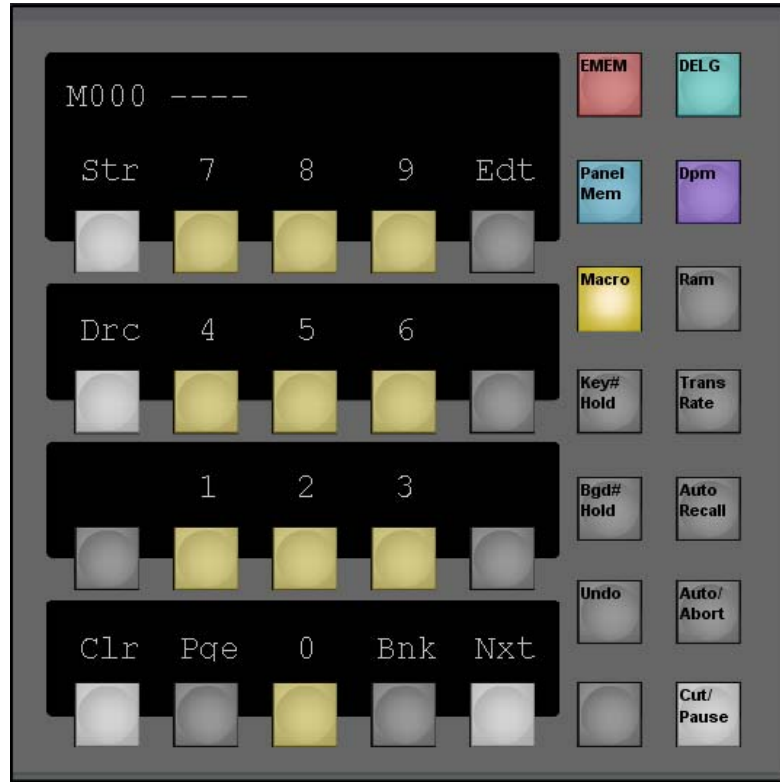
The following procedure is used:

1. Shift the timeline object to delete to the end of the display (Buttons <-- and -->) Press **DEL**.

## Macro

In Macro mode the Effects Subpanel serves for recording and playing Panel Macros. The total number of registers available for macros is 96.

Figure 79. Kayenne XL Local EMEM



### Selecting a Register for Record Start

For record start of a macro the register to be used for storage must be selected.

Press the **Store** button.

The display prompts.

#### RECORD

- If the register number is to be taken over that shown before the actuation of the **Store** button, no further selection is necessary.

**Note** During recording the contents of the register is overwritten.

- If you wish to select the next free register, press the **FREE** button.
- If you wish to select a particular register, enter a one- or two-digit number with the numeric keypad. Errors can be deleted with **Clear**.



**Note** Should the register be assigned, the contents is overwritten. With the start of the recording

Confirm the register selection by pressing the **Enter** button.

Now the recording of the macro starts, while the **Store** button starts blinking. All keystrokes executed on the panel are recorded. Pressing the blinking **Store** button again stops the recording.

**Note** When you execute any macro action in the **Misc Bus Section**, the recording is stopped automatically. Changing the delegation of the Effects Subpanel for example, EMEM does **not** stop the recording. This enable you to include EMEM recalls and machine control commands into the macro.

**Note** Recorded macros are named by default as M001 – M096.

## Recalling a Macro

For recalling a macro there are two basic ways to select a corresponding register.

### Register Mode

If the register shown in the display is to be used, no further selection is necessary.

- To select the next used register, press the **NEXT** key.
- To select a particular register, enter a one- or two-digit number with the numeric keypad. If a two-digit number is entered (for example, 15), the related register (1) appears in the display when the first digit (1) has been entered. The desired register (15) appears after the input of the second digit.

After the selection press the **Cut** button to play the macro.

### Direct Mode

In Direct Mode registers are treated in groups of ten. Such a group is called a bank. The display below shows, for example, register 7 of bank 4. This is equivalent to register 47 in **Register Mode**. Each digit button in the keypad is now a hotkey. Pressing digit button **3** will directly recall macro 43. To select another bank, press the **Drc** button and press one of the digit buttons, for example pressing digit button **2** would switch to bank 2, giving direct access to the macros 20 through 29.

In Direct Mode the **NEXT** button advances to the next used register in the bank, but in contrast to **Register Mode** the macro is directly recalled. This enable you to recall a stack of up to ten macros by repeatedly pressing the same button.

The Direct Mode may be enabled during recording but this does not have any particular benefit.

Pressing the **Drc** button toggles between Register Mode and Direct Mode.

**Note** Buttons **Edit**, **Auto Recall**, **Undo**, **Auto/Abor**: No functionality in Make Mode.

## Panel Lock Function

The local EMEM Module provides also a Lock function for the complete workplace (Control Panel and Kayenne XL Menu):

- Hold down the **EMEM** button and press the unlabeled button left to the **Cut/Pause** button.
- You can enter 0 (no digit) to 8 digits for your personal locking code and press **ENT**.
- The panel will turn to Locked.
- To unlock the panel, enter your locking code again and press **ENT**.

In case you forgot the locking code there are two ways to unlock the panel:

- There is a universal unlocking code available, please contact our service department.
- Reboot or power cycle the CPU.

## Master EMEM

In addition to the Master EMEM, EMEM system provides individual EMEM systems for each M/E. Since the Local EMEM Modules are too limited, the Master EMEM module provides the possibility of delegating this module to the local EMEMs, allowing extended editing capabilities.

The following two pictures show the different delegation modes for the Recall Layouts.

Figure 80. Master EMEM Panel

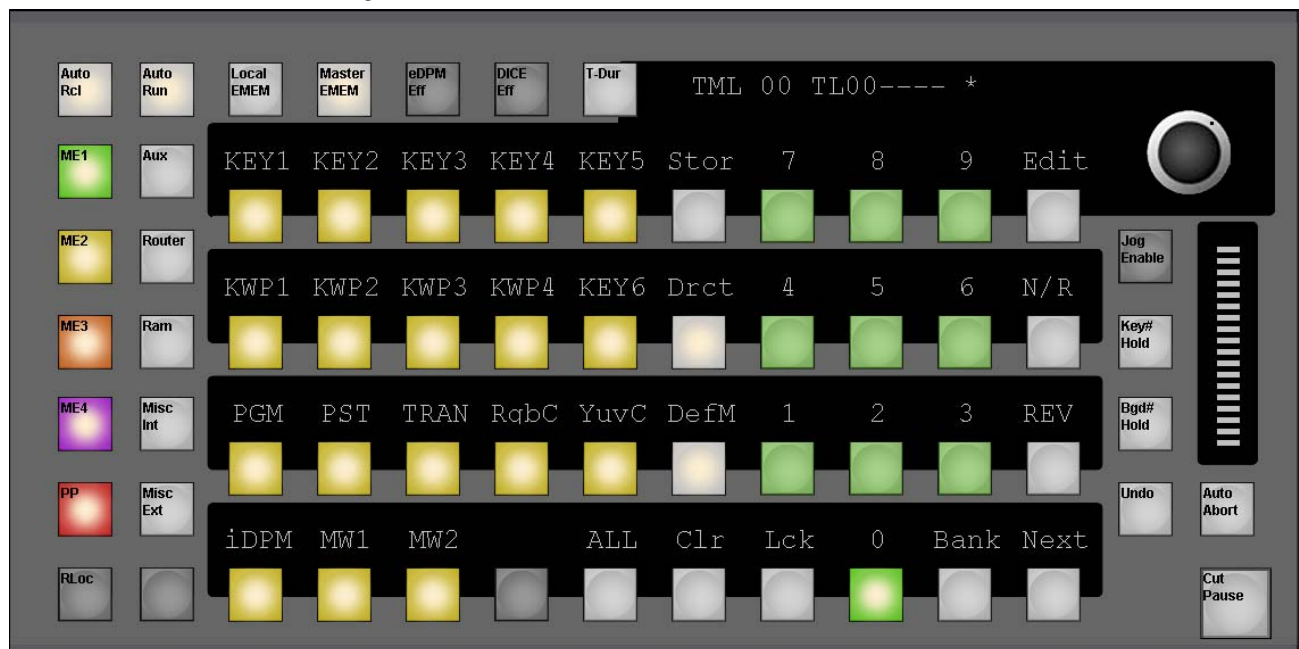


Figure 80 on page 135 shows the **Master EMEM** button highlighted.

In this mode the buttons **M/E1** through **PP** all are colored according the M/E-colors, and in this example **M/E2** is selected, allowing to set the "DefineMemo" for the modules of M/E2. See for more details of Define-Memo.

Figure 81. Master EMEM - Local EMEM Delegation

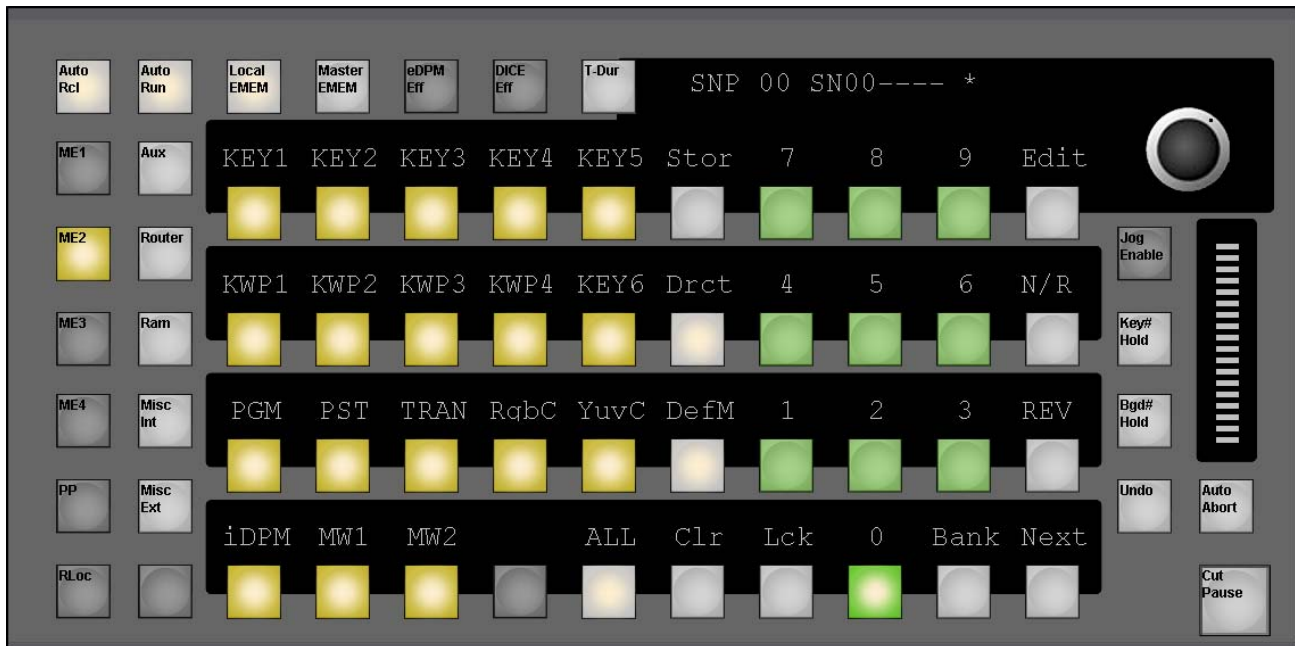


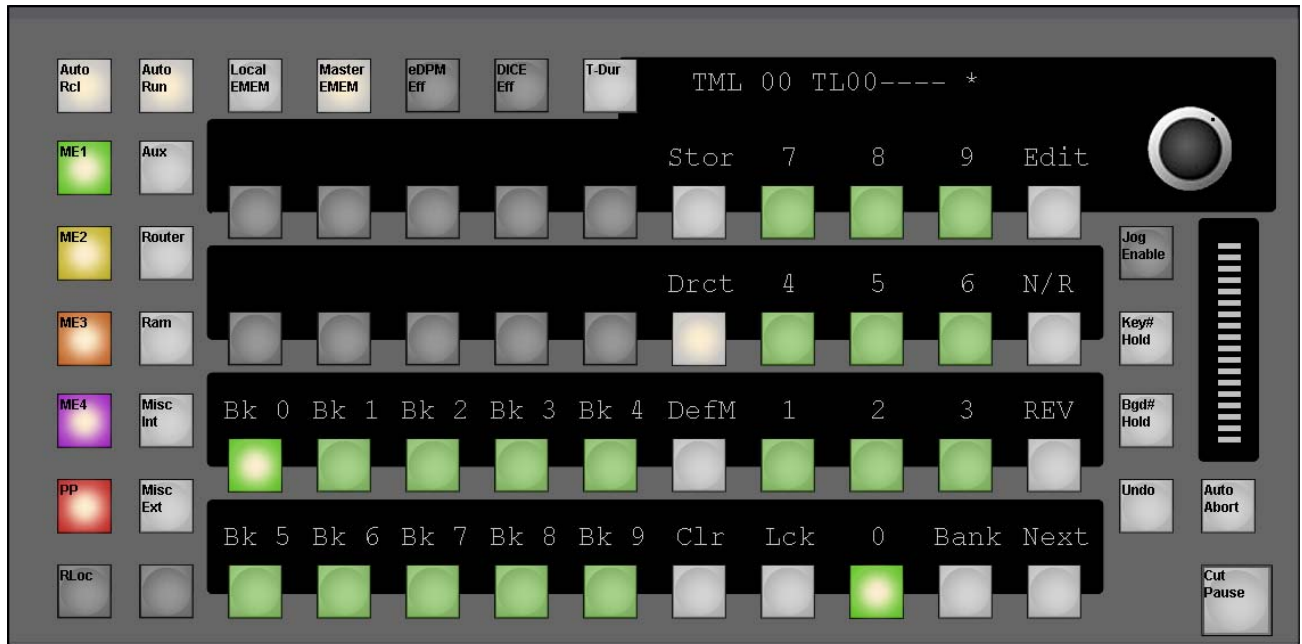
Figure 81 on page 136 shows the situation for Local EMEM delegation. When you press the **Local EMEM** button, the last selected local EMEM delegation is remembered. There are two ways to change the delegation to another Local EMEM:

1. Press the **Local EMEM** button again to toggle through the M/Es.
2. Hold down the **Local EMEM** button: all available M/Es are low tally colored.
3. Select a M/E and release both buttons.

For general EMEM operation see [Local EMEM on page 113](#).

The module has two delegations for the left part. You can delegate the module to Define Memo using the **DefM** button (Figure 81 on page 136) or you can delegate the module to page/bank selection (Figure 82 on page 137) by pressing the **DefM** button again.

Figure 82. Master EMEM



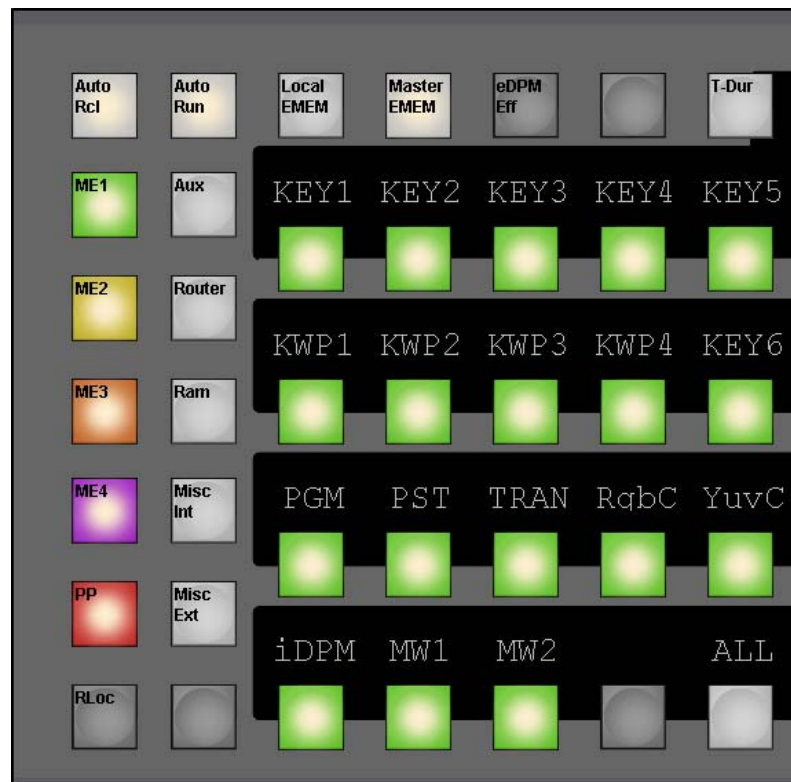
## Define M/EMO

The buttons **M/E1 - PP** and **Aux - Misc Ext** in the columns 1 and 2 are used to delegate the softkeys of column 3 - 7 to the according subgroup of the define memo. The buttons lit when at least one member of their subgroup is selected. All subgroup members are on/off-toggles.

**The All** button toggles a complete subgroup on/off. When this button is pressed while only some members are "on", the first press turns all members "off".

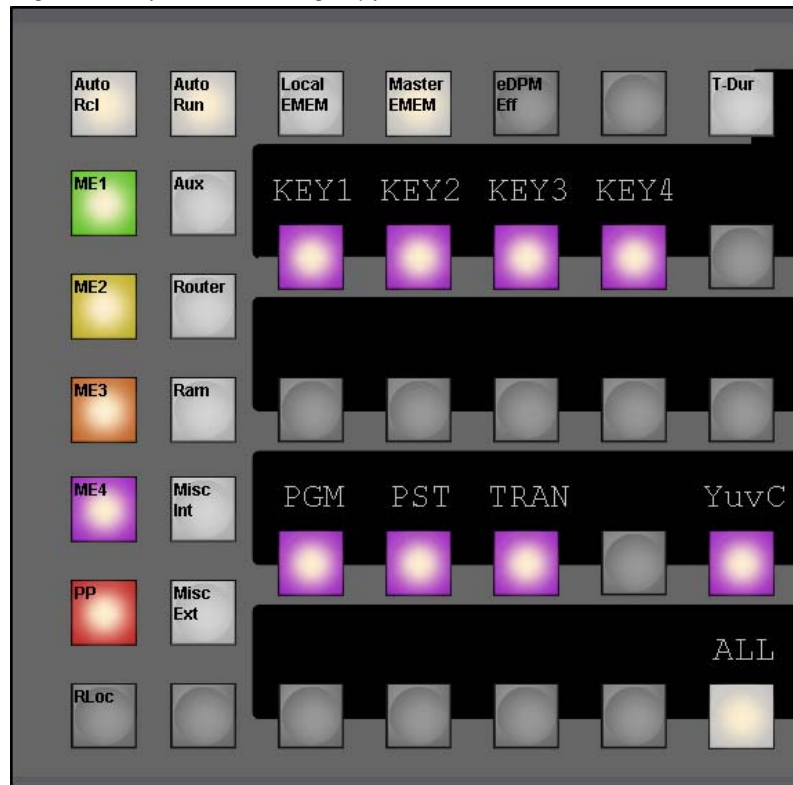
### Subgroup for PP, M/E1, M/E2, M/E3

Figure 83. Define Memo - Subgroup for PP, M/E1, M/E2, M/E3



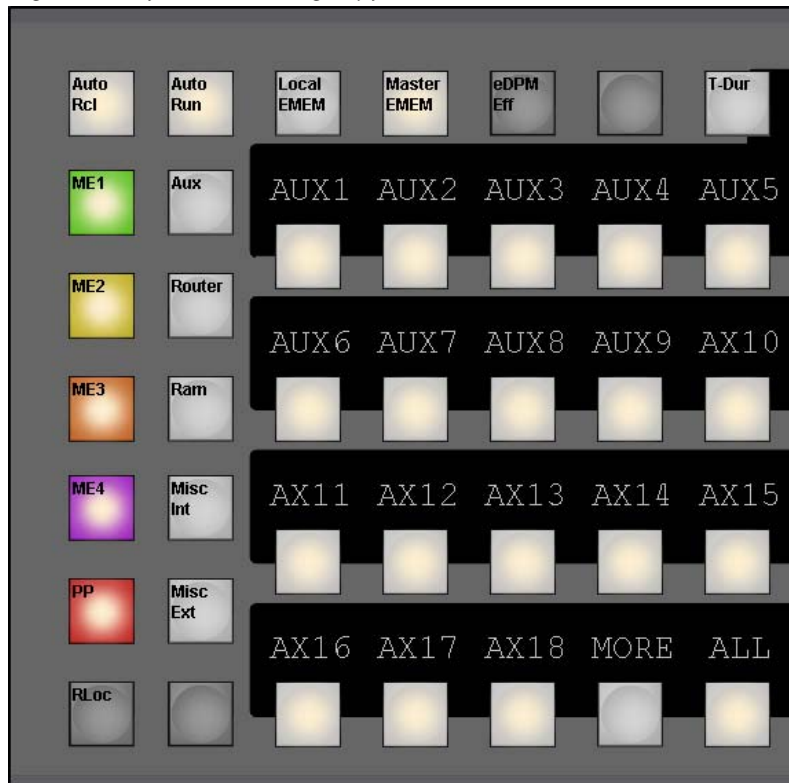
## Subgroup for M/Eh

Figure 84. Define Memo - Subgroup for M/E-H



## Subgroup Aux

Figure 85. Define Memo - Subgroup for Aux

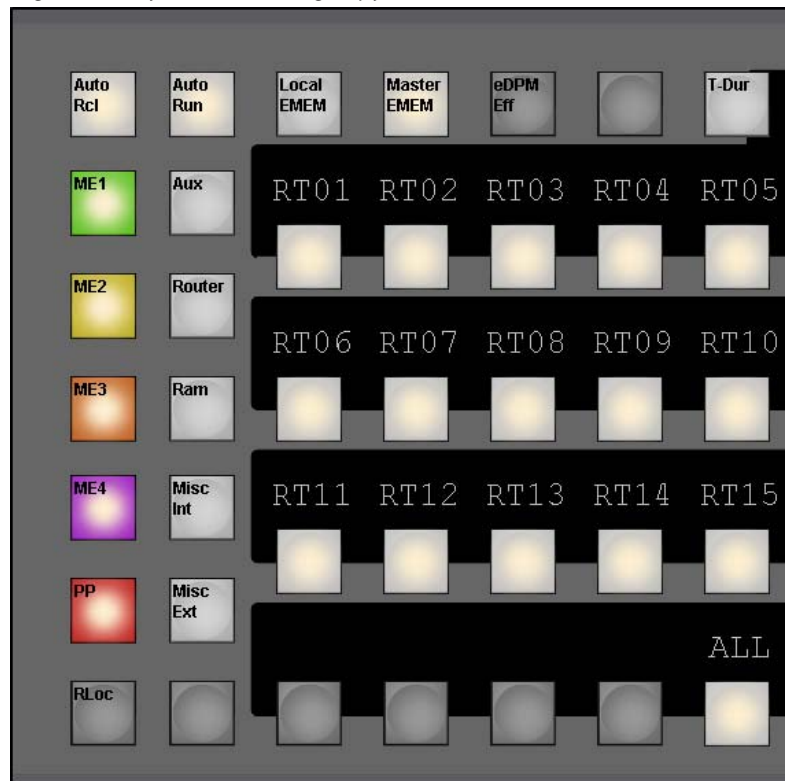


There are more Sublevels available than buttons. You can toggle through the pages by pressing the **more** button in that subgroup.



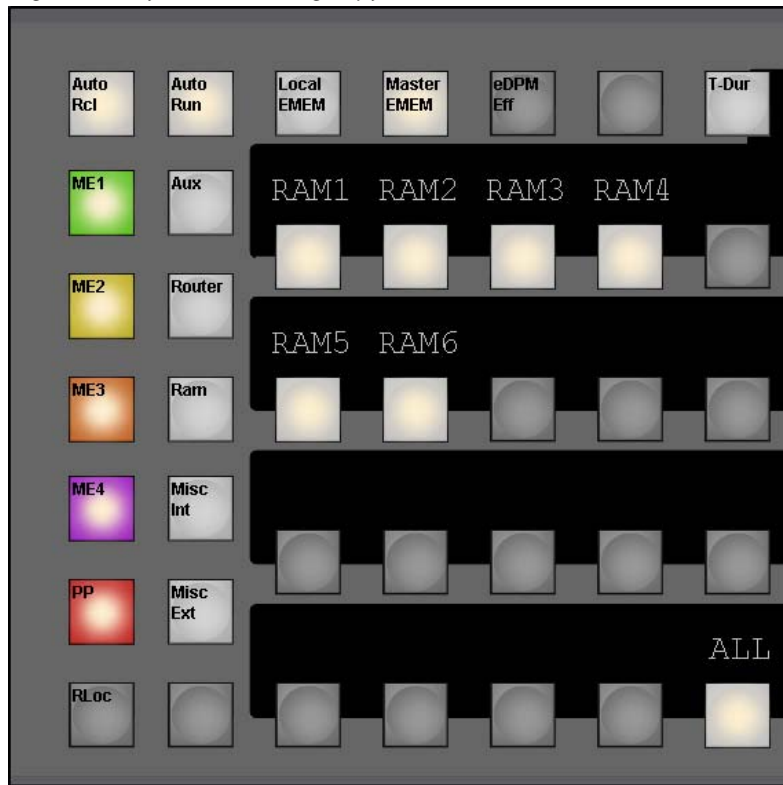
## Subgroup Router

Figure 86. Define Memo - Subgroup for Router



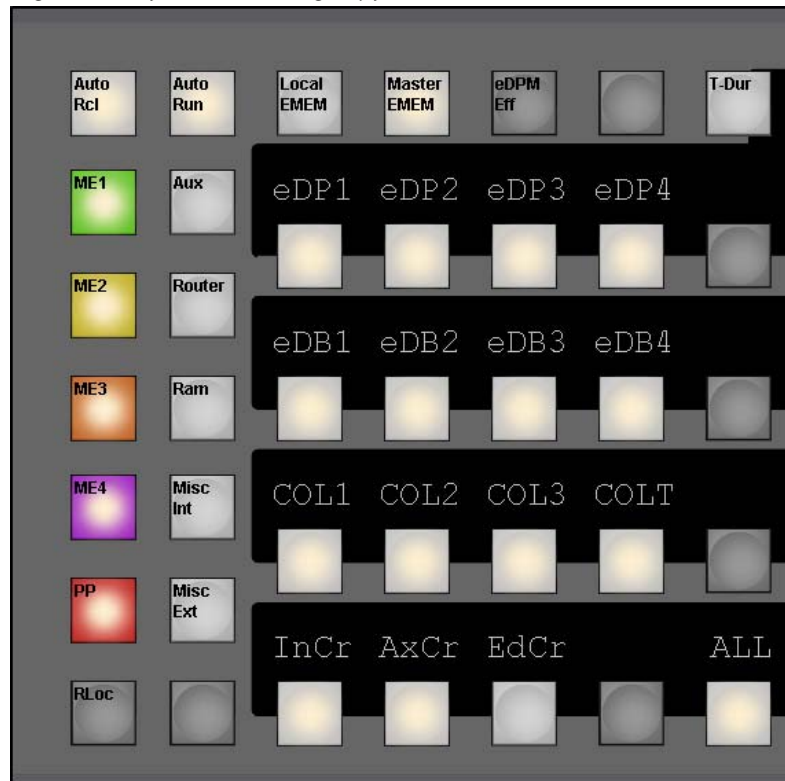
## Subgroup Ram

Figure 87. Define Memo - Subgroup for RamRecorder



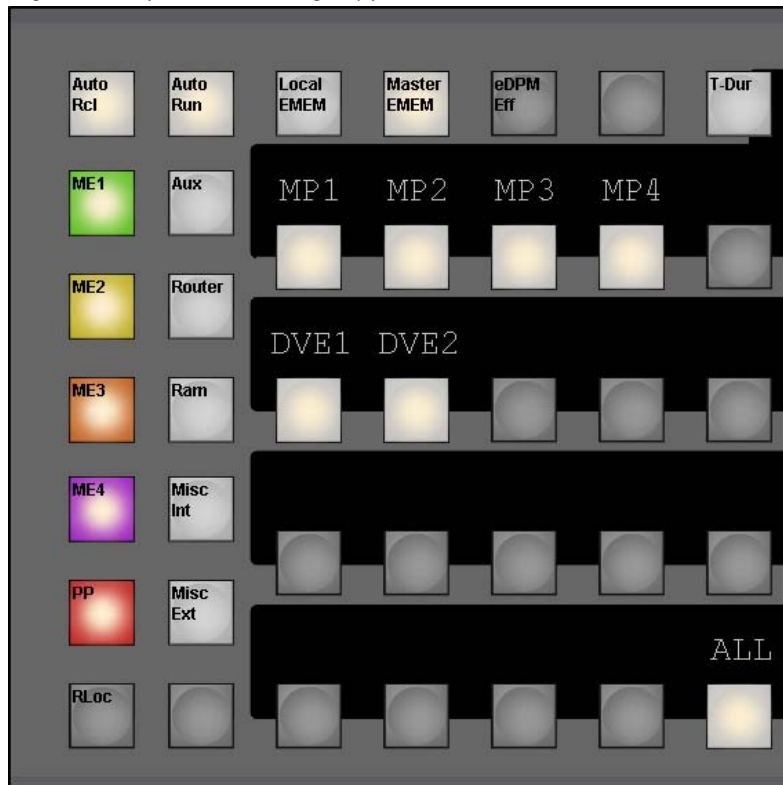
## Subgroup Misc Int

Figure 88. Define Memo - Subgroup for Misc Int



## Subgroup Misc Ext

Figure 89. Define Memo - Subgroup for Misc Ext



## Page/Bank Selection

This delegation is only available when the EMEM part of this module is in Direct Mode.

The Page selection is currently disabled (reserved for future use); the 10 buttons in the last 2 rows show the currently selected bank.

# Display Panel

Figure 90. Kayenne XL Display Panel



For details, refer to [Menu Panel Description](#) on page 252 and [Menu Structure Overview](#) on page 261.

## Half M/E

The Half M/E is used as an additional M/E. In terms of routing it offers the same possibilities as a full M/E. This includes the reentries in other M/Es. The main restrictions are due to features not implemented, which is also the reason to call it “Half M/E” (also referred to as “M/E-H”).

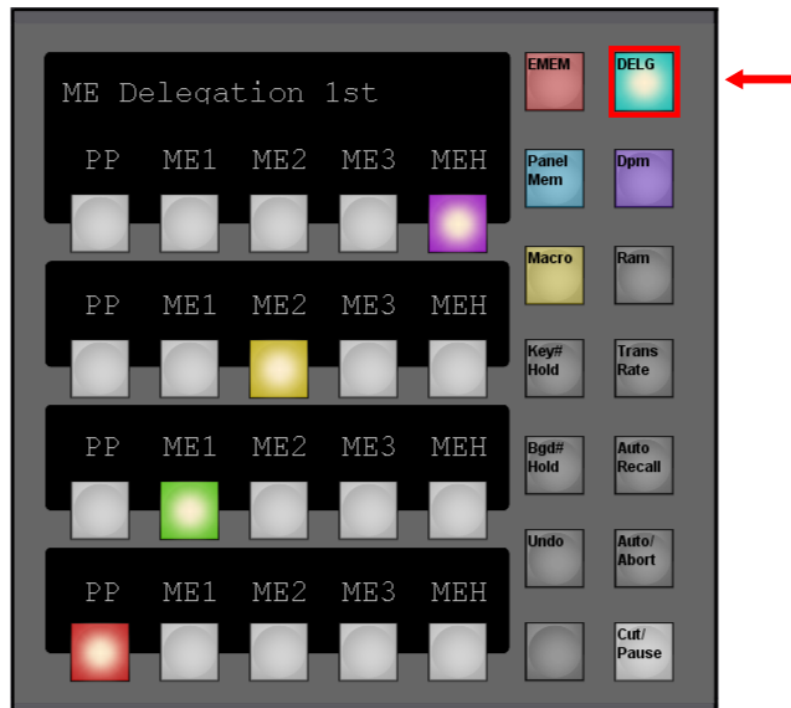
### Feature Set of the Half M/E

Table 5. Feature Set of the Half M/E

Feature Set	Not implemented Features
Field Dominance	Wipe Transition
M/E Couple	iDPM
Key Drop	Chroma Key
Mix Transition	Preset Pattern
DSK Transition	RGB Correction
Black Preset (no Utility Inputs)	
Transition Preview	
Luminance Key	
Memo (Master and M/E Memo)	
Transition Abort	
FTB Cancel	
Clean Feed	
Input Correction	
Key Preview	
FTB	
eDPM Transition	

## Selecting Half M/E

Figure 91. Selecting Half M/EMachine Control



The **Machine Control** serves for controlling external machines. This can be any type of device, which can be controlled by one of the machine control protocols, such as video/audio tape machines, hard disk recorders, etc.

In addition all internal switcher components that behave like a tape machine can be controlled (RamRecorder, eDPM, iDPM).

## Overview

Figure 92. Machine Control Module



In status mode the display shows the current delegated machine/device, the current loaded clip and the current timecode position. Depending on the delegated device type (for example, RAMRecorder) it shows additional device related information.



## Control Buttons

Figure 93. Machine Control Module Detail 2

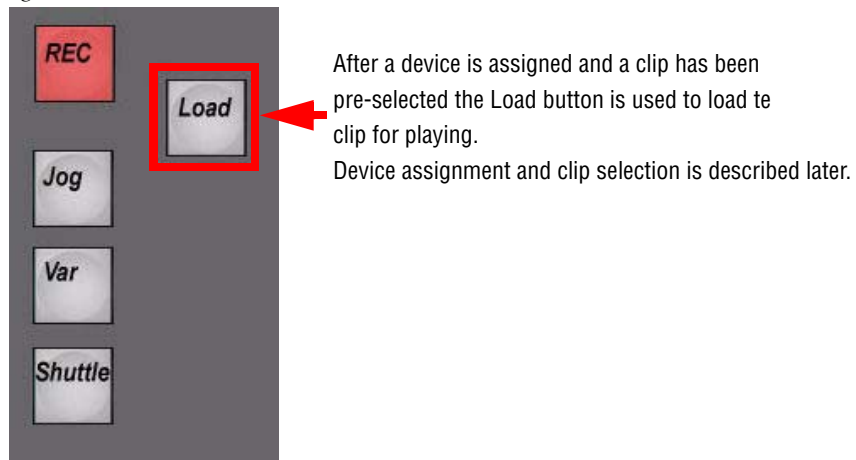
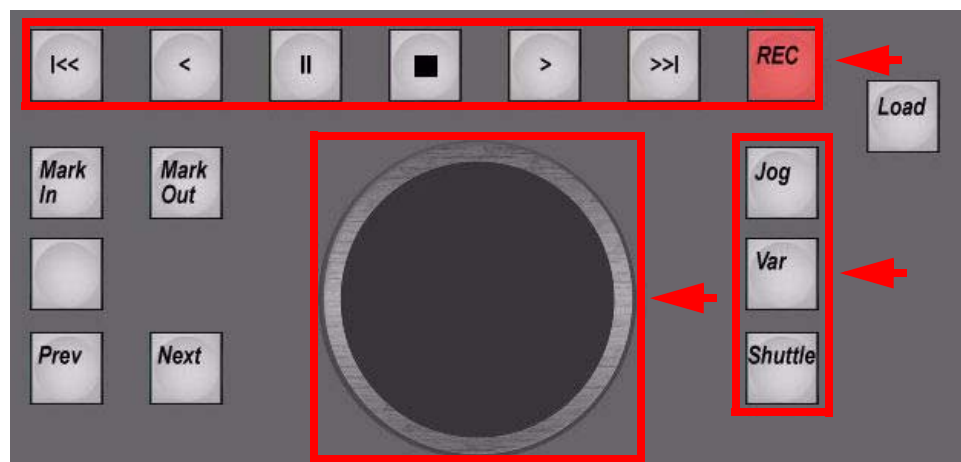


Figure 94. Machine Control Module Detail 3



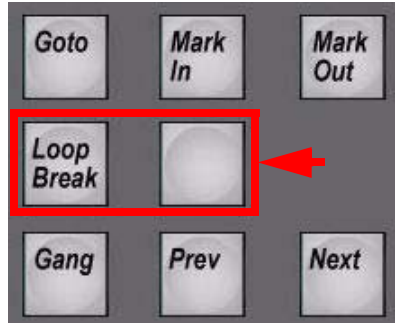
Device motion control functions (**Rewind, Reverse, Still, Stop, Play, FastForward, Record**). The buttons **Jog, Var and Shuttle** will delegate the control wheel automatically. To disable the wheel, press any other motion command button.

Figure 95. Machine Control Module Detail 4



- Goto**  
 Numeric Timecode entry. To cue to an IN or OUT mark, hold the **Goto** button and press the related **Mark In** resp. **Mark Out** button.
- Mark In/Out**  
 Opens the numeric keypad with actual timecode displayed, which can be confirmed or overwritten with a numeric entry. The default value for the new mark is the current timecode position of the loaded clip. In addition the numeric keypad contains an entry to clear/reset the IN or OUT mark. Use **SOM** (start of material) to clear the IN and EOM (end of material) to clear the OUT mark.

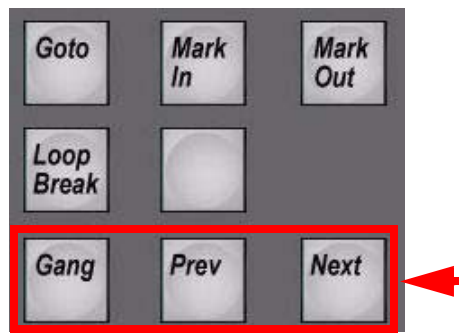
Figure 96. Machine Control Modul Detail 5



Indicates an activated **Loop and/or Breakout-Mode**. An activated Breakout can be overruled with this button, once activated for a loaded clip inside a RamRecorder channel.

**Note** These two buttons are currently only operational when the module is delegated to a RamRecorder channel.

Figure 97. Machine Control Module Detail 6



When a clip server or RamRecorder is selected, **Prev and Next** enable you to step through the related clip list. Once a clip is selected, it is loaded immediately.

Figure 98. Machine Control Module Detail 7

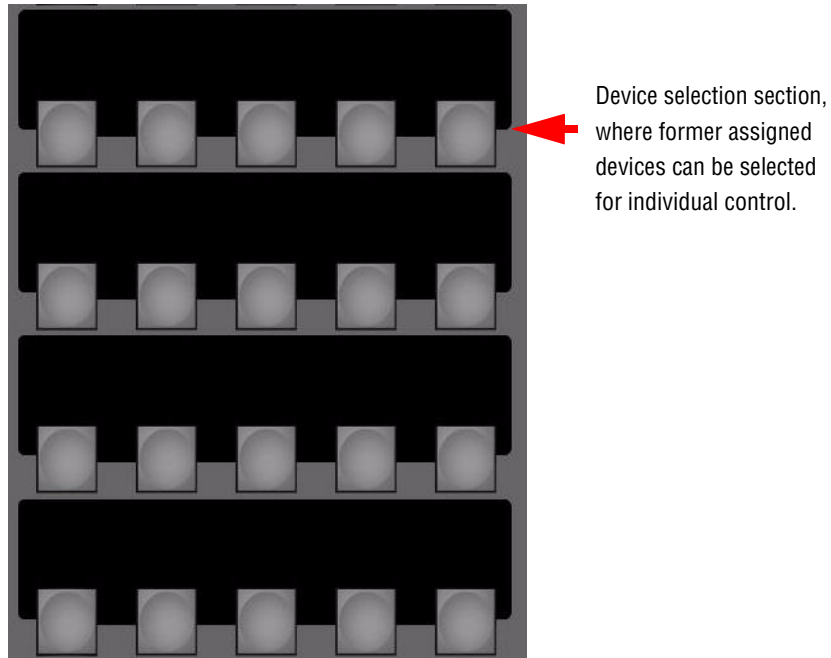
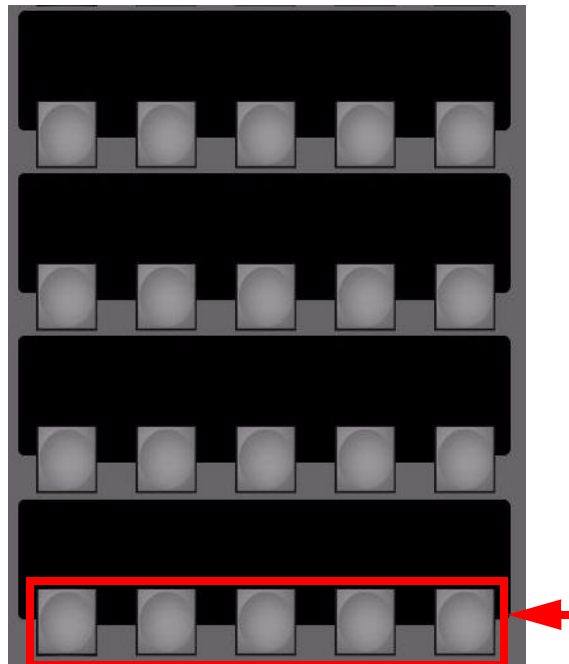
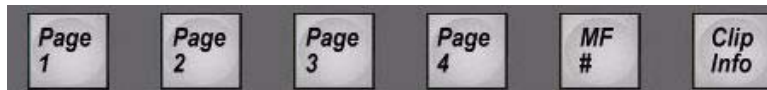


Figure 99. Machine Control Module Detail 8



Device settings buttons for changing device specific parameter. The function of these buttons depends on the type of selected device. For example a RamRecorder device has other settings to control than an external disk server.

Figure 100. Machine Control Module Detail 9

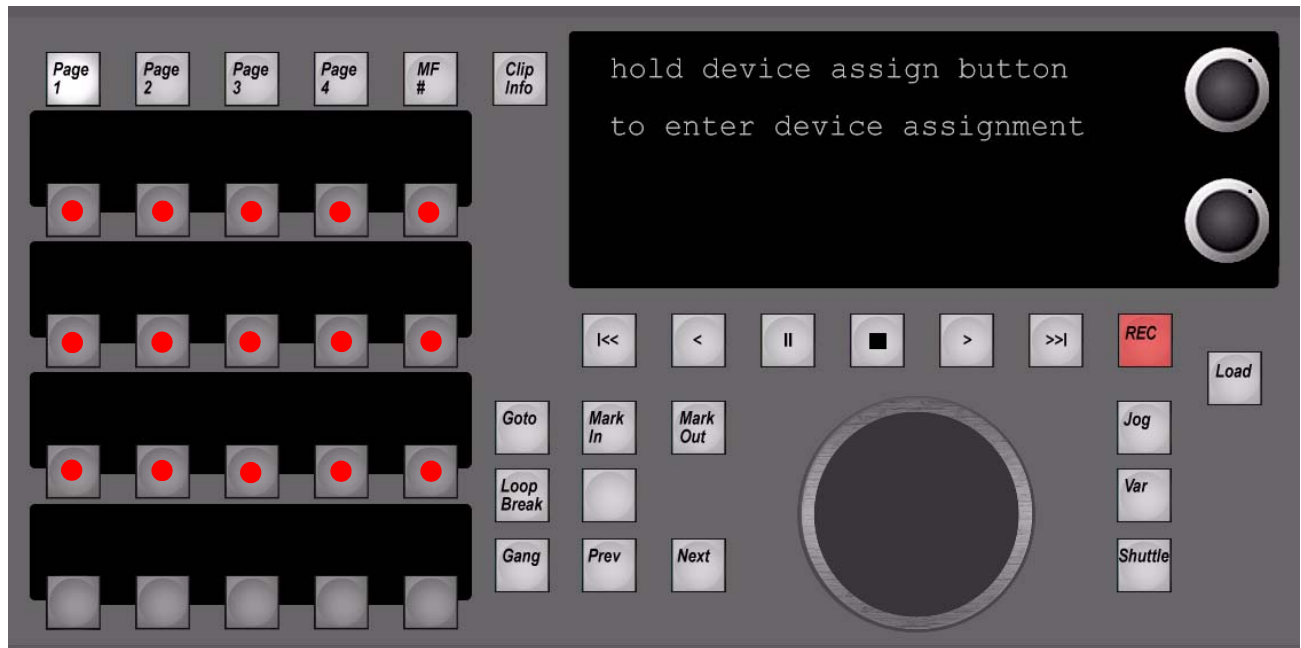


- Page delegation buttons 1 - 4, 15 positions each individual MF selection (not yet implemented).
- **Clip Info** for more detailed clip information.

## Operation Modes

### Machine Selection

Figure 101. Machine Control - Device Selection



Start with a blank Machine Control Module.

To assign a device to a certain device selection button, press and hold one of the device selection buttons (marked with red dots).

Figure 102. Machine Control - Digipots



Turn upper digipot to select available devices. Confirm selection by pressing the digipot.

- **none** = Delete current assignment.
- **cncl** = Cancel current dialog.

## Operational Examples

Figure 103. Machine Control - Selected Device



Example for the delegation of an external machine (for example disk server). In the example above, an external machine called "MP-1" is currently selected.

Device Setting buttons related to external devices:

- **List**  
Update cliplist of selected device.

**Note** If a new clip has been locally created on an external device, or an existing clip has been deleted, the cliplist has to be updated.

- **Loop**  
Enable or disable Loop Mode for AMP controlled devices.

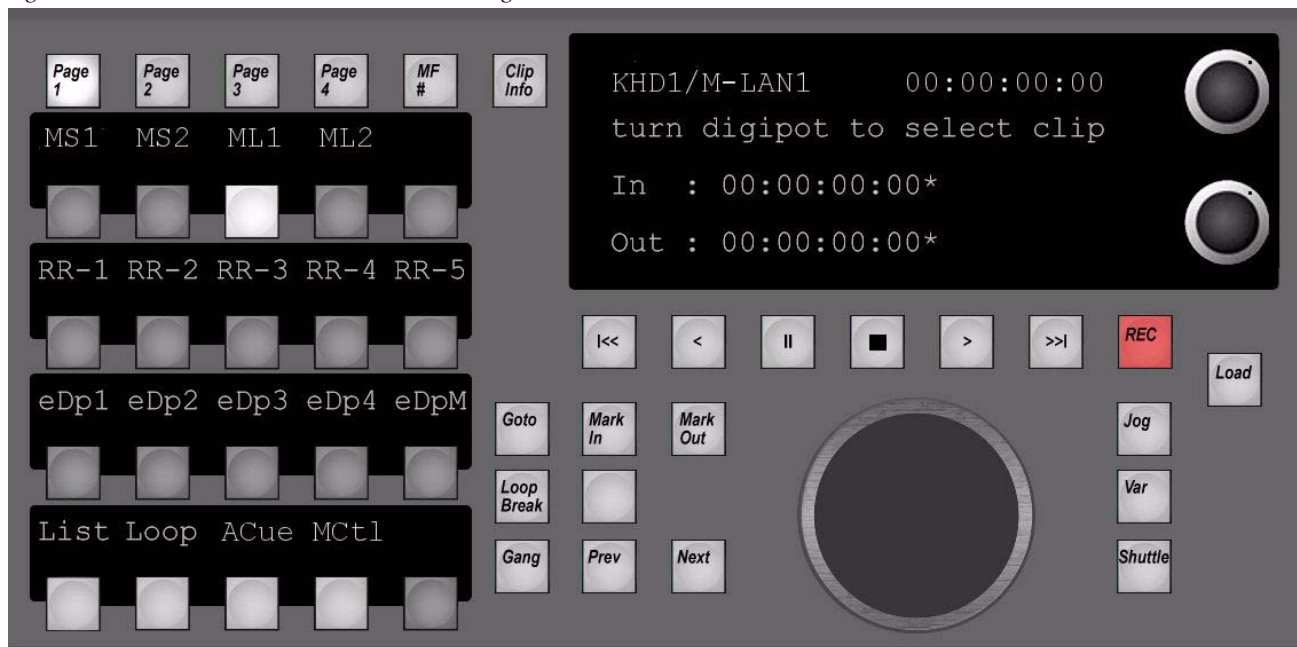
## External VTR Delegation

The Kayenne XL Package supports control of up to 4 external VTRs (e.g. disk server, betacams etc.) via a serial connection (RS422) and in addition the control of up to 32 external VTRs over LAN (AMP protocol using TCP/IP). All of these external VTRs can be fully controlled by the Machine Control Module.

Before an external VTR becomes available in the device assignment section of the module, it has to be selected in the installation menu of the Kayenne XL Menu. For serial controlled VTRs, a port and a protocol has to be selected. For VTRs which are controlled via LAN, the IP address and the video channel of the external machine has to be selected. In addition a protocol has to be chosen (currently only the AMP protocol is available).

Within the Machine Control Module the short identification name for serial controlled VTRs is "MS[1-4]". The long identifier is the name of the controlling protocol (e.g. "amp\_v694", "vdcp\_v670"). The short name for VTRs which are controlled via LAN is "ML[1-32]". The long identification name is "M-LAN[1-32]".

Figure 104. Machine Control - External VTR Delegation



Example for the delegation of an external machine which is controlled via LAN (for example a K2 disk server).



## Loading a Clip

While turning the upper right digipot the list of available clips in the current working folder is shown (4 clips visible at once). The clip that is showed on the first line is always the one that is currently pre-selected (also marked by the "<" sign). To load the pre-selected clip, the Load button has to be pressed. To cancel the clip selection dialog without loading a clip, press the upper right digipot.

**Note** While selecting a clip, the currently loaded clip is marked by the "\*" sign.

For serial controlled VTRs press the List button when no clips are showed while turning the upper right digipot.

## Changing the Working Folder

**Note** This feature is only available for machines which are controlled over LAN.

While turning the lower right digipot the list of available folders is shown (4 folders visible at once). The folder showed on the first line is always the one that is currently pre-selected (also marked by the "<" sign). To make the pre-selected folder to the current working folder, press the **LOAD** button. To cancel the folder selection dialog without changing the working folder, press the lower right digipot.

**Note** While selecting a folder, the current working folder is marked by the "\*" sign.

## Device Settings buttons related to external VTRs:

- **List**

Update cliplist of selected device. This function is mainly used for serial controlled VTRs. By pressing this button, the names and durations of all clips which are available in the current working folder are transferred to the switcher XL system. This has to be done for instance on system startup or after the working folder has been changed. For devices which are controlled over LAN, the cliplist is updated automatically in most cases (e.g. change of working folder, startup).

**Note** If a new clip has been locally created on an external device, or an existing clip has been deleted, the cliplist has to be updated manually - even on VTRs controlled over LAN.

- **Loop**

Enable or disable Loop Mode for AMP controlled devices.

**Note** On serial controlled VTRs (using the AMP protocol), the current IN and OUT marks are ignored for the loop. In other words, a clip is always played from SOM (start of material) to EOM (end of material) or vice versa. This also applies to LAN controlled VTRs when the "Mark Control" feature is disabled. If "Mark Control" is enabled (see "MCtl" section for details), the IN and OUT marks are taken into account for the loop.

- **ACue**

When "**Auto Cue**" is enabled, a clip is automatically cued to its IN mark after it is loaded by a snapshot or timeline recall.

- **MCtl**

The "**Mark Control**" feature is only available for VTRs which are controlled over LAN. When "Mark Control" is enabled, the IN and OUT marks stored within the metadata of a clip are controlled directly. In other words, metadata of a clip can be changed. In combination with the loop mode, a clip can be played in loop between its IN and OUT marks. This kind of loop is completely controlled by the external machine and therefore 'absolute accurate'.

### Some More Details About IN/OUT Mark Handling

On serial controlled VTRs and on LAN controlled VTRs where "Mark Control" is disabled, the IN and OUT marks are totally clip independent and stored within the Kayak frame once per machine. It's possible to set them per keypad input or by grabbing the current timecode (see description of related buttons for details). By holding the **Goto** button and pressing **Mark In** or **Mark Out**, the machine cues to the related timecode. The IN and OUT marks are not considered in loop mode.

On a LAN controlled VTR where "Mark Control" is enabled, the IN and OUT mark handling is clip dependent. When a mark is changed (setting, grabbing), the new value is stored within the metadata of the current loaded clip. When a new clip is loaded, the stored marks are read from the clip and copied to the current mark entries. The IN and OUT marks are fully considered in loop mode.

**Note** When the current loaded clip is not located in the current working folder (e.g. working folder has been changed after clip was loaded) and an IN or OUT mark is changed, the working folder is also changed back to the one where the clip is located.

## Temporary Machine Delegation

A machine that has been assigned to a machine control group of the **Systembar** can be temporary delegated to the Machine Control Module for full control:

- Select the desired device on the related machine control group.
- Press and hold **Prev** and **Next** simultaneously and press the **Clip/Info** button on the Machine Control Module.
- To bring back the module to standard delegation, just select a device within the device assignment section.

## Recorder Delegation

Figure 105. Machine Control - RamRecorder Delegation



- Turn upper digipot to browse available clips.
- Turn lower digipot to browse available stills.
- Load selected clip/still by pressing the **Load** button.
- Clip position which will be loaded after confirmation of **Load**.

Figure 106. Machine Control - Clip Selection



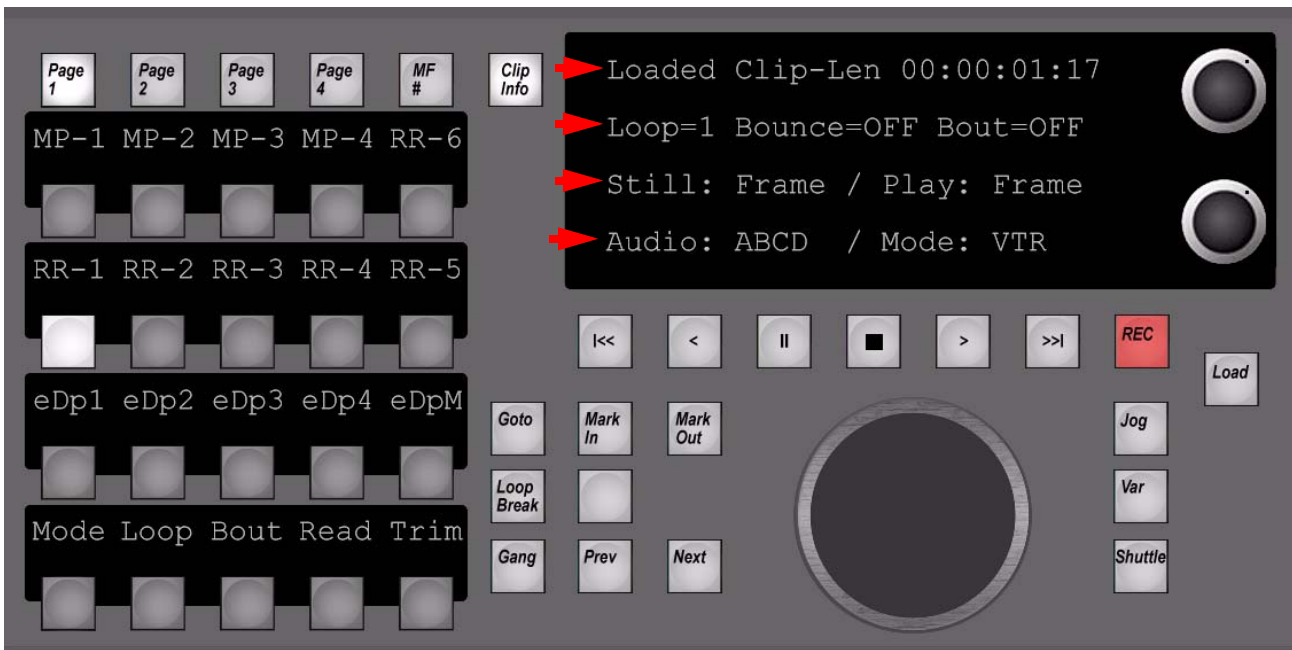
Figure 107. Machine Control - Loaded Clip



Figure 103 on page 155 shows the indicator for audio groups available for selected clip and payout assignment.

Example: "C > C" = Audio Group "C" exist's and played out (>) on group "C".

Figure 108. Machine Control - Clip Info

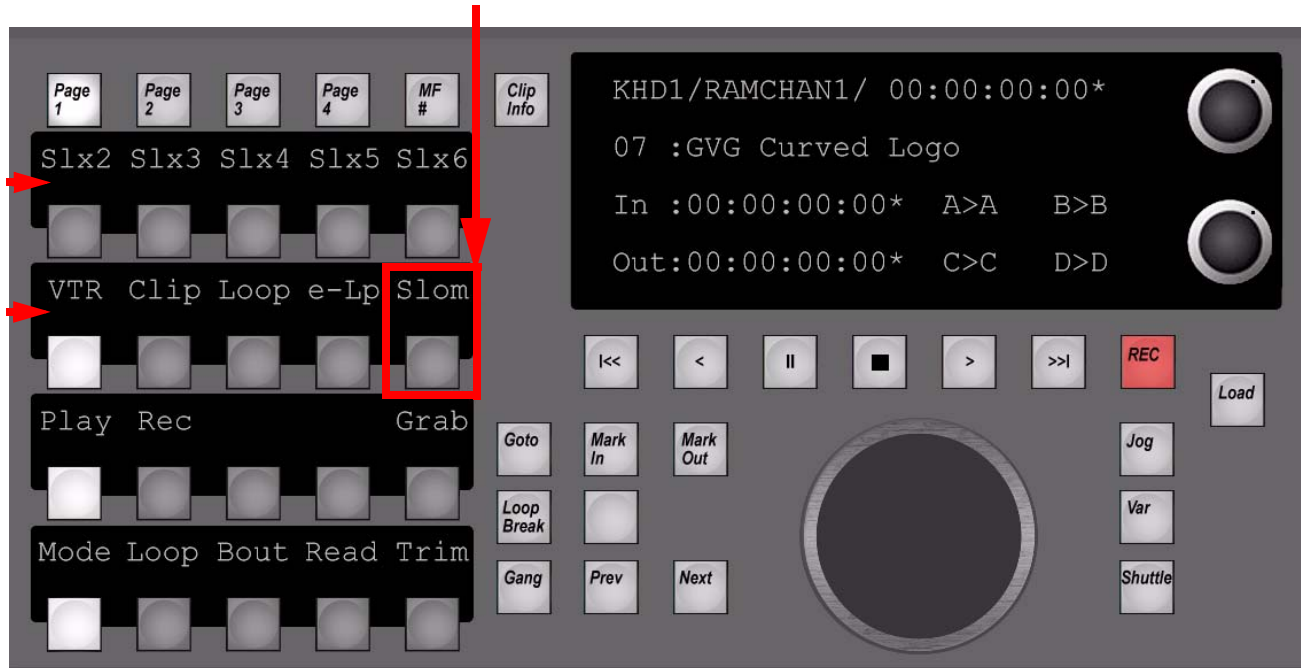


While button **Clip Info** is pressed and held down, the status display is showing additional clip information. The type and amount of information depends on the selected device type. Figure 108 on page 162 shows the clip information for an RamRecorder channel:

- Top row: Length of loaded clip.
- Upper middle row: Loop count, Bounce mode, Breakout mode.
- Lower middle row: Readout while in "Still" position, Readout while in Play.
- Bottom row: Present Audio groups, Ram Channel Play mode.

Figure 109. Machine Control - Slow Motion

**Live Slomo mode - not yet implemented!**

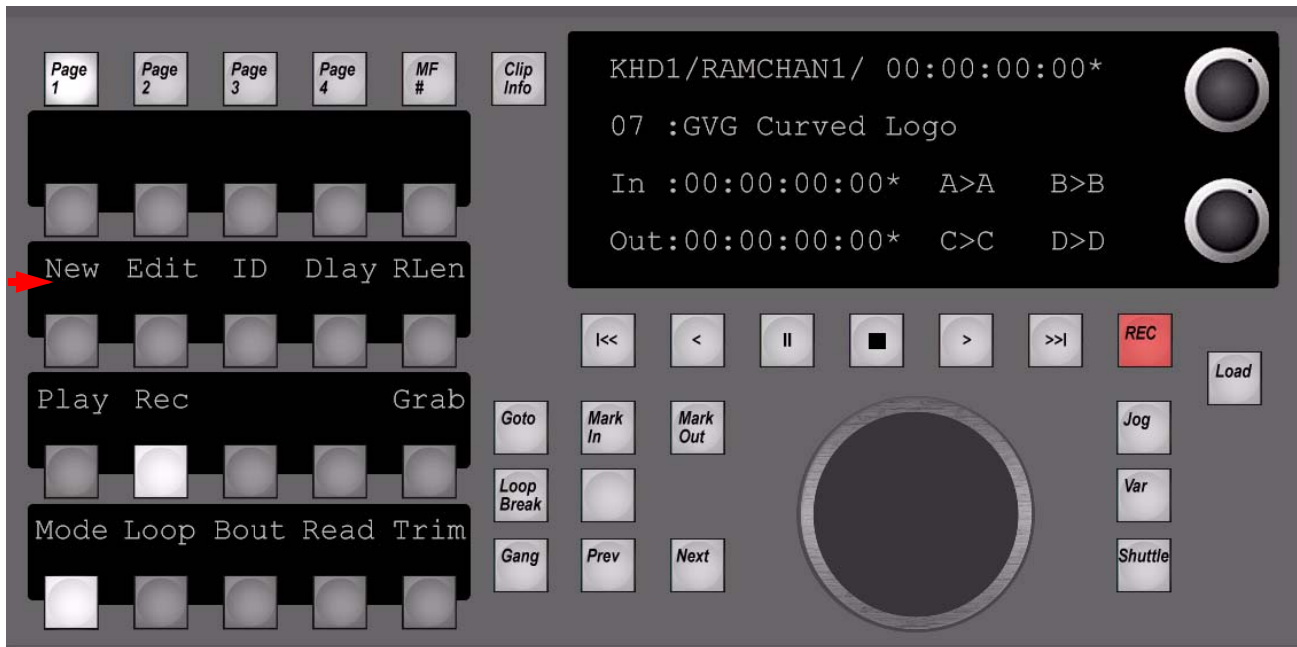


Individually selectable Play modes per RamRecorder Channel.

Available modes are:

- Lower selection: **VTR, Clip, Loop, Extended**
- Upper selection: **SuperSlomo** speed 2x, 3x, 4x, 5x, 6x

Figure 110. Machine Control - Record



Individually selectable Record possibilities/adjustments for each RamRecorder Channel.

- **New:** Record new clip on next available position using specified **RLen** (Record length).
- **Edit:** Allows to overwrite/append new content to existing clip using specified Record length.
- **ID:** Preselecting clip record position.
- **Dlay:** Using selected channel(s) as Delay Line. Delay time = Record length.
- **Grab:** Grabbing a still using selected channel(s) video input(s).



Figure 111. Machine Control - Loop



Adjustments for

**Loop count** (0 = endless/infinite), **Loop** on/off, **Bounce** on/off

Figure 112. Machine Control - Breakout



Adjustments for **Breakout** mode:

- **Off:** Breakout disabled
- **In:** Breakout forced to Mark In TC
- **Out:** Breakout forced to Mark Out TC
- **Any:** Breakout possible on Mark In and Mark Out TC

Figure 113. Machine Control - Readout



**Readout modes for Still and Play:**

- **P-F1:** Play Field-1
- **P-F2:** Play Field-2
- **P-Fr:** Play Frame
- **P-12:** Play Field-1/2
- **S-F1:** Still Field-1
- **S-F2:** Still Field-2
- **S-Fr:** Still Frame-3
- **S-12:** Still Field-1/2

Figure 114. Machine Control - Trimming



Adjustments for trimming:

- **In:** Allows you to Trim/Delete the "Inner" part between Mark In and Mark Out.
- **Out:** Allows you to Trim/Delete the "Outer" part before Mark In and after Mark Out

# System Bars

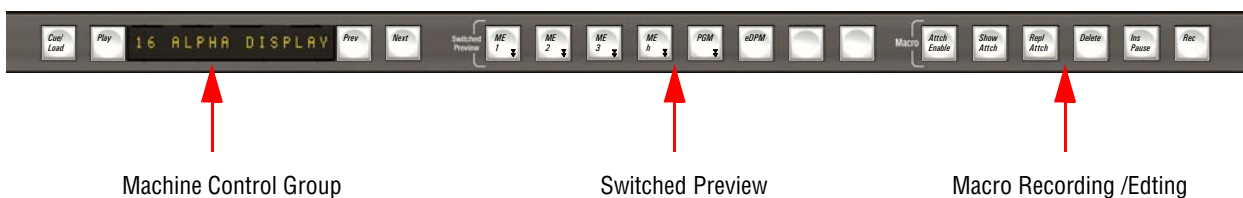
## Overview

There are three lengths of system bar to accommodate the four basic models of panel.

The System Bar is used for

- Switched Preview selection
- Macro Recording / Editing
- Machine Control

Figure 115. System Bar



The Kayenne XL control panel types are different:

- The 4, 3 and 2 M/E control panels (35 sources) have 6 machine control groups.
- The 2 M/E panel (25 sources) has 6 machine control groups.
- The 1 M/E panel (15 sources) has 2 machine control groups.

## Switched Preview

Before the **Switched Preview** feature can be used, an **Aux Preview Bus** has to be defined and **Auto Aux Preview** has to be enabled. These parameters are set within the **Config/EBox** menu. The **Switched Preview** buttons are used to select the M/E output which is routed to the defined aux preview bus.

Figure 116. Switched Preview



When pressing the Switched Preview buttons (M/E1, M/E2, M/E3, M/E4, PGM, eDPM), the following outputs will be 'toggled' per M/E:

- Main
- Out B
- Out C
- Out D
- Preview 1
- Preview 2

The button of the currently previewed M/E will be tallied high.

The last two buttons of the Switched Preview group are currently not used.

## Macro Recording / Editing

The macro editing buttons, described below work in conjunction with source select rows delegated to macros. This delegation is performed by using the MACRO button and the BUS SELECT buttons in the Source Selection Module. Further details of the row delegate processes is found in the description of this module.

Figure 117. Macro Editing Section



### Macro Building

- Record:**  
 Pressing this button enables the record process. Pressing a button on a bus delegated to macros starts the recording. To be compatible with the XTen/Kayak style of recording macros, it is also possible to hold the **Record** button and press a button on a bus delegated to macros. While the recording process the **Record** button blinks. It is terminated by pressing the **Record** button again, or pressing the selected macro button again.
- Insert Delay:**  
 While recording a macro, pressing this button changes the delegated macro row to display time delay on the source name displays in increments of seconds and tenths of seconds (unshifted), or fields (shift level 1).
- Delete:**  
 To delete a recorded macro, hold this button and press a button on a bus row delegated to macros. The related macro will be deleted, which is indicated by a 'blank' macro name display.

## Macro Attachment

- **Attach Enable:**  
Pressing this button turns the macro attachments ON and OFF macro attachments. When OFF, all attached macros are disabled, and the buttons revert to their original functionality.
- **Show Attach:**  
An ON/OFF toggle. When ON, all buttons which have a macro attached flash.
- **Replace Attach:** To replace-attach pre-defined macros to a button:
  1. Delegate the required bus rows to macros as needed.
  2. Press the **Replace Attach** button. The Attach button tallies high.
  3. Hold down a macro button.
  4. Hold the button to which the macro is to be attached.

When the replace-attachment is done, the **ReplaceAttach** button tallies low. To attach further macros, repeat steps 2 to 4.

### To pre-attach a macro:

1. Delegate the required bus rows to macros as needed.
2. Hold down a macro button.
3. Hold the button to which the macro is to be attached for two seconds.
4. To check if the macro is attached, press **Show Attach**.

### To post-attach a macro:

1. Delegate the required bus rows to macros as needed.
2. Hold down the button to which the macro is to be attached.
3. Hold the macro button for two seconds.
4. To check if the macro is attached, press **Show Attach**.

### To delete a pre-attached macro:

1. Hold down the **Delete** button in the macro editing section.



2. Hold down the button to which the macro is attached for two seconds.
3. To check if the macro has been deleted, press **Show Attach**.

**To delete a post-attached macro:**

1. Hold down the button to which the macro is attached.
2. Hold down the **Delete** button in the macro editing section for two seconds.
3. To check if the macro has been deleted, press **Show Attach**.

## Machine Control

Figure 118. Machine Control



There are 6 machine control groups on the system bar for panels with 35-button source selectors.

There are 6 machine control groups on the system bar for panels with 25-button source selectors.

There are 2 machine control groups on the system bar for panels with 15-button source selectors.

Each machine control group has a 16-character display showing:

- Short machine identifier
- Selected clip/effect (in clip selection mode)
- Selected still (in still selection mode for RamRecorder channels)
- Selected folder (in folder selection mode for VTRs controlled via LAN)
- Current timecode (in timecode display mode)

## Multiple Device Assignment

It is possible to associate one or more devices with a machine control group. There are two ways to assign a device to a machine control group:

- Hold down **Prev** and **Next** buttons together and press (not hold) the device selection button on the Machine Control module where the device is assigned to.
- Hold down **Prev** and **Next** buttons together and press a source where a machine is attached to in the Source Selection Module. Attaching a machine to a source is done with the Kayenne XL Menu (**Config/EBox/Input/General**).

If there is more than one device assigned to a machine control group, use **Prev**, **Next** and **Play** to select a device for control ('bring it on top'):

- To select the next device in the list of assigned devices, hold **Next** and press **Play**.
- To select the previous device in the list, hold **Prev** and press **Play**.

**Note** The machines within the list of assigned devices are sorted in alphabetical order

To remove a device from the list, do the following:

- Select the device ('bring it to top') as described in the previous section.
- Hold down **Prev** and **Next** buttons together and press (not hold) the device selection button on the Machine Control module where the device to remove is assigned to.
- Alternatively hold down **Prev** and **Next** buttons together and press a source where the device to remove is attached on the Source Selection Module.

**Note** Device assignments on machine control groups can be saved/loaded to/from a Panel Memory registers.

## Temporary Machine Delegation

A machine that has been assigned to a machine control window of the Systembar can be temporary delegated to the Machine Control Module for full control. This feature is described in details within the Machine Control section.

## Machine Delegation Busses

In addition to the manual selection of machines within a list of assigned device, it is possible to bring a device on top of a machine control group for controlling by the 'Machine Delegation Busses' feature:

A Machine Delegation Bus is a ME or an Aux bus where sources (containing attached machines) can be associated. This source association is done in the Kayenne XL Menu (**Config/EBox/Input/MachineDelegationBusses**). In the association process one or more Machine Delegation Busses can be assigned to an input source.

When an input source is selected on a ME or an Aux, the system checks if the related bus is associated with the selected source and in addition it verifies if the source has a machine attached. If this is the case, it searches all machines assigned to the machine control groups in the Systembar for the attached machine and if found, it is brought on top for control.

## Operational Example:

- Attach all RamRecorder channels to the related RamRecorder output sources
- Assign all RamRecorder channels to one machine control group in the Systembar
- Associate the desired ME bus (e.g. ME2 PGM) to the RamRecorder output sources

From now on a RamRecorder channel can immediately be controlled on the machine control group right after the related output source is selected on ME2 PGM.

## Prev/Next

- When there are clips on the assigned machine available, the **Prev** and **Next** buttons are used to navigate through the list of clips.
- The clips are pre-selected (not loaded).
- When a RamRecorder channel is assigned to the machine control group, pressing **Prev** and **Next** simultaneously changes to still selection mode. In that mode the buttons are used to preselect RamRecorder stills.
- When a machine that is controlled via LAN is assigned to the machine control group, pressing **Prev** and **Next** simultaneously changes to folder selection mode. In that mode the buttons are used to navigate between the available folders on the external disk server. Pressing **Prev** and **Next** again changes back to clip selection mode.

## Cue/Load

- Pressing this button after a clip/still/effect/folder has been pre-selected by Prev or Next causes a load command to be sent to the device.

**Note** In folder selection mode, the selected folder will become the current working folder. After switching back to clip selection mode, the machine control group will then show the clips of the new working folder.

- The button is high-tally when the selected clip/still/effect is loaded resp. when the selected folder is the current working folder.

## Play

- Pressing the **Play** button causes the device to play.
- Pressing the **Play** button while the device is playing causes the device to Pause.
- The button high-tallies while the device is playing and goes low tally when it stops.
- In clip and folder selection mode, **Play** has no function.

## Timecode Display Mode

To bring a machine control group into Timecode Display Mode for the current controlled device

- change to clip selection mode
- then hold **Prev** (or **Next**) and press **Cue/Load**
- do the same to switch back to clip selection mode.

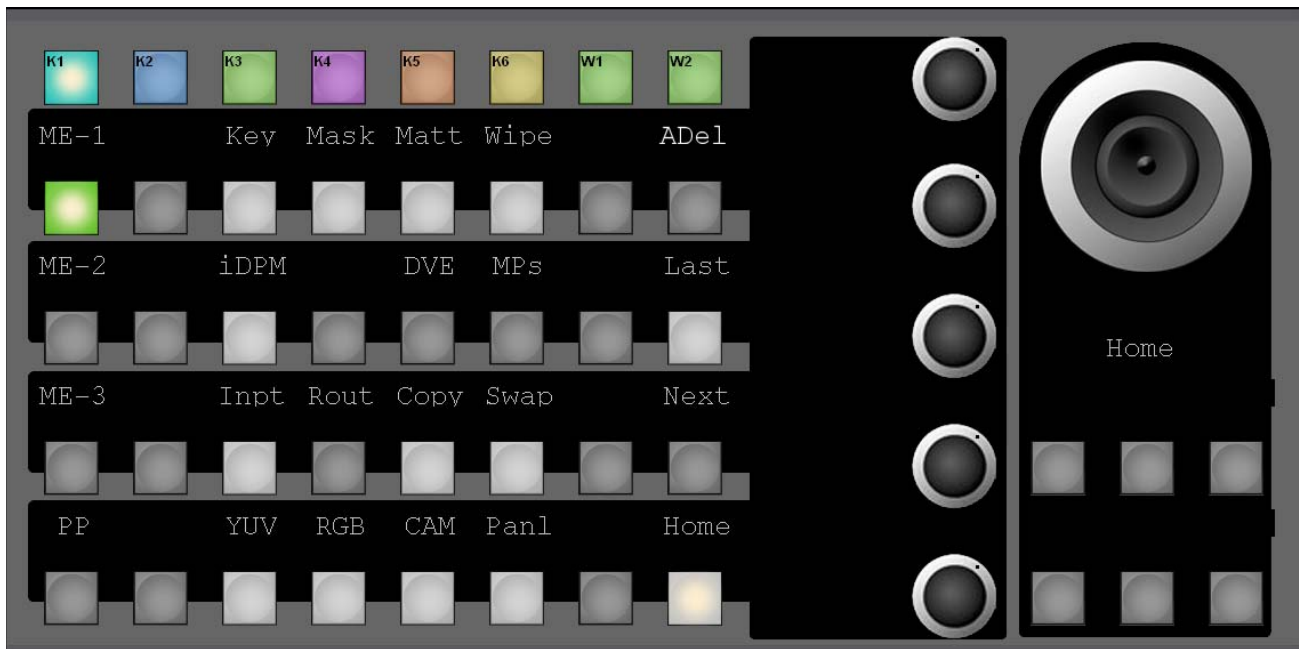
**Note**      Display modes are stored per assigned device (not per machine control group).

# Multi Function Control

## Overview

The Multi Function Control gives access to the main parts of the switcher. Each function in the Multi Function Control is also available in the Kayenne XL menu.

Figure 119. Multi Function Modul



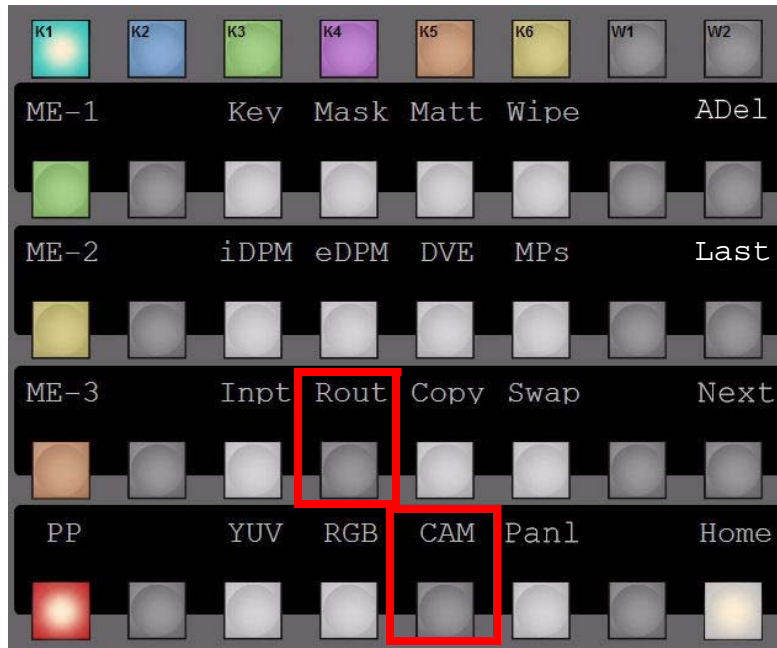
In the **Home** menu those displays remain blank, except the display right beneath the Joystick, which show's **Home**.

Once entering any Main Menu, the control philosophy is built from bottom row selections, up to the top row selections - reflecting the control levels in the inbuilt hierarchy.

The Multi Function module is displays controllable resources, reflecting the actual installed hardware and software options.

## Main (Home) Menu

Figure 120. Multi Function - Home



Menu item not yet implemented.

Figure 121. Multi Function - Main Menu Buttons



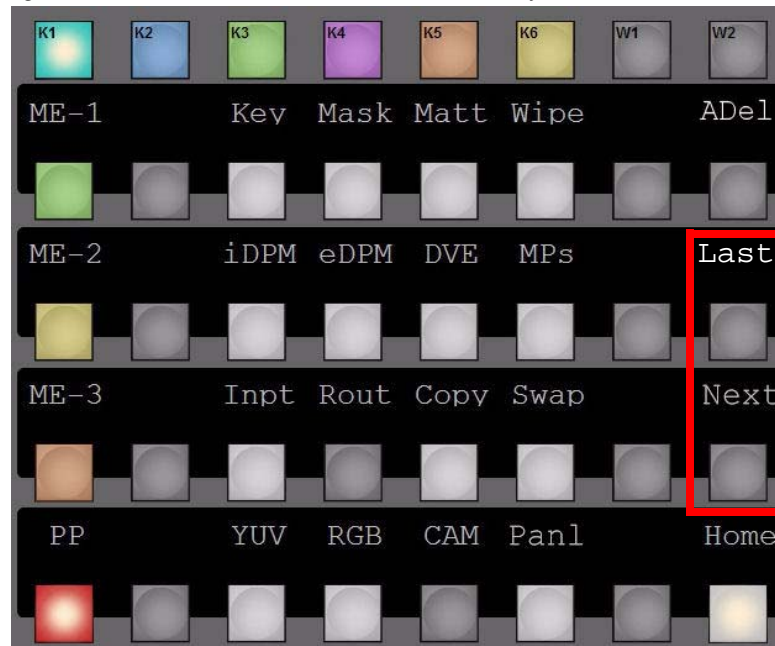
Main Menu selection and **Home** Menu.

Main menus are (in the order left to right / top to bottom):

- **Keyer, Mask, Mattes** (Fill, Border, Transition, Background), **Wipes**
- **iDPM, eDPM, ext. DVE, Machine Control**
- **Input** (Program, Preset, Utility, Fill, Key, Aux, eDPM, RamRecorder), Router (not yet implemented), **Copy, Swap**
- **YUV** Correction (Input, Bus, Aux), **RGB**-Correction optional (Input, Bus, Aux)
- Camera, Panel (Brightness controls for Lowlight Tally), Highlight Tally, OLED's, Text displays), Home Main Menu

## Menu History

Figure 122. Multi Function - Last/Next Menu History

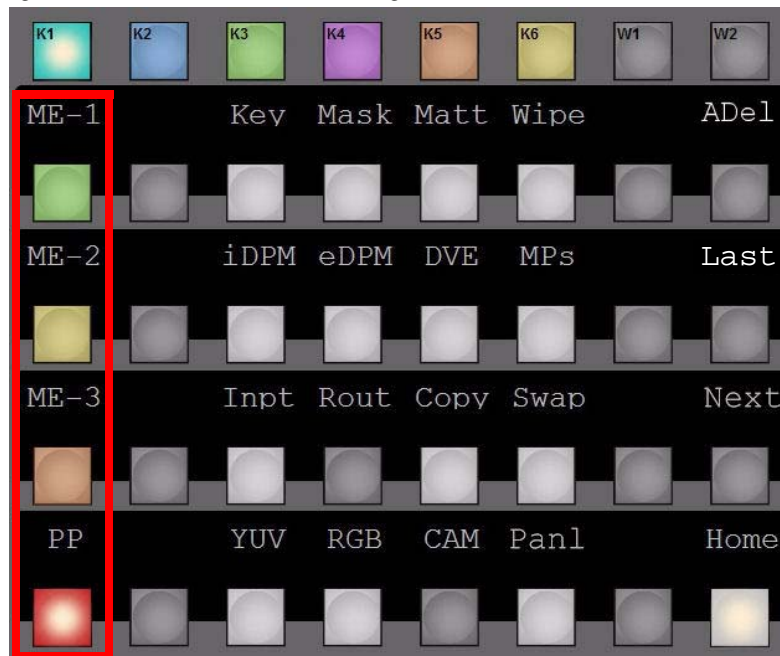


**Last/Next** menu (2nd page menu), also used for menu history system.



## Control for M/E Delegation

Figure 123. Multi Function - M/E Delegation



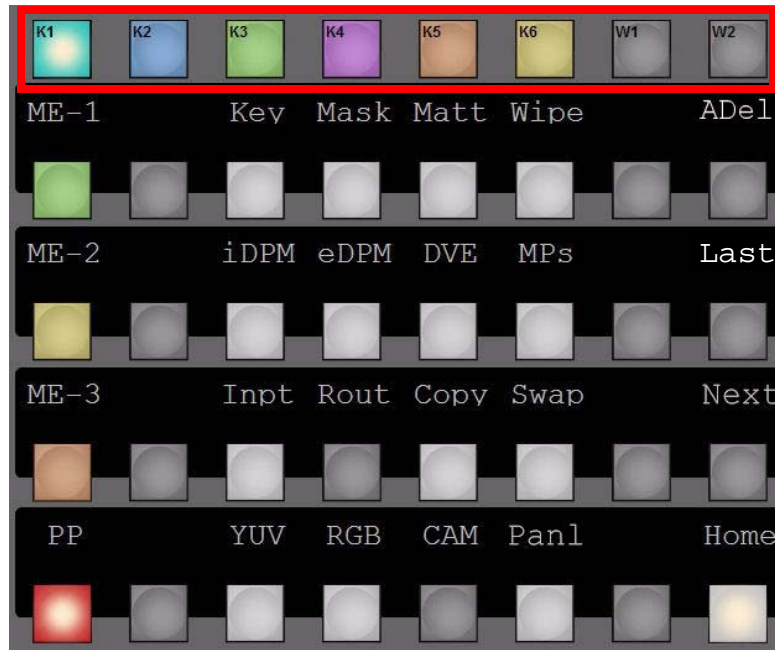
Control panel M/E# delegations.

These buttons delegate the Multi Function Control to a different M/E of the mainframe. Selecting **M/E-3** causes the status of M/E3 to be shown, and the setting to be sent to M/E3 in the mainframe. The M/E-H is reachable by deselecting the currently highlighted M/E. All buttons have to be off.

M/Es without a licence are disabled.

## Key and Wipe Delegations

Figure 124. Multi Function - Key/Wipe Delegation



The **Key** delegation (button **K1 ... K3**) delegates the Multi Function Control to the Key of the mainframe. The determination of the key is a combination of the M/E delegation and the Key delegation. Since the M/E-H supports four keyers, the key delegation 5 and 6 are inactive.

The **Wipe** delegation button leads directly into the Main Menu of the Transition Wipe setting. Therefore the displayed wipe depends on the status of the Transition Wipe settings. The determination of the Transition Wipe is done by the selection of the M/E. The color of the Wipe delegation buttons is the same as the currently selected M/E.

The M/E-H does not have a Transition Wipe, consequently the delegations are disabled for this M/E.

## Auto Delegation (ADel)

The **ADel** function activates the auto delegation of the multi function module. When enabled, the MFM is delegated by other modules of the control panel, e.g. via the keyer buttons of the Transition Module, as well as by the Sidepanel Menu, e.g. in the iDPM / eDPM edit menu. This delegation does not only presets the according subdelegation but also activates the according Keyers and ME's.

## Joystick and Digipots

Figure 125. Multi Function - Joystick

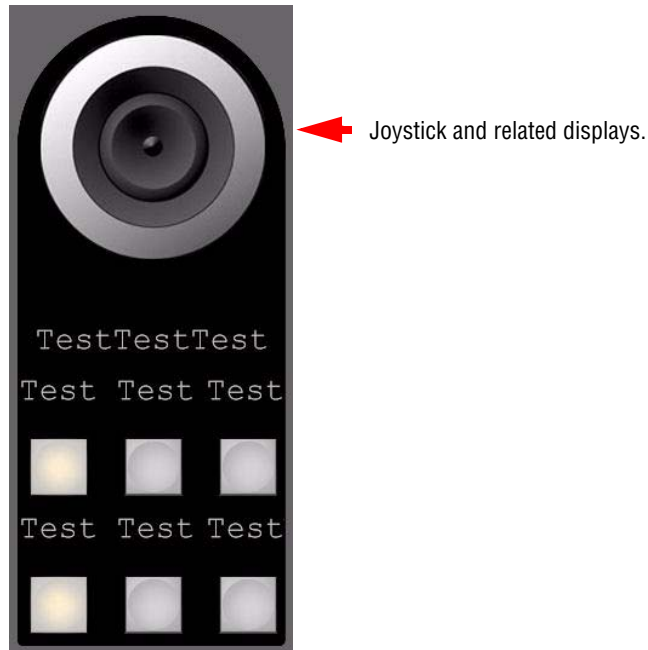
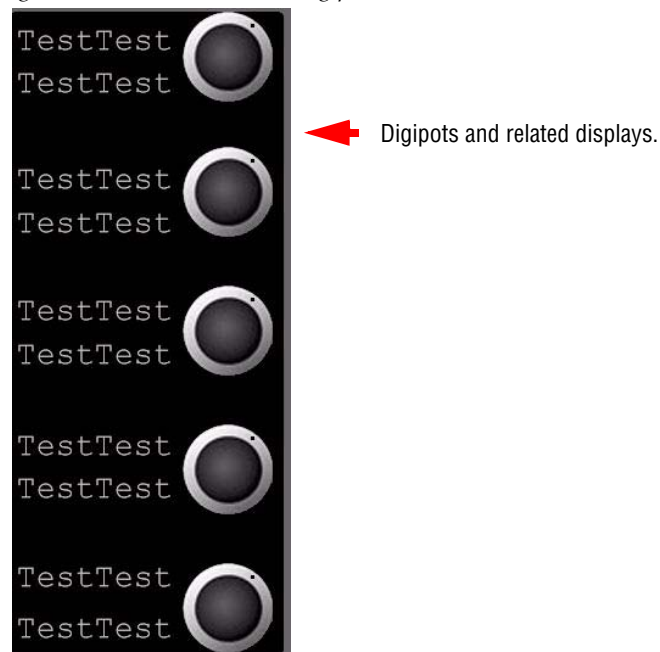
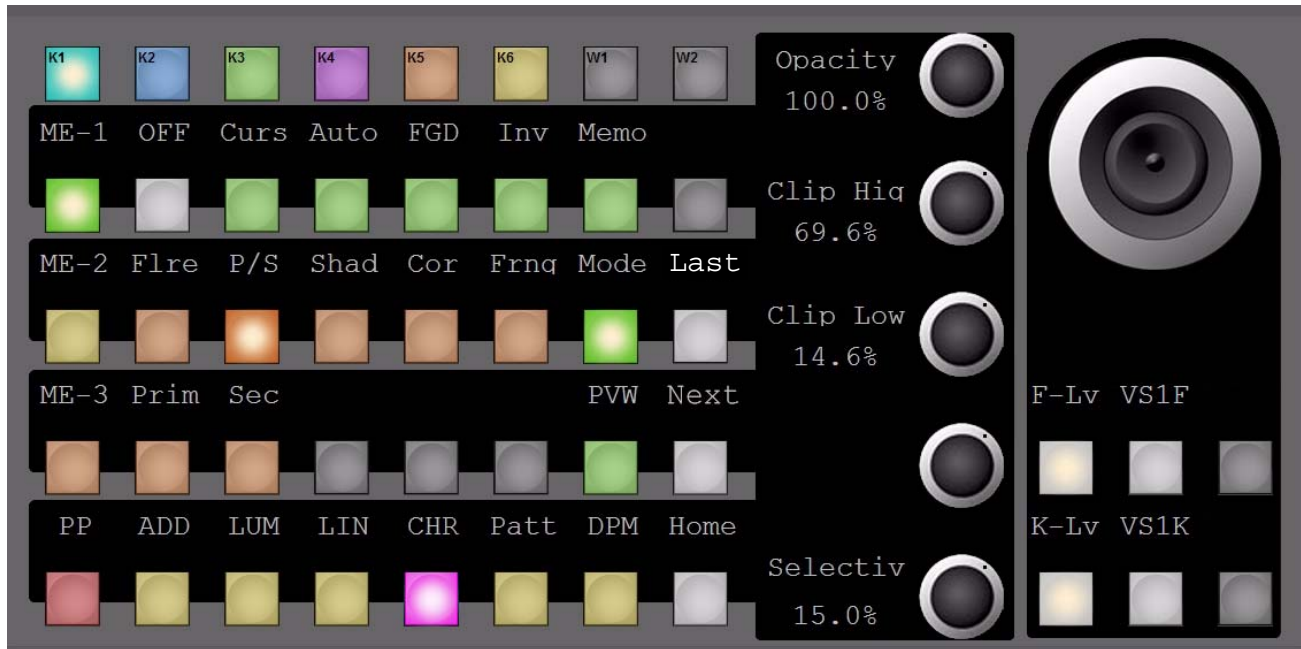


Figure 126. Multi Function - Digipots



All displays filled with the word "Test" are just an example regarding the number of characters available in each display.

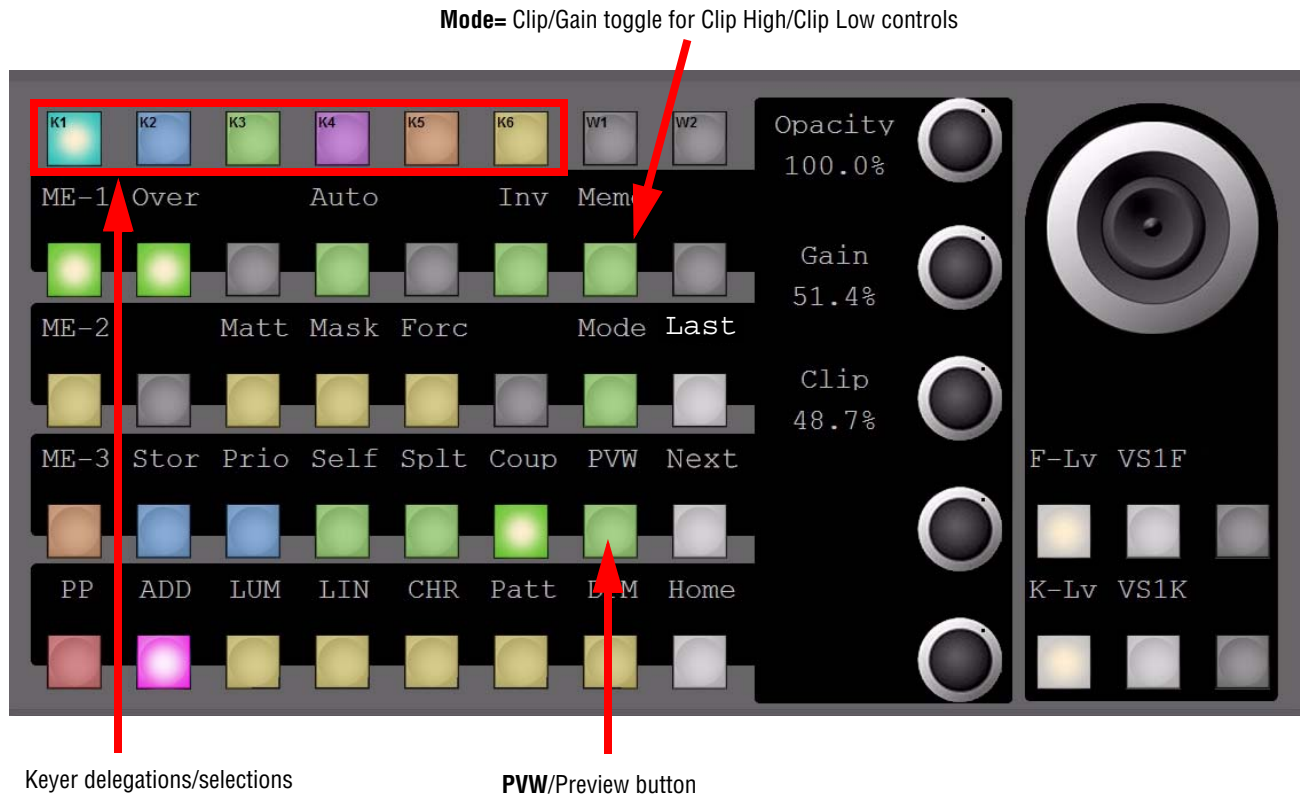
Figure 127. Multi Function - Overview



In general, the last selected function or delegation will automatically force control to the 5 digipots and/or joystick on the right side of the Multi-Function Module as well as to the 6 buttons located underneath the Joystick.

## Keyer Control

Figure 128. Multi Function - Keyer Control



When the Main Keyer menu is entered, the Multi-Function module represents the actual settings of the selected Keyer.

### Key Preview

The **PVW** button is used for viewing the key control signal. This button does not affect the output of the M/E. Pressing the button once shows, on the preview output, the key signal in front of the background. Pressing the button a second time shows the key signal.

When changing any M/E's preview mode from "Look-Ahead Preview" to "Combined Key Signal", press and hold the **PVW** button in a Keyer Main menu of related M/E# and select/deselect the Keys which should be displayed on that M/E preview output. After finishing selection, press the **PVW** button in order to cycle through available M/E-Preview output states.

**Note** While an M/E# PVW output is configured to be in "Combined Key Signal" mode (Config/E-Box/M/E/Preview Output), the **PVW** button in Keyer Main menu at the Multi-Function modul of the related M/E# will stay lit permanently.

## Key 1...6

These buttons delegate the Keyers Panel and indicate which keyer is currently delegated to the Keyers Panel.

Due to the **Auto delegation** the keyers panel is automatically delegated to the appropriate keyer when it makes sense.

When **Auto Menu** is enabled, the menu display of the attached side panel will switch to the appropriate **Key Menu** and sub-menu. Parameter adjustment is performed by the menu digipots.

## Key Sources

### Matte Fill

The **Matt** button serves to select a color matte as a fill signal for the respective key in place of the fill bus signal.

### Self - Couple - Split Key Buttons

When the Miscellaneous Bus is delegated to a keyer, a source selection always selects the Fill signal for the corresponding keyer.

The **Self - Coup** and **SpIt** buttons define the way in which the key signal is selected.

- If **Self** is selected, the selected fill signal is also used as key signal.
- If **SpIt** is active, the key and fill sources can be selected separately.
- If **Coup** is active, the operator selects a Key Fill source on the Key Buses row, and the switcher automatically selects the Key Source signal using the Coupled Key table.

The Coupled Key table is defined in the menu.

The default table entry for Coupled Key is **White**. For DVEs, character generators, graphics, etc., the input where the Key signal from such an image source is connected should be coupled to the input where the video signal is connected.

## Key Types

### Add Key

The **Add** button serves to select the additive key mode. In this mode, an external unit (for example, modern caption generators, paint systems) generates and supplies the key signal and the associated fill signal.

The background signal is multiplied with the key control signal and added to the supplied fill signal. This mode ensures that the supplied fill signal is not influenced and that all details contained in it are reproduced true to the original.

**Note** Please note that the supplied fill signal must be on top of a black background. Otherwise, the addition of the signals will yield a discolored *background signal*.

### Lum Key

The **LUM** button selects the luminance key mode. The key control signal is derived from the luminance component of the key source signal. The key control signal controls the transition between background and foreground (=fill) signal.

### Lin Key

The **LIN** button sets the luminance key to a linear mode. The key control signal corresponds to the non-amplified and unlimited luminance signal.

### Preset Pattern Key

The **Patt** button selects Preset Pattern, which cuts the hole in the background using an internal wipe pattern generator (or Utility Bus video), rather than a source's key cut signal.

Wipe pattern selection and other preset pattern adjustment such as softness of the preset pattern edge and size of the preset pattern shape can be adjusted in the Wipe menu. The Joystick in the Joystick subpanel, when properly delegated, controls the location of the preset pattern on the screen. The Preset Pattern and Masking features share common keyer hardware. When a Preset Pattern is being used by a keyer, masking will be disabled for that keyer.

### Key Over

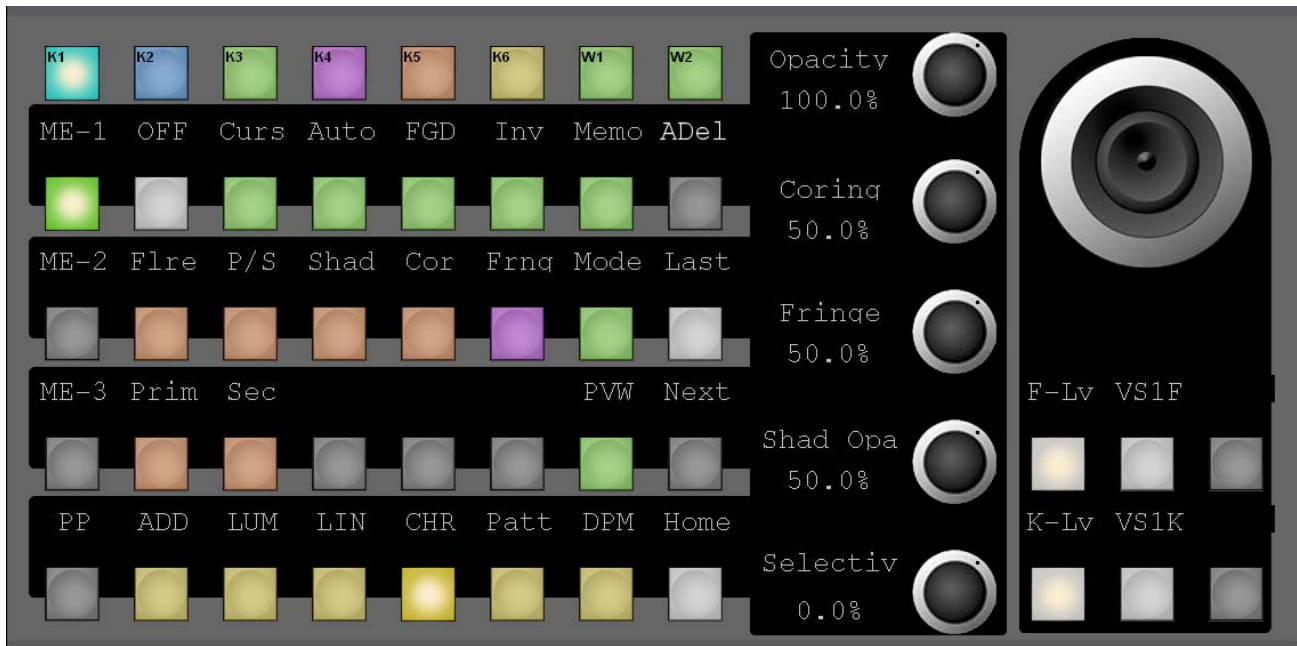
The **Over** button changes the current key priority of the delegated keyer. With each press of the button the priority is advanced by one. When top priority is reached, the next press of the button set the key priority to the lowest level.

### Key Invert

The **Inv** button reverses the sense of the key control signal. When Key Invert is active (button lit), black areas of the key cut signal cause replacement of the background, and the white key cut areas cause the background to be retained.

## Chroma Key Main Page

Figure 129. Multi Function Chroma Key Page

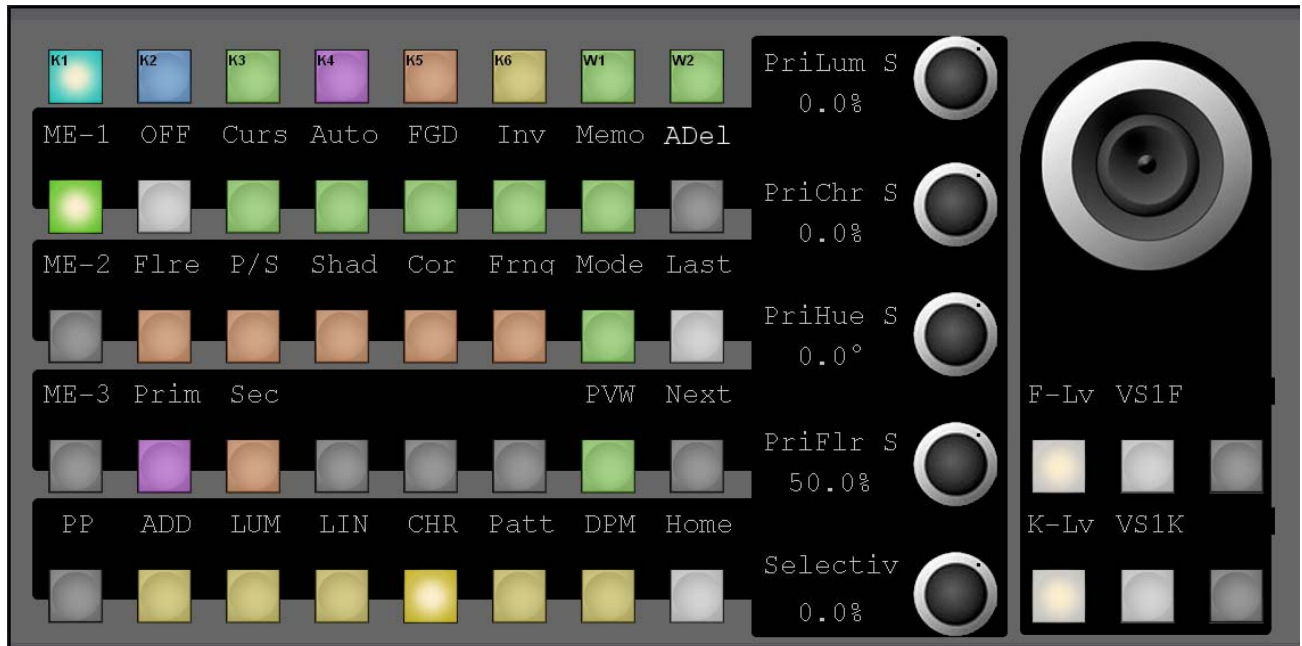


### Strategy for Manual Chroma Key Setup

1. Turn **Selectivity** to minimum.
2. Set **Clip Lo/Hi** to “midrange values” (we recommend Clip Lo/Hi, but it is also possible with Clip/Gain).
3. Set primary suppression with **PriChr** to max.
4. Set primary suppression with **PriLum** to min.
5. Turn primary suppression **PriHue** until the background (the key color) becomes very noisily affected. Adjust for maximum.
6. Increase the **Selectivity** until the background is completely keyed off but foreground stays unaffected.
7. Adjust **PriChr** and **PriLum** so that the background color and luminance appears as in the original.
8. Adjust **Clip Lo/Hi**. Adjust **Clip Lo** to make the foreground opacity and adjust **Clip Hi** to suppress noise/shadows in the background. To help with this adjustment, turn on show key using the **PVW** button.
9. If necessary, start tweaking as after and **Auto** adjustment.



Figure 130. Multi Function Chroma Key Primary Page



## Automatic Key Adjustment

The **Auto** button serves to start various automatic functions in the different key modes.

- In **ADD**, the key control is switched to 1:1 transfer so that key signals for example, from the caption generator are effective without change.
- In **LUM**, clip and gain are adjusted so that the key source signal is amplified to become a full-range signal with minimum of 0% and maximum of 100%.  
In **LIN**, clip and gain are set to unity.
- In **CHR** (Chroma Key), the **Auto** button starts an automatic key adjustment.

**Note** After all automatic key adjustments, the corresponding parameters may still be changed manually.

## Automatic Chroma Key Adjustment

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 (**FGD Fade off**), and the other for more challenging sets (**FGD Fade on**). Depending on individual circumstances, additional manual adjustments may be required after you use Auto Setup.

After an Auto Setup has been initiated by pressing the **Curs** button, you can cancel it by pressing the **Curs** button again, but the chroma key will retain the default settings imposed.

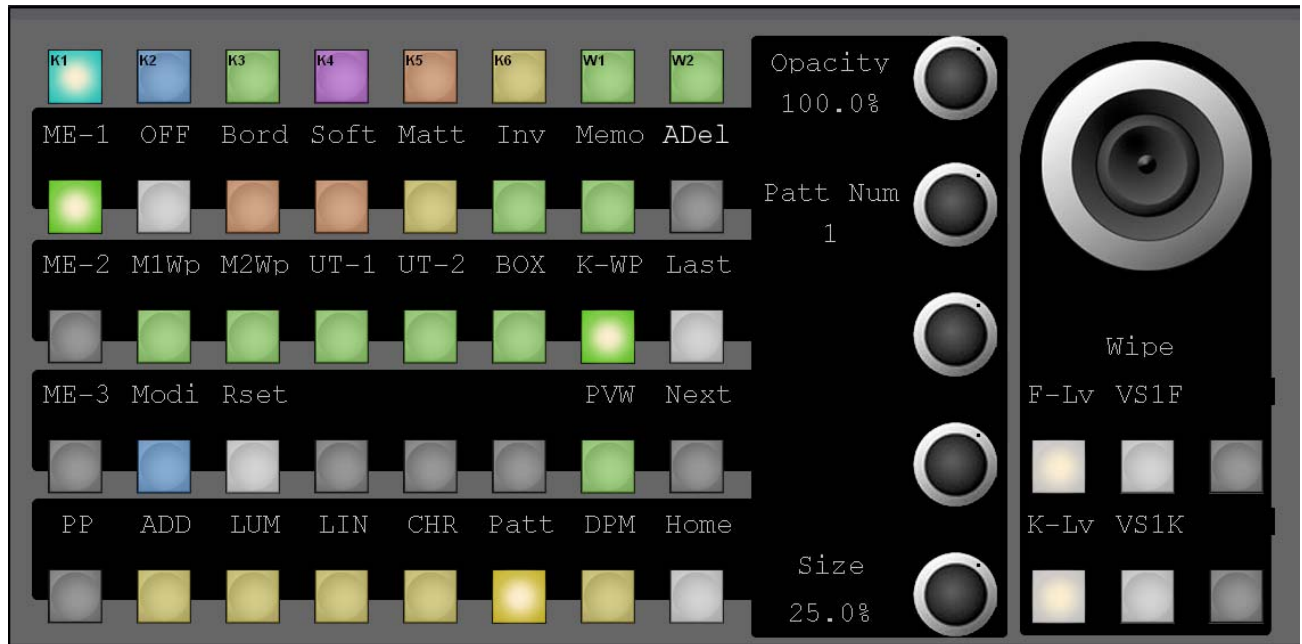
If the result of the Auto Setup is not satisfactory, further fine tuning can be made in the chroma key menu as described below:

1. Adjust **Selectivity** to ensure that no foreground color is affected by the keying process.
2. If there is still some transparency left, adjust Clip Lo to make the foreground opaque, and adjust clip Hi to suppress noise/shadows in the background. To help with this adjustment, turn on Show Key using the **PVW** button.
3. Adjust **Flre** (Flare) suppression if needed, to reduce flare created in the camera lens.
4. Adjust Foreground (secondary color) suppression if needed, due to direct reflections in foreground objects.

### FGD Fade

If the set is lit unevenly or has other problems, **FGD Fade** 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 **FGD Fade** is not needed.

Figure 131. Multi Function Chroma Key Pattern Page



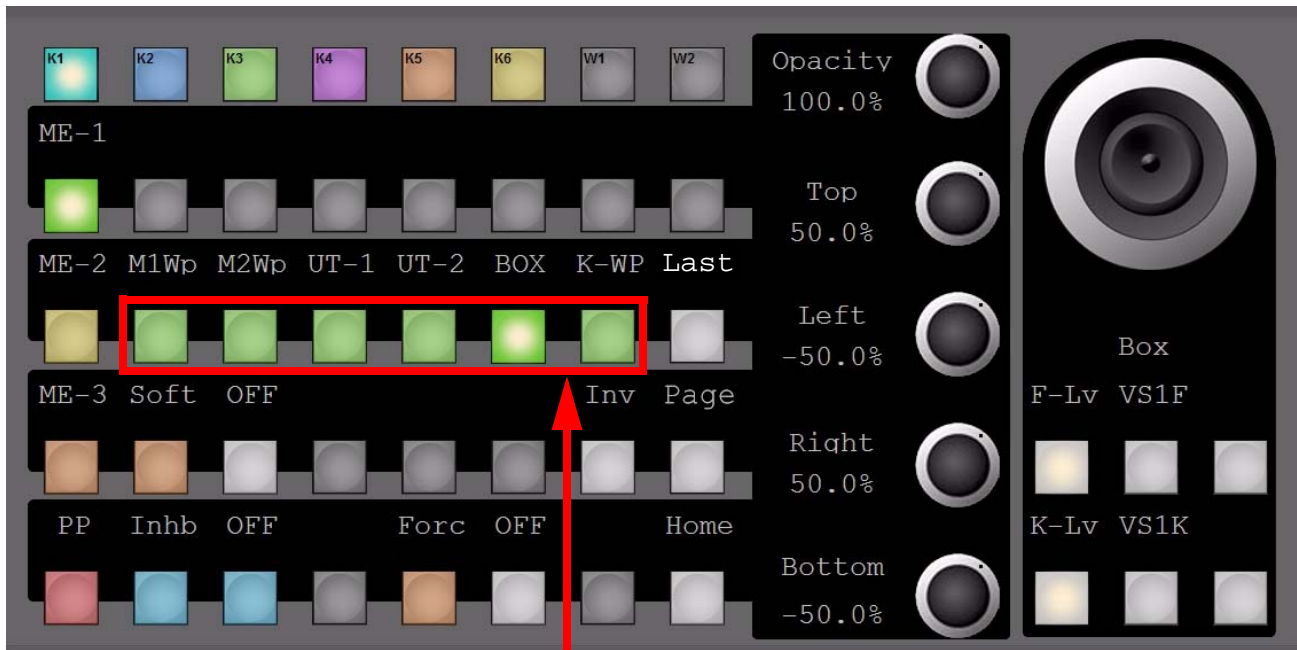
### Border

The border function enables you to provide the key signals with a border effect which can be adjusted individually.

The border selected in the Keyer menu can be switched on with the **Bord on** button. For further information, please refer to the section Key Menu. The border functionality is not supported in the first software releases.

## Main Mask Menu

Figure 132. Multi Function - Mask Page



Mask tools for **Inhibit Mask** and **Force Foreground Mask**

### Mask / Force Delegation Buttons

Masks help clean up keys by defining picture areas that are prevented from keying (inhibit mask) or are forced to key (force mask). Separate inhibit and force masks may be set up for each keyer. Masks can be created by pattern generators, or can be based on a video source that has been clip and gain adjusted to create the mask control signal. Masks cannot be applied to preset patterns.

The **Inhb** and **Forc** buttons delegate the keyer to control one of these two mask types. Changes to the masking controls affect only the selected mask type of the keyer delegated in the keyers subpanel. A high button tally indicates which mask is being controlled. If the other mask is also active, its delegation button will low tally. Masking parameters can be controlled by the digipots.

## Main Keyer Store Menu

Figure 133. Multi Function - Store Page



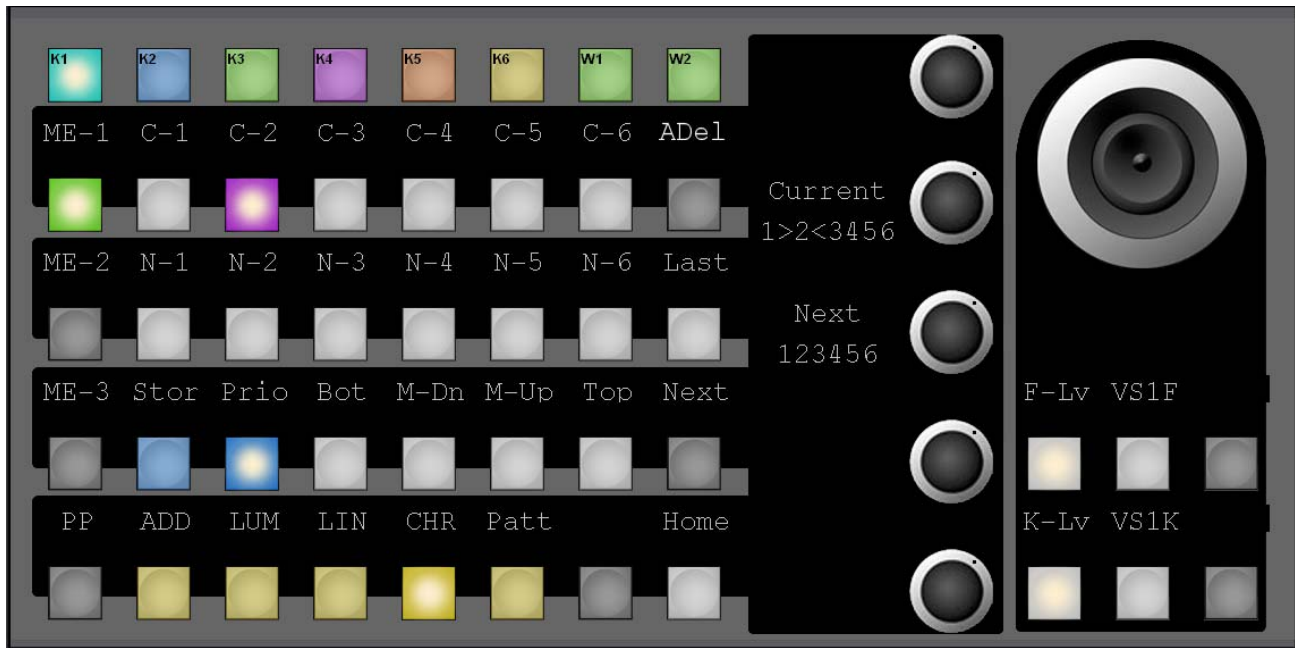
Within this delegation the Key Store readout can be selected.

The button underneath the joystick gives the possibility to select the live signal or to freeze the Signal. The Freeze Signal depends on the Readout which is set in the **Store** menu.

- **F-Lv**: Fill Live
- **K-Lv**: Key Live
- **VS1F**: Video store 1 Fill
- **VS1K**: Video store 1 Key

## Main Keyer Priority Menu

Figure 134. Multi Function - Key Priority



Within this delegation the Key Priorities for **C** = Current Priority and **N** = Next Priority can be adjusted by selecting the resource (**C1 - 6** and/or **N1 -6**), and change actual position with designated digipot at the right end of related button row. Beneath both digipots for **Current** and **Next** a graphical representation of the actual priority status is displayed.

### Key Prior

The **Prior** button enable the user to set the next priority stack of the four keyers. To set key priority, hold down the **Prior** button and press the **Key 1 – 4** buttons in the keying order desired, from top to bottom priority. This will set the next priority stack. After key priority has been set, select the **Prior** button in the Transition subpanel to use this next priority selection as part of the next key transition.

## Pattern Key Main Menu

Figure 135. Multi Function - Pattern Main



On the digipot in lower right position the pattern size can be adjusted.



## iDPM (eDPM)

- The iDPM (eDPM) menu has a hierarchical structure. The lowest button row divides the DPM in the Main Group; Edit Group; Misc Group. The **Near** and **Far** button gives access to the sources of the buses. The **Num** button enable you to recall the effect directly with the corresponding register number.

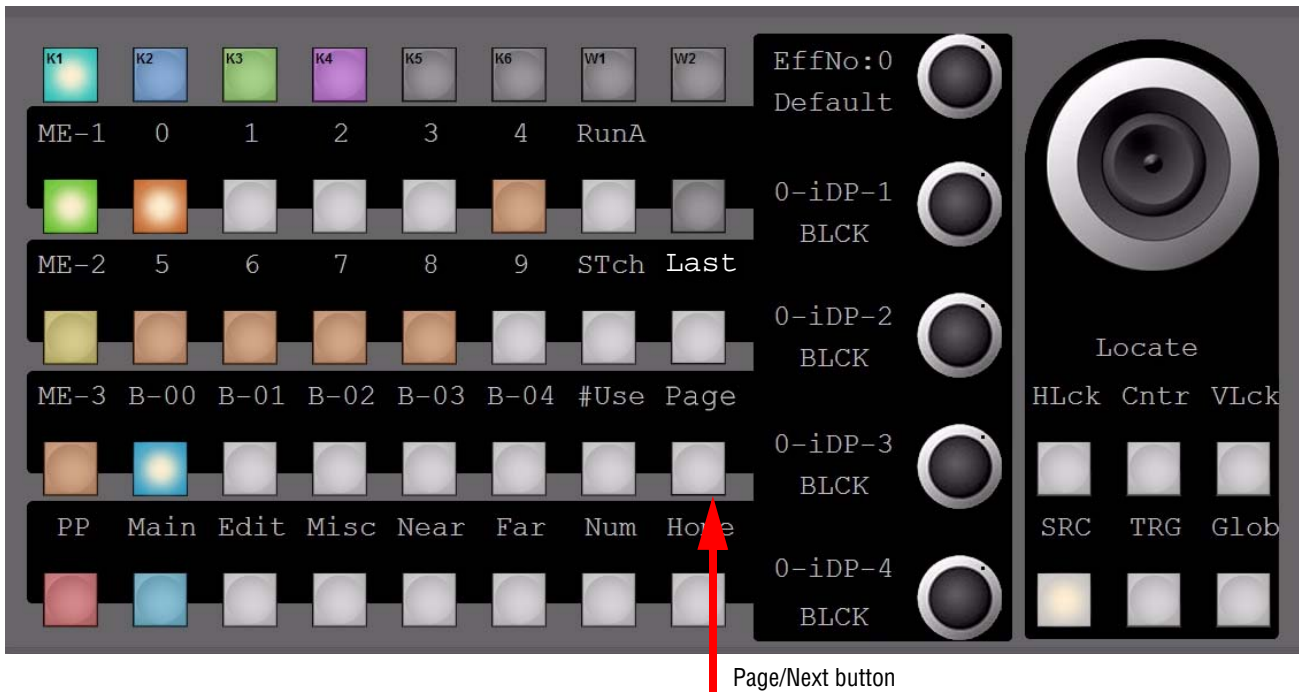
More information is available in each section below.

### iDPM (eDPM) Main Menu

While "Banks" in iDPM (eDPM)Main is selected, the former displayed button **Next** changes to **Page**, in order to toggle between Banks **00 - 04** and **05 - 09**. **Bank - 00** is selected, and button **0** in upper left corner indicates the loaded DPM effect. It is also reflected on all digipots which effect number is loaded to which channel. The top digipot displays the last recalled effect. When you turn this digipot, you step through the list of available effects. To load an effect, push the digipot.

Buttons **1, 2, 3, 9** are empty effect numbers, and buttons **4, 5, 6, 7, 8** are effects which exist but are not loaded.

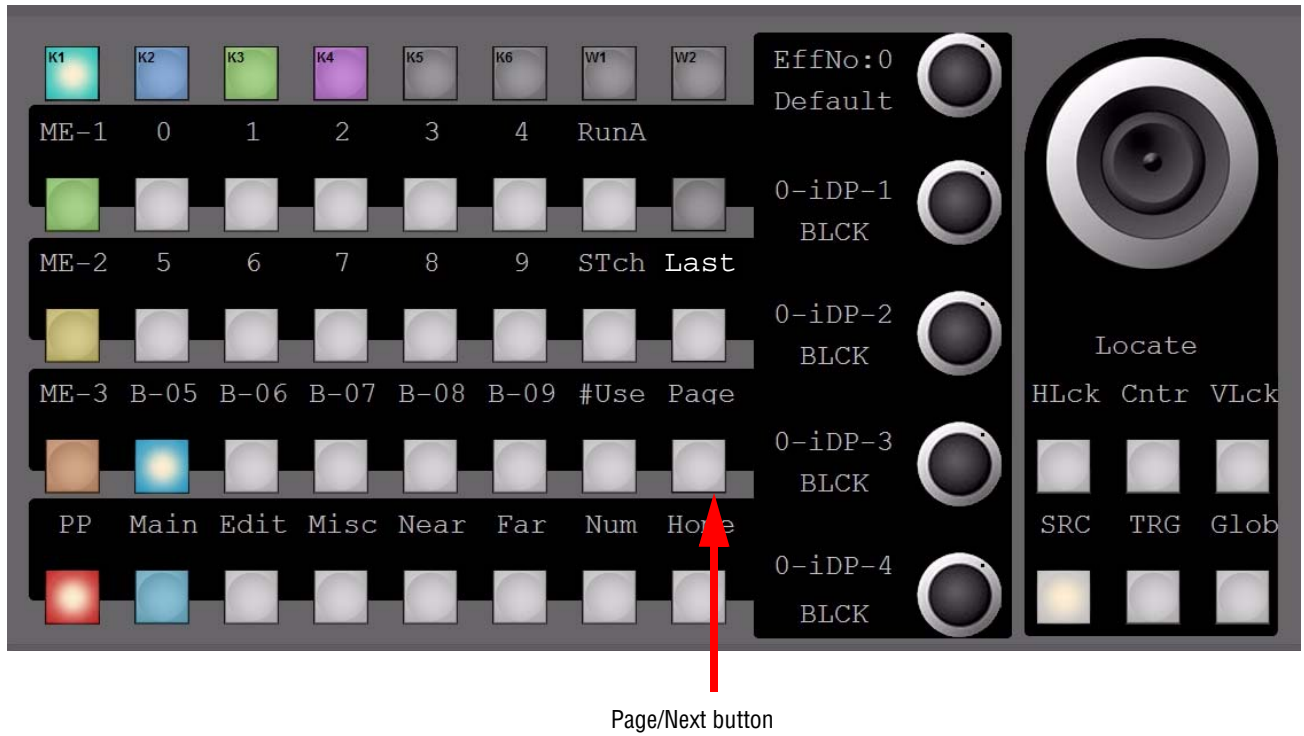
Figure 136. Multi Function - DPM First Page



Page/Next button



Figure 137. Multi Function - DPM 2nd Page



All effects are empty in Bank 05.

## iDPM (eDPM) Edit - Locate Menu

Figure 138. Multi Function - DPM Edit - Locate Menu



The digipot in the lower right corner in most menus is delegated to the **Size** parameter. Inside "Locate" there are delegations for **Axis** and **Spin** available.

**Note** The lowest button row beneath the Joystick delegates to the control plane for example: **SRC**=Source plane (where "Spin" is available), **TRG**=Target plane (where "Rotate" is available), and Delegation for **Glob**=Global Channel/planes.

## Gang Control

In the iDPM / eDPM edit menu more than one channel can be controlled in parallel (gang control). The buttons **K1** through **K4** reflect the control states of the DPM channels.

- Disabled:  
The channel is not part of the current effect
- White color:  
The channel is part of the current effect but is not under control (of buttons, digipots, or joystick)
- Orange or Yellow:  
The channel is part of the current effect and is under control
- Yellow:  
The channel is part of the current effect and is under control. The parameters of the yellow channel are displayed.

Example:

[Figure 139](#) - All four channels are part of the current effect, channel 1-3 are under control, parameters of channel 3 are displayed.

Figure 139. Example 1

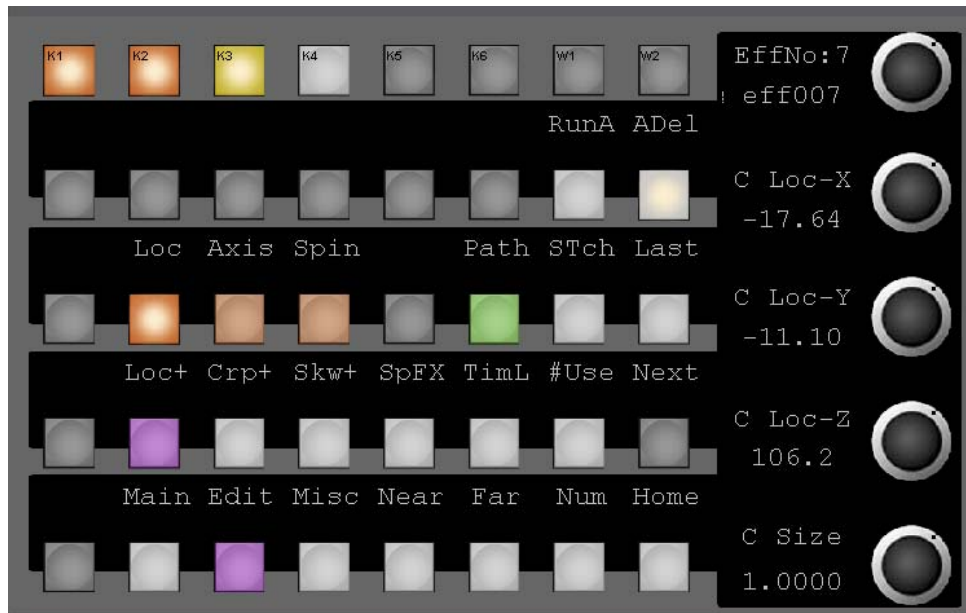
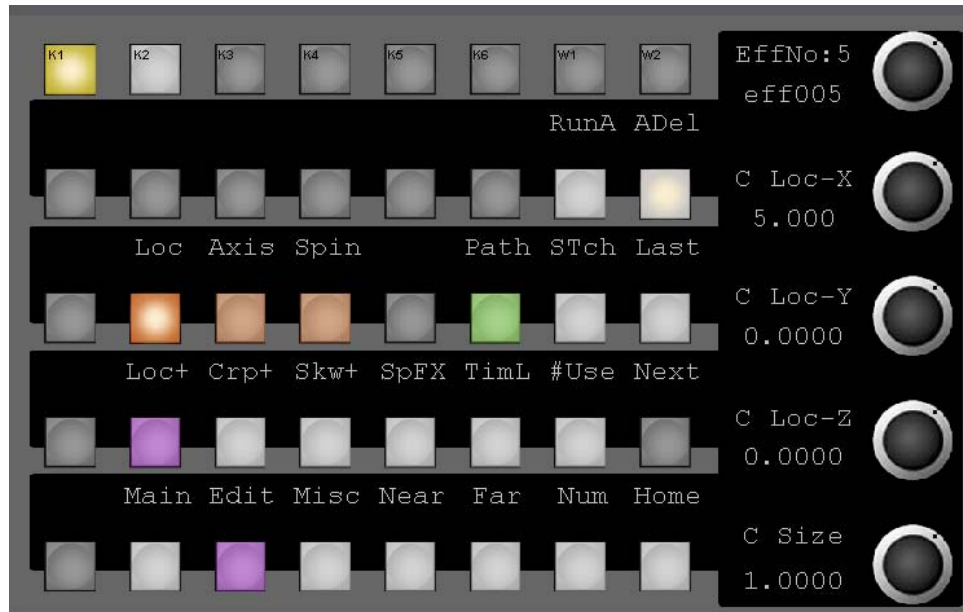


Figure 140 - Only channel 1 and 2 are part of the current effect. Only channel 1 is controlled and its parameters are displayed.

Figure 140.



## iDPM (eDPM) Edit > Crop Menu

Figure 141. Multi Function- DPM Edit - Crop Menu

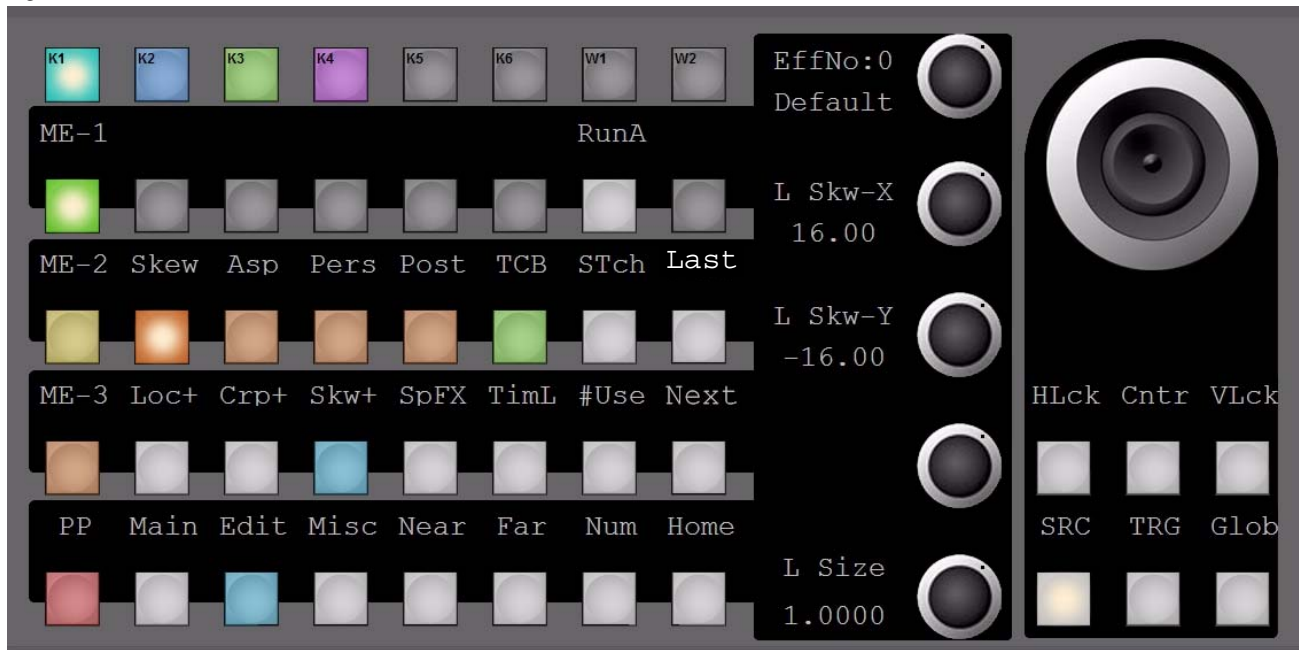


While 4 digipots are controlling their individual crop edges, spinning the Joystick in Z-direction will affect all crop edges simultaneously.

Inside **Crop** there are delegations for **Rev**= H-V Inverts, and **Cube**=Auto-Cube On/Off.

## iDPM (eDPM) Edit - Skew Menu

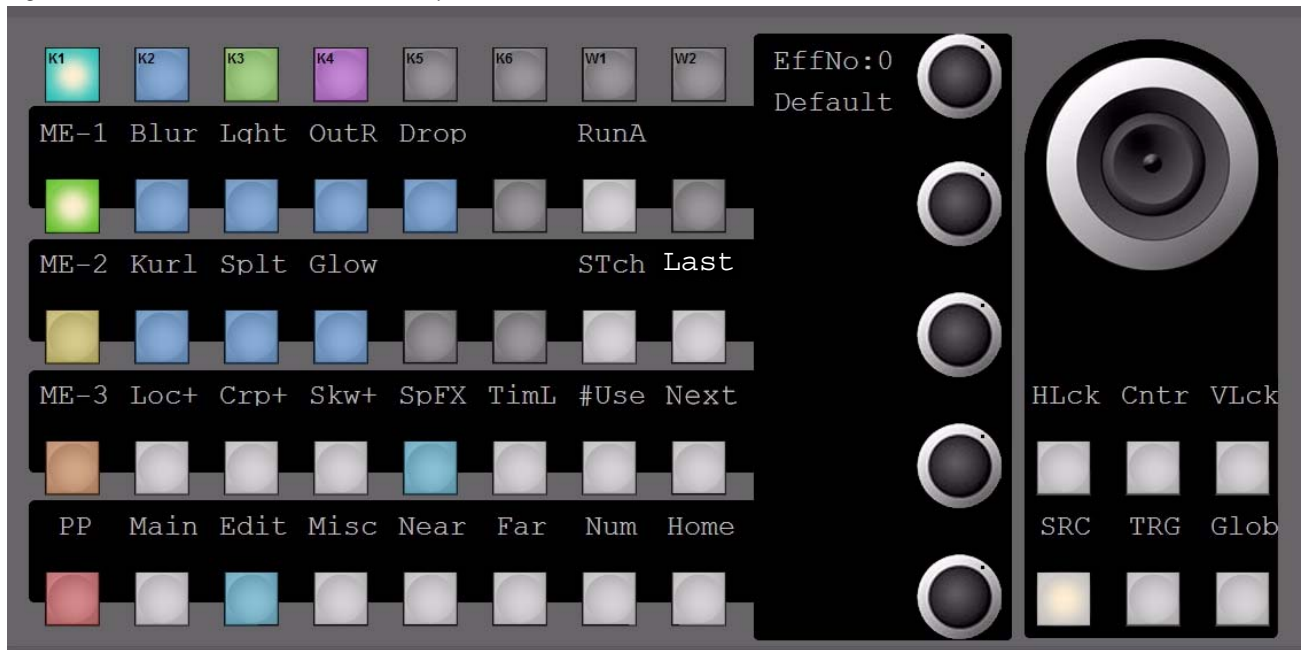
Figure 142. Multi Function - DPM Edit - Skew Menu



Inside **Skew** there are delegations for **Asp**=Aspect, **Pers**=Perspective, and **Post**=Post 3D Transforms.

## iDPM (eDPM) Edit - SpFX Special Effects

Figure 143. Multi Function - DPM Edit - SpFX Menu

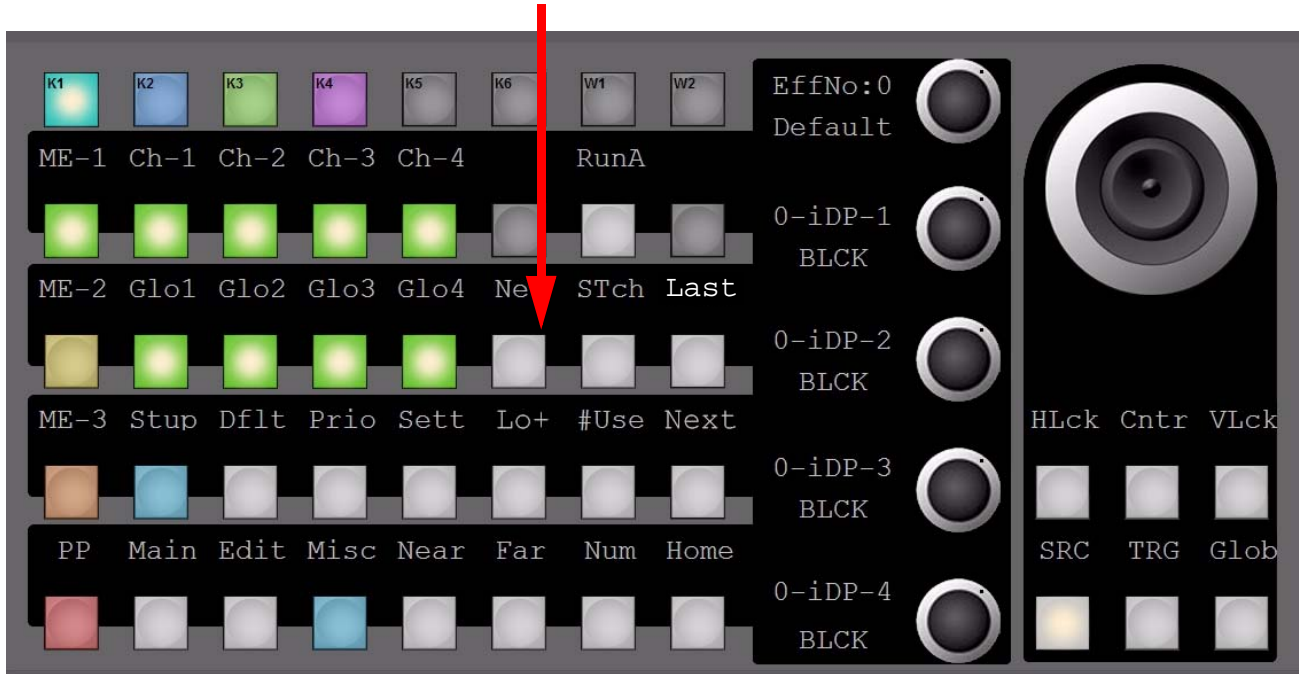


For each DPM channel it can be determined whether a recalled effect is loaded with or without the preprogrammed input crosspoints.

## iDPM (eDPM) Edit - Setup Menu

Figure 144. Multi Function - DPM Edit - Setup Menu

**New** = Create New DPM effect based on channel(s) selection

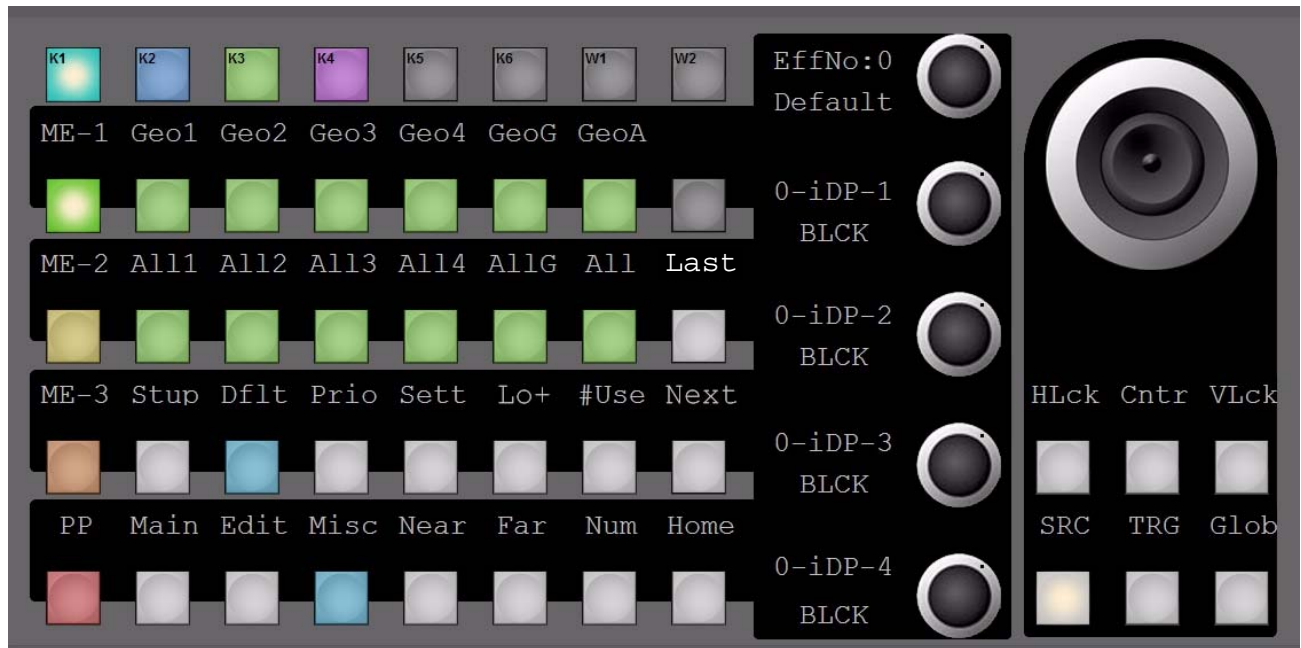


Inside **Setup** it is determined which DPM channel(s) will belong to a newly created clip, and whether Global applies to those channels or not.



## iDPM (eDPM) Edit - Misc - Default Menu

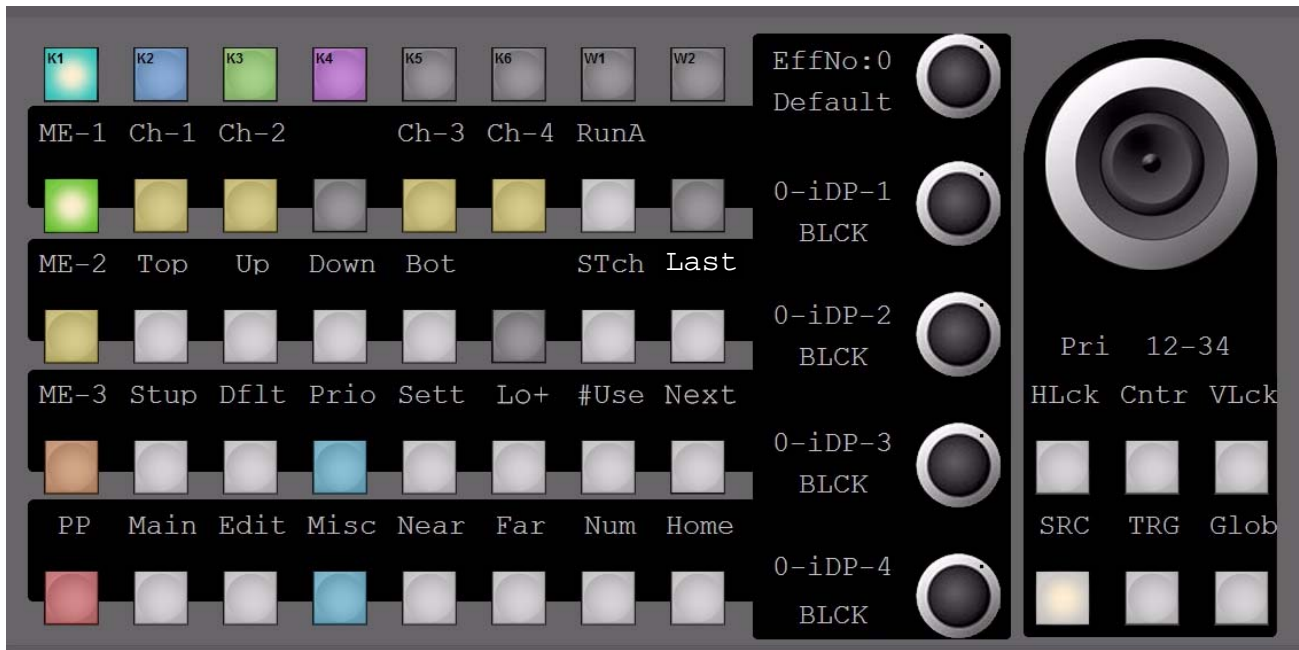
Figure 145. Multi Function - DPM Edit - Misc Default Menu



Inside **Default**, a single or all DPM channel(s) and Global channel can be backed up to their geometric preset only or to all presets.

## iDPM (eDPM) Edit - Misc - Priority Menu

Figure 146. Multi Function - DPM Edit - Misc Priority Menu



When **Priority** is selected, the channel buttons in the top display row are selecting the channel, and the related priority is affected with the row underneath. The display beneath the Joystick indicates the priority status throughout all DPM channels. In this case channels 1 and 2 are together in a Z-Group forced to be below channels 3 and 4 which are also forming a Z-Group, always on top of channel 1 and 2.

Any combination of groups and priorities is possible:

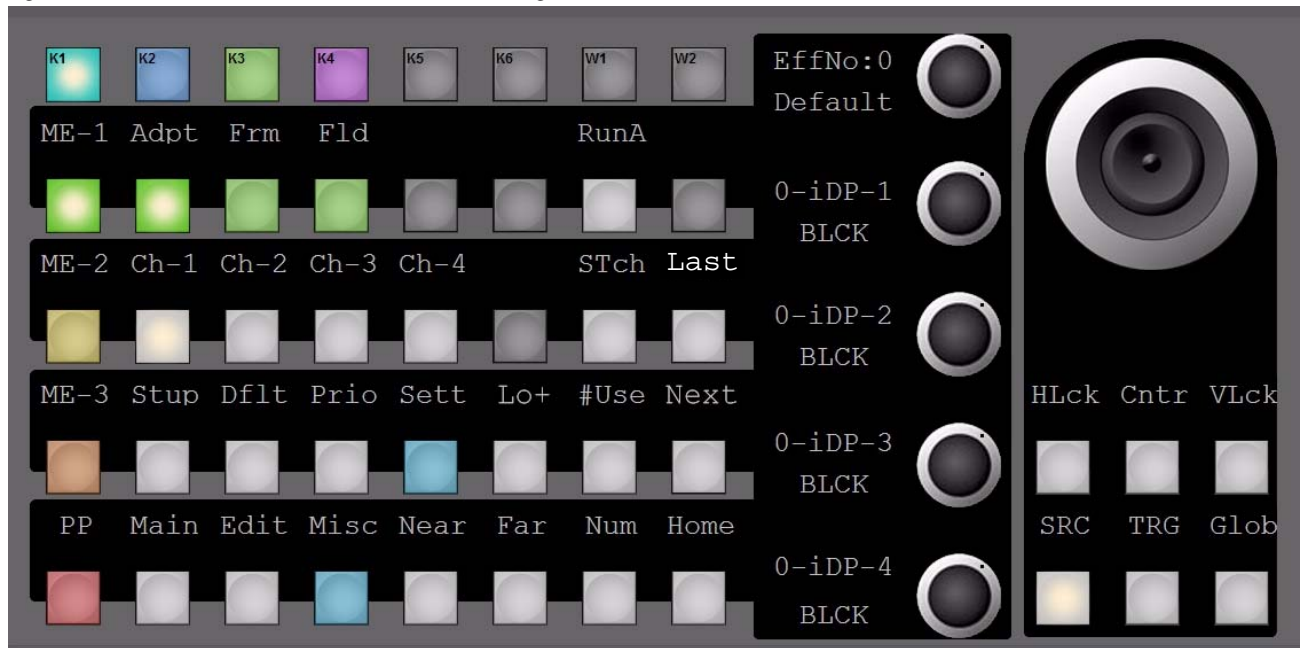
1-2-3-4, 4-3-2-1, 2-3-4-1, 3-4-2-1, 1-3-4-2, 1-4-3-2, 1-4-2-3 , .....etc.

Z-Groups:

13-24 , 14-23 , 12-3-4 , 12-4-3, 1-2-34, 2-1-34, 123-4, 134-2, 42-13, .....etc.

## iDPM (eDPM) Edit - Misc - Settings

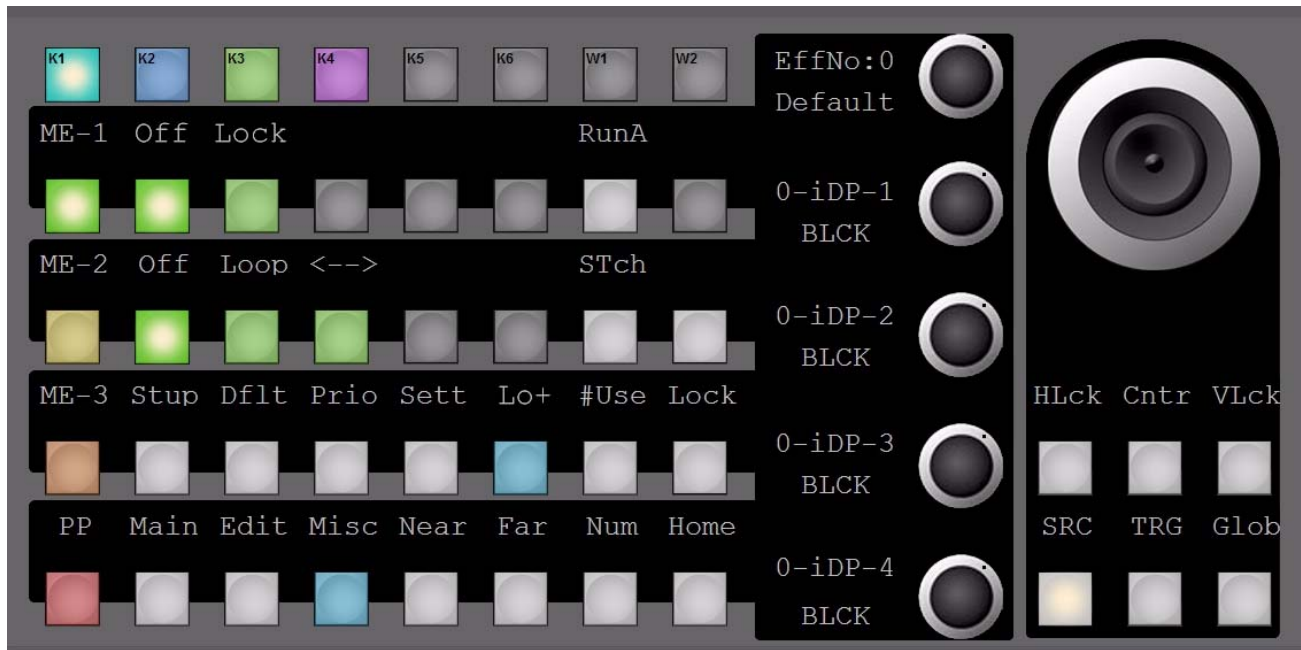
Figure 147. Multi Function - DPM Edit - Misc Settings Menu



In **Settings**, the DPM interpolation mode can be changed per channel between **Adpt**=Adaptive, **Frm**=Frame and **Fld**=Field.

## iDPM (eDPM) Edit - Misc - Load / Lock

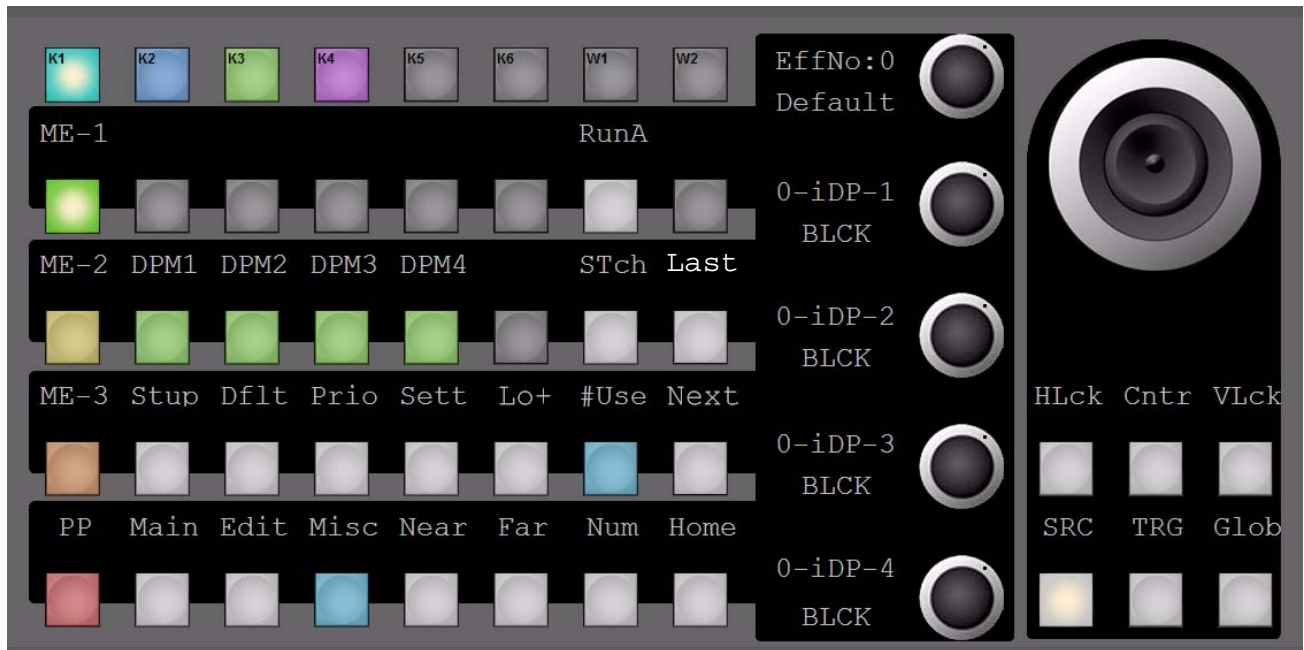
Figure 148. Multi Function - DPM Edit - Misc Load and Lock Menu



When **Lo+** is selected, effects can be write protected using **Lock On/Off**. Also **Loop Off/On** and Bounce <--> is possible here.

## iDPM (eDPM) Edit - Misc - Use DPM Crosspoint

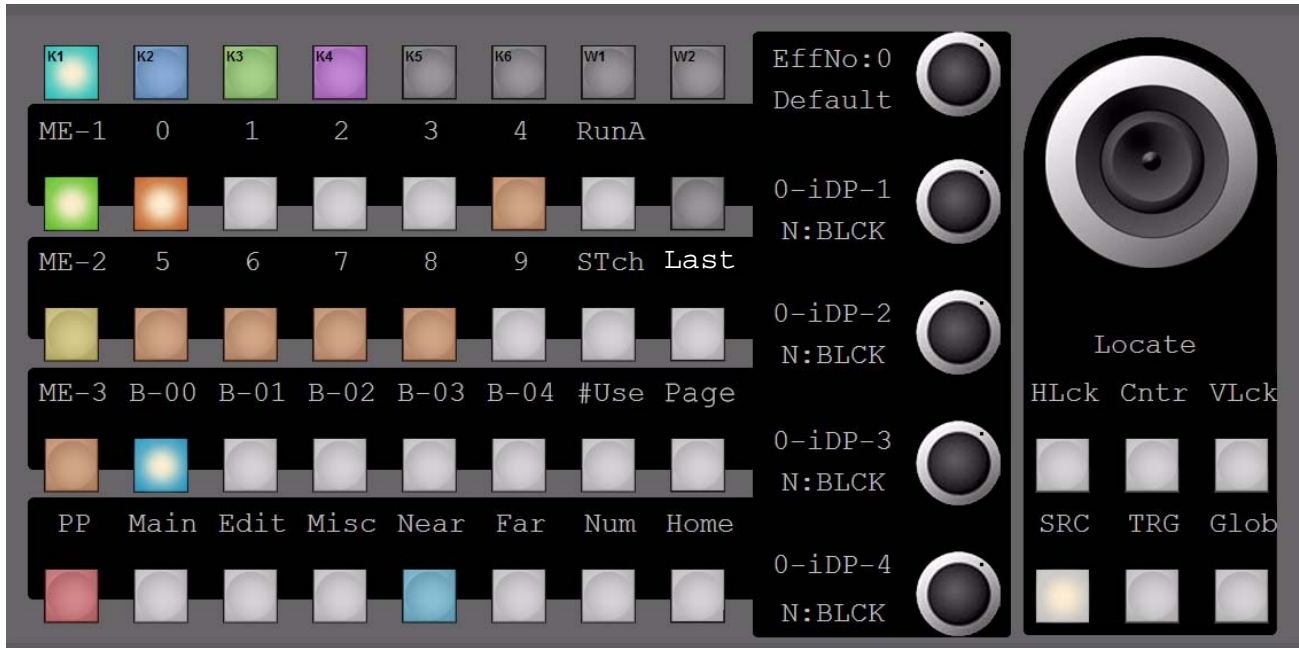
Figure 149. Multi Function - DPM Edit - Misc Use Crosspoints Menu



For each DPM channel it can be determined whether a recalled effect is loaded with or without the preprogrammed input crosspoints.

## iDPM (eDPM) Edit - Near - Input Crosspoint Selection

Figure 150. Multi Function - DPM Edit - Near Input Menu

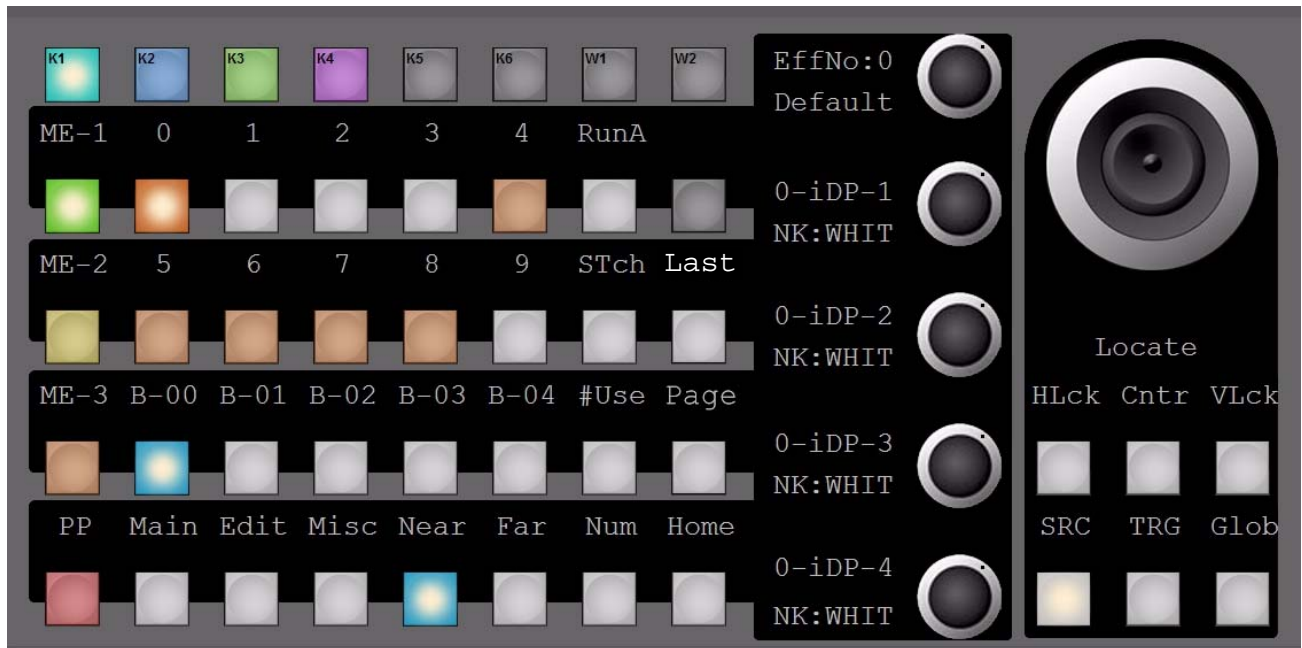


For each DPM channel the input for the **Near** fill signal can be selected with the delegated digipot.

**Note** When function button **Far** is delegated, the input for each DPM channel for **Far** - Fill signal can be selected with the related digipot.

## iDPM (eDPM) Edit - Near/Key - Input Crosspoint Selection

Figure 151. Multi Function - DPM Edit - Near Key Input Menu



While pressing and holding the **Near** button, the input for the near key signal can be selected with the delegated digipot for each DPM channel.

**Note** When function button **Far** is delegated, the input for each DPM channel for **Far** - Key signal can be selected with the related digipot.



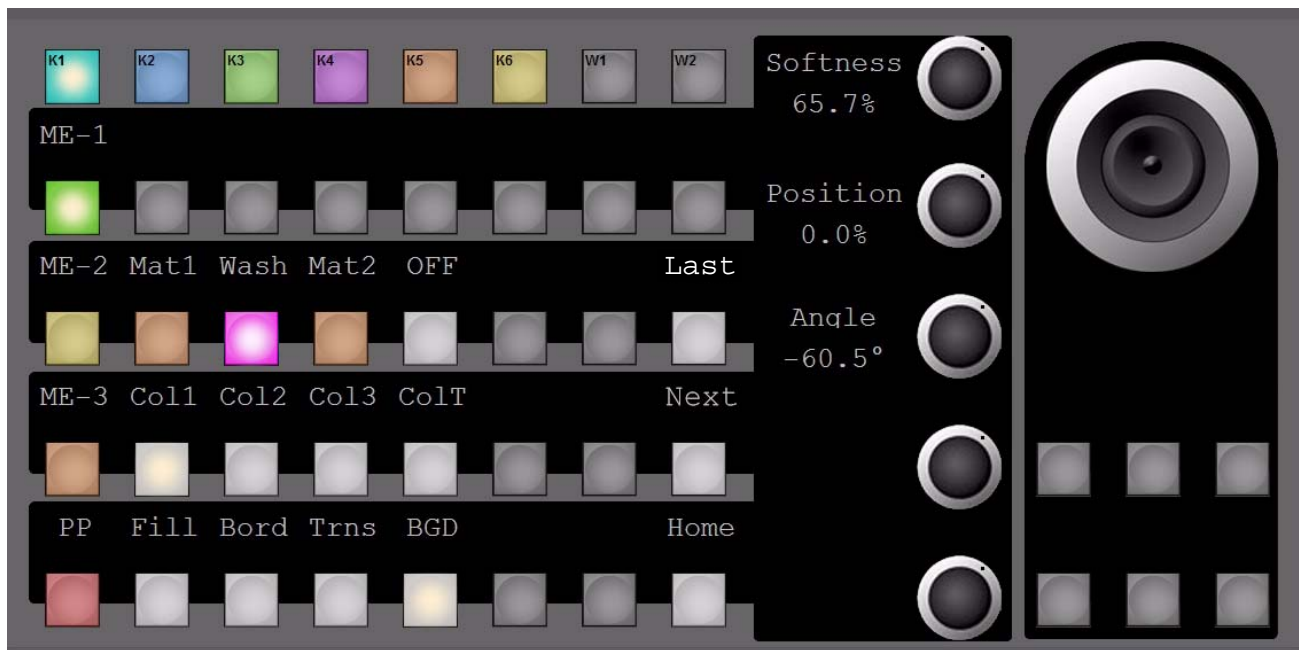
## Wipe and Key Selection

### Home - Matt (Col Mattes) Selection - BGD (Background Color1)

Figure 152. Multi Function - Home Mattes Menu



Figure 153. Multi Function - Background Colors

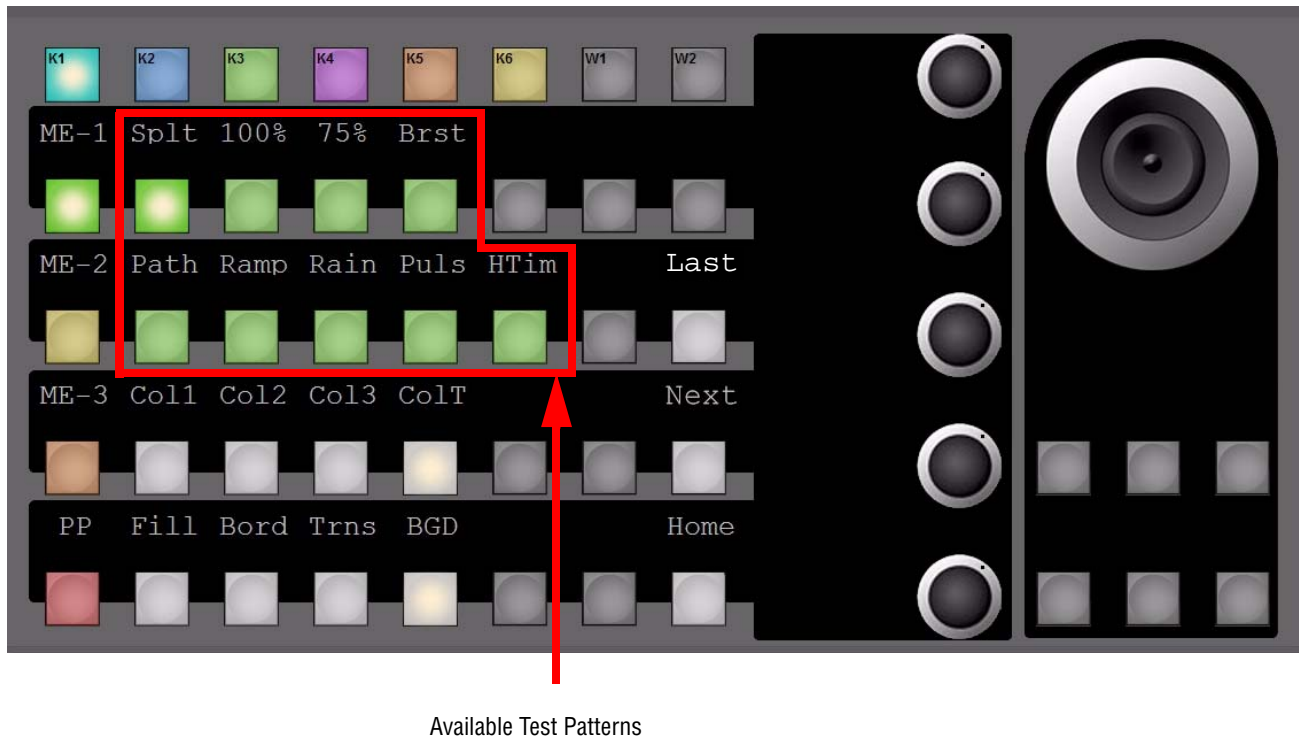




Background Colors 1 - 3 can be in **Wash** mode, allowing changes for Softness, Position and Angle. Selecting either Matte1 or Matte2 the digipots are controlling the parameters for Hue, Saturation and Luminance. When **Wash** mode is turned **Off**, Matte1 and Matte2 are single flat Mattes.

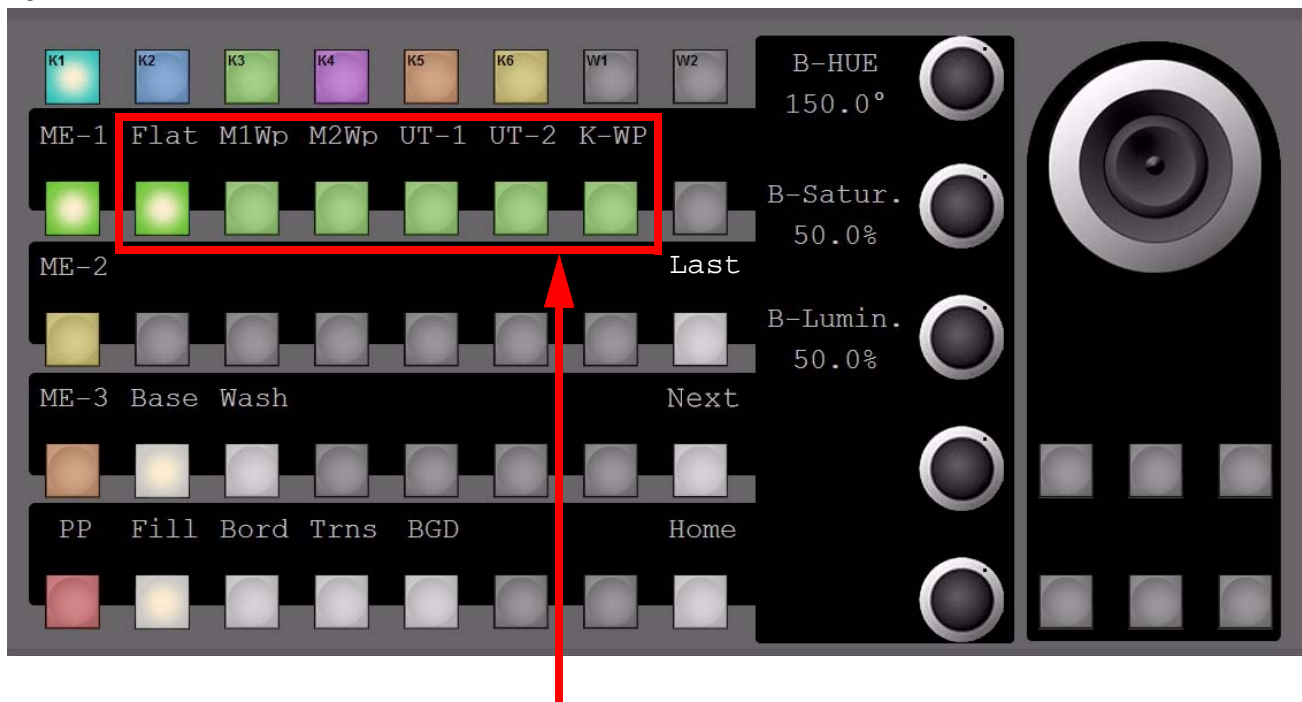
## Matt (Col Mattes) Selection - ColT (Test Signal Gen)

Figure 154. Multi Function - Mattes Test Signals



## Matt (Col Mattes) Selection - Fill (Key Fill Col) Flat

Figure 155. Multi Function - Mattes Selection



Selection for **Flat** Matte and **Wash** tools

While **Base** (-color) or **Wash** (-color) is selected, the digipots on the right are delegated to control the parameters for **Hue**, **Saturation** and **Luminance**.

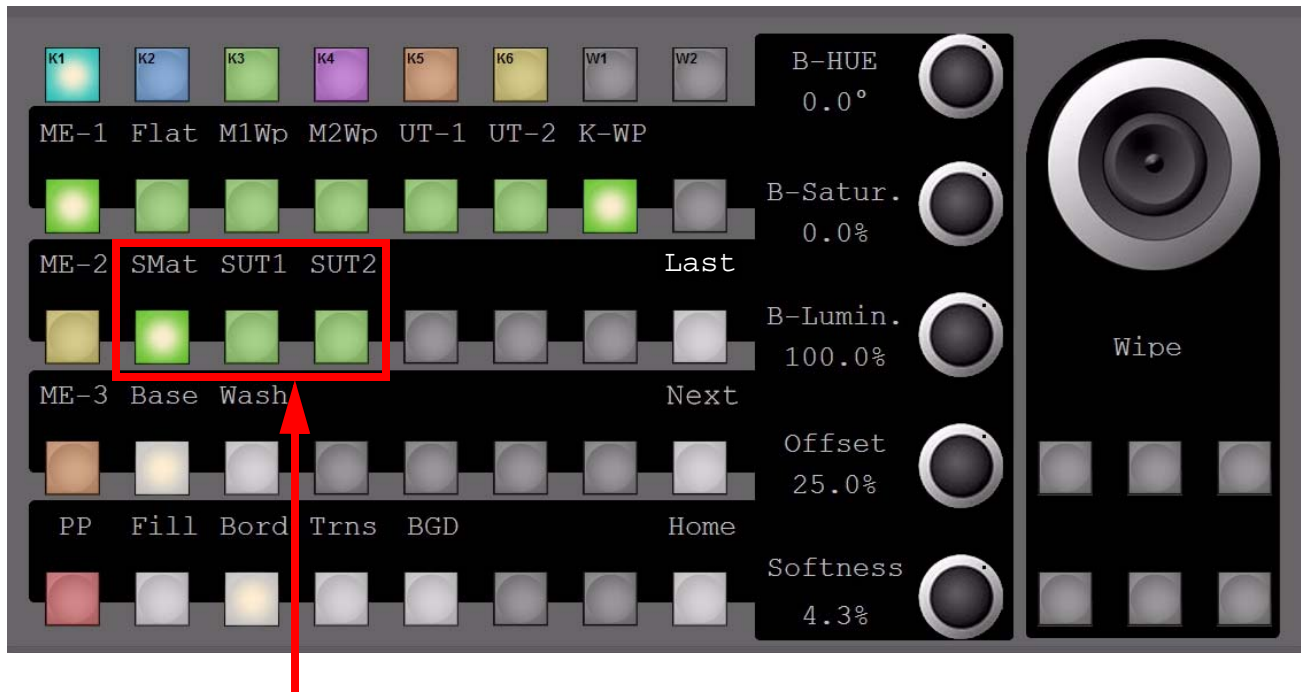
When changing from **Flat** > **M1Wp** or **M1Wp** (Main Wipe1 or 2), the lower 2 digipots are delegated to **Size** and **Softness** controls of the related Wipe.

When **UT-1** or **UT-2** (Utility 1 or 2) is selected, the lower two digipots are delegated to **Clip** and **Gain** controls of the related Utility bus.

Selecting **K-WP** (Key-Wipe) as **Wash** tool will delegate the lower two digipots to the **Offset** and **Softness** controls.

## Matt (Col Mattes) Selection - Bord (Key Border Col) Key Wipe

Figure 156. Multi Function - Mattes Border

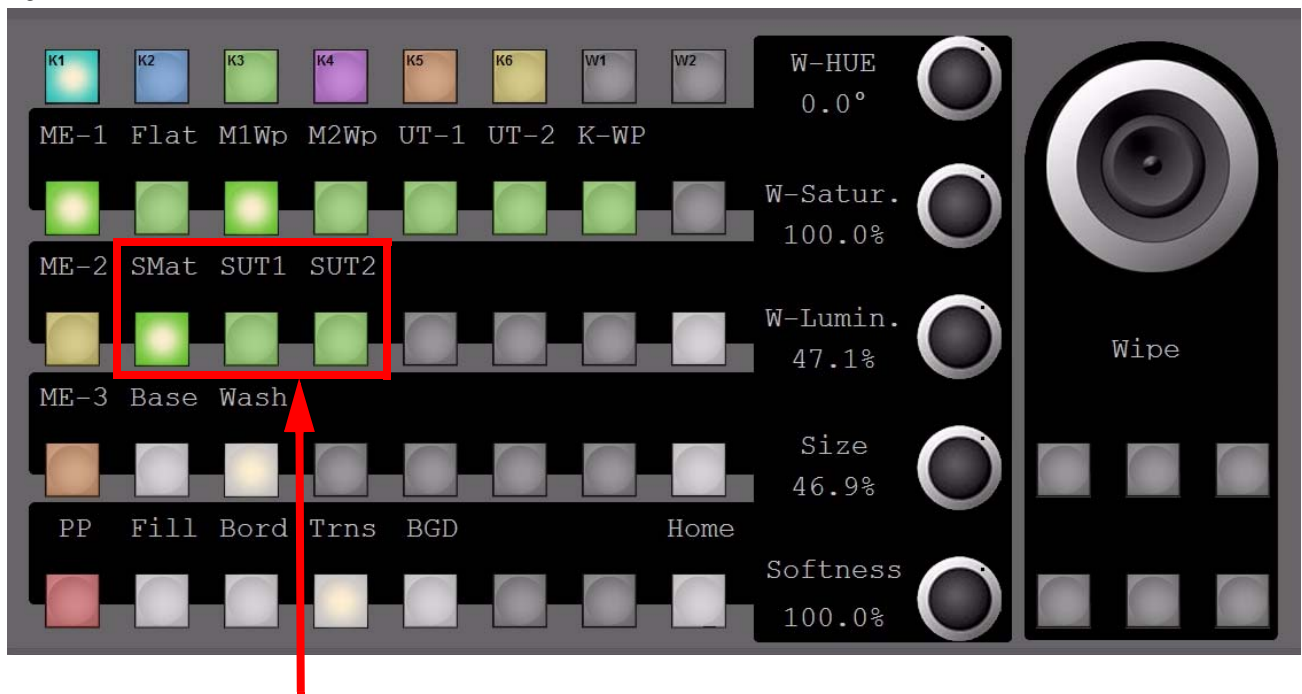


Border Source selection for Matte or Video signal from Utility buses

Selects the Border Fill Source for the **Base** or **Wash** color to be derived from Color Matte (**SMat**) or from Utility bus1 or Utility bus2 (**SUT1** or **SUT2**). > S=Source.

## Matt (Col Mattes) Selection - Trans (Trans Border Col) Main Wipe1

Figure 157. Multi Function - Mattes Border



Border Source selection for Matte or Videosignal from Utility buses

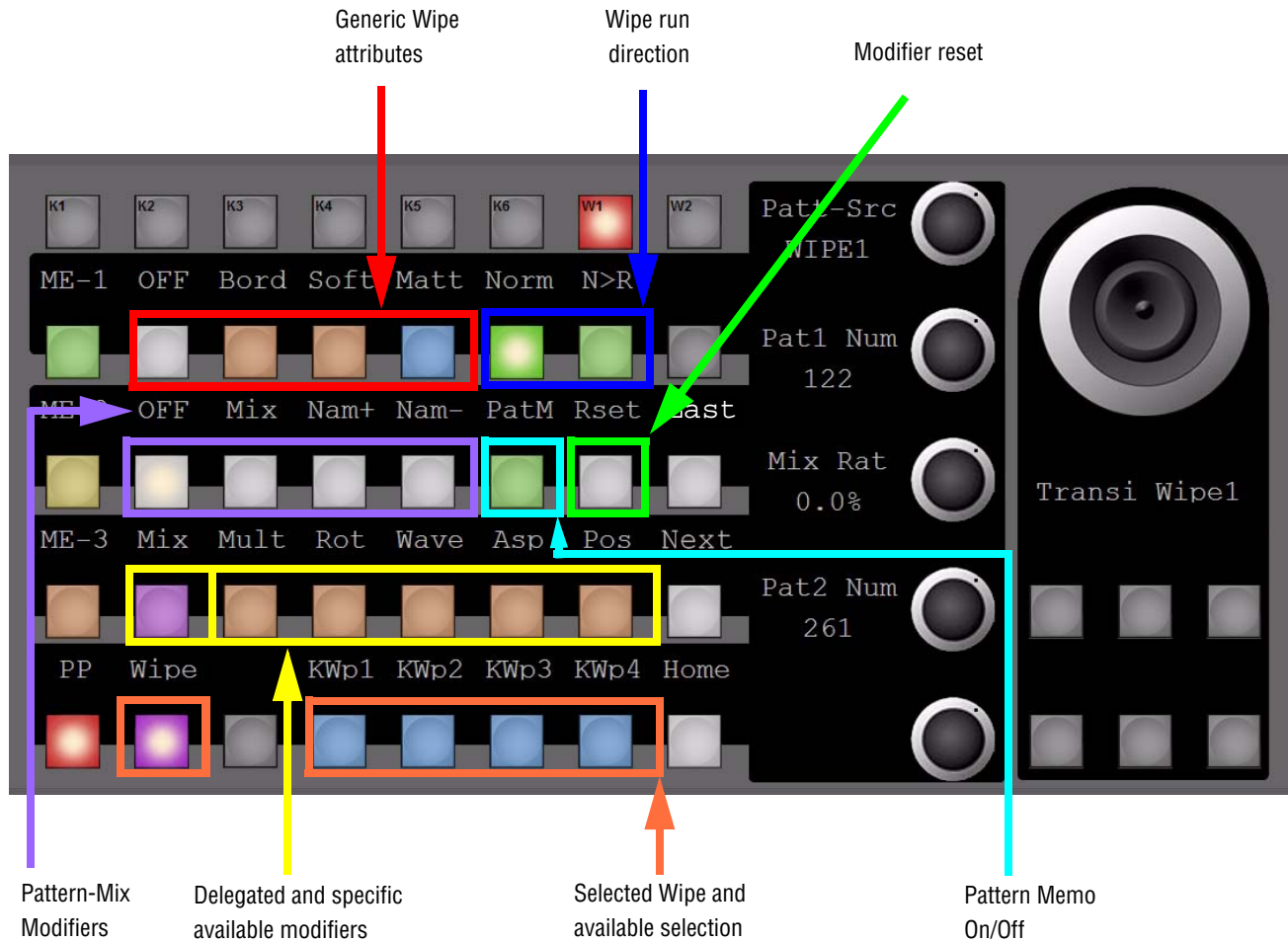
Selecting the Border Fill Source for the **Base** or **Wash** color, to be derived from Color Matte (**SMat**) or from Utility-bus1 or Utility-bus2 (**SUT1 or SUT2**).

S = Source

UT = Utility

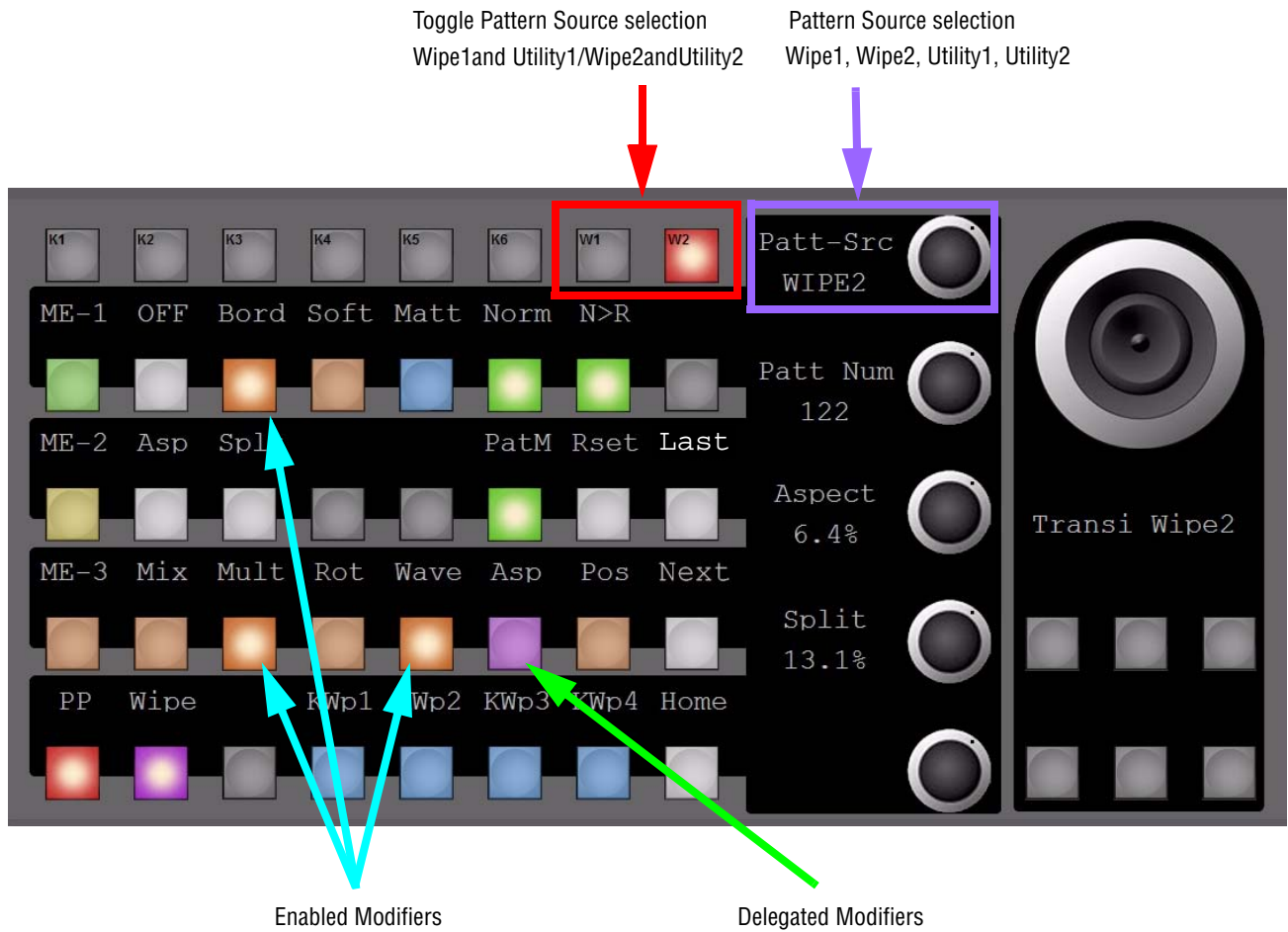
## Wipe Sel - Wipe Source = Main Wipe1, Mix = Delegated

Figure 158. Multi Function - Wipe Selection



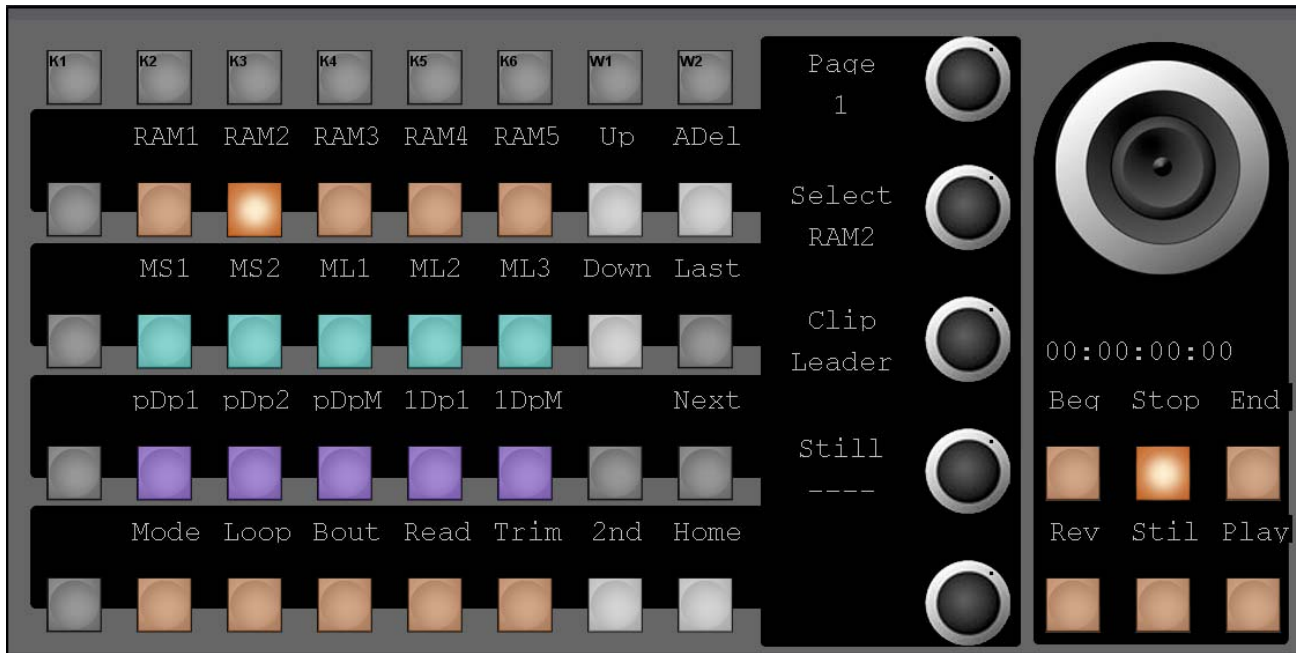
## Wipe Sel - Wipe Source = Main Wipe2, Misc. Modifiers

Figure 159. Multi Function - Wipe Selection



## Media Players (MPs)

Figure 160. Media Player Delegation



This subdelegation consists of 4 pages of 15 devices each. Which page you are on is displayed and controlled with the top digipot. Alternatively you can step through the pages with the **Up** and **Down** buttons

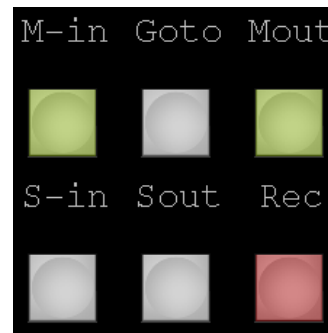
The **2nd** button toggles between the tape motion commands

- **Beg** go to begin
- **Stop** stop
- **End** go to end
- **Rev** play reverse
- **Stil** still
- **Play** play

and as second page



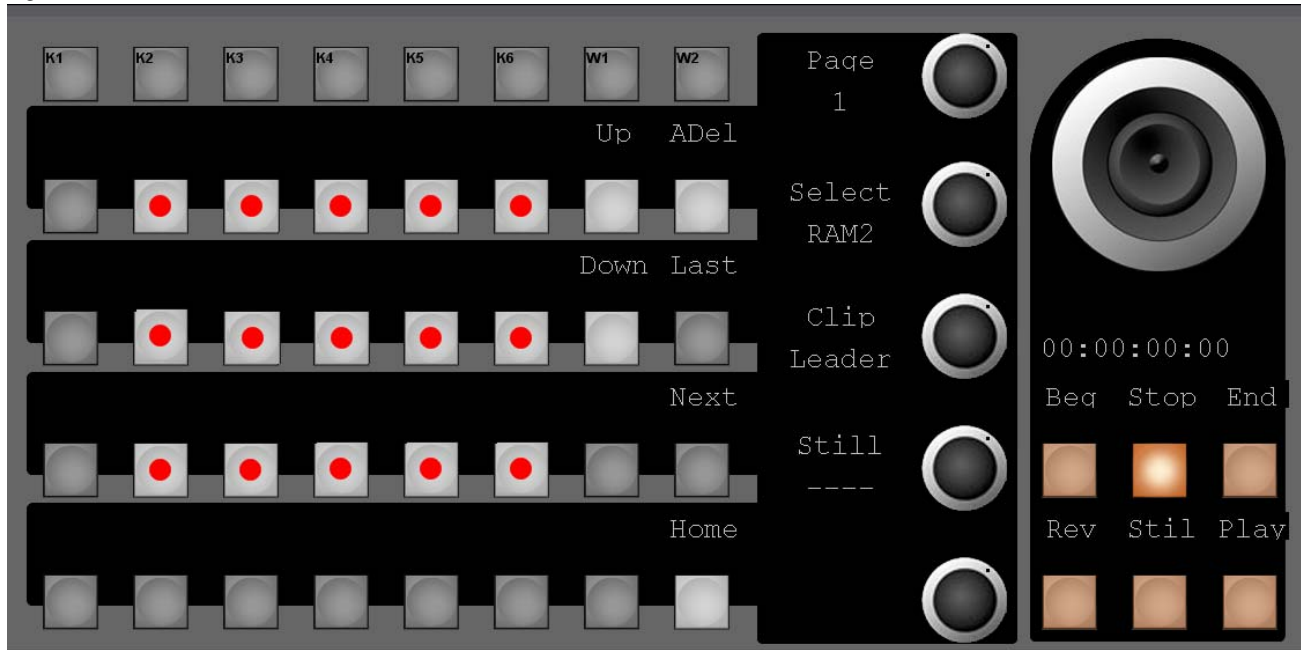
Figure 161. 2nd Level Buttons



- **M-In** go to Mark In
- **Goto** go to timecode
- **Mout** go to Mark Out
- **S-In** set Mark In
- **Sout** set Mark Out
- **Rec** record

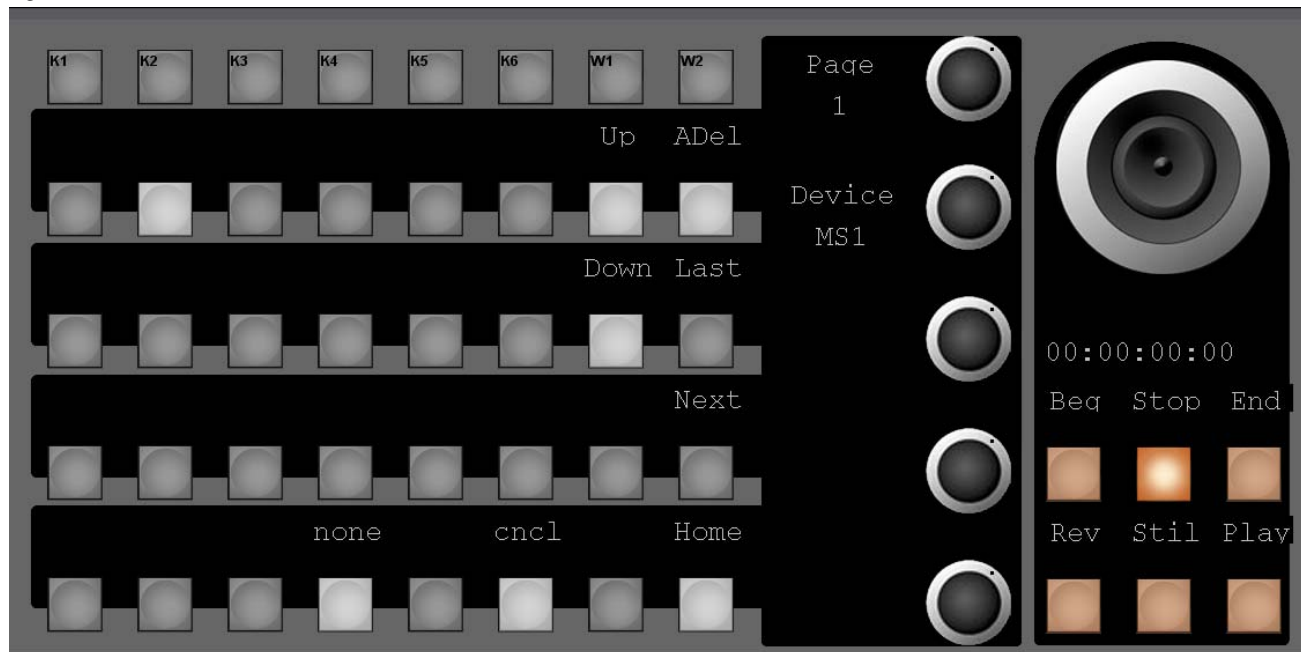
## Machine Selection

Figure 162. Machine Selection



To assign a device to a certain device selection button, press and hold one of the device selection buttons (marked with red dots).

Figure 163. Machine Selection



Turn **Device** digipot to select available devices. Confirm selection by pressing the digipot.

- **none** - Delete current assignment.
- **cncl** - Cancel current dialog.

Depending on the type of the selected machine the digipots and the bottom row offers a choice of options.

### Options for the Ram Recorder

Digipots:

- **Clip** - select a clip
- **Still** - select a still

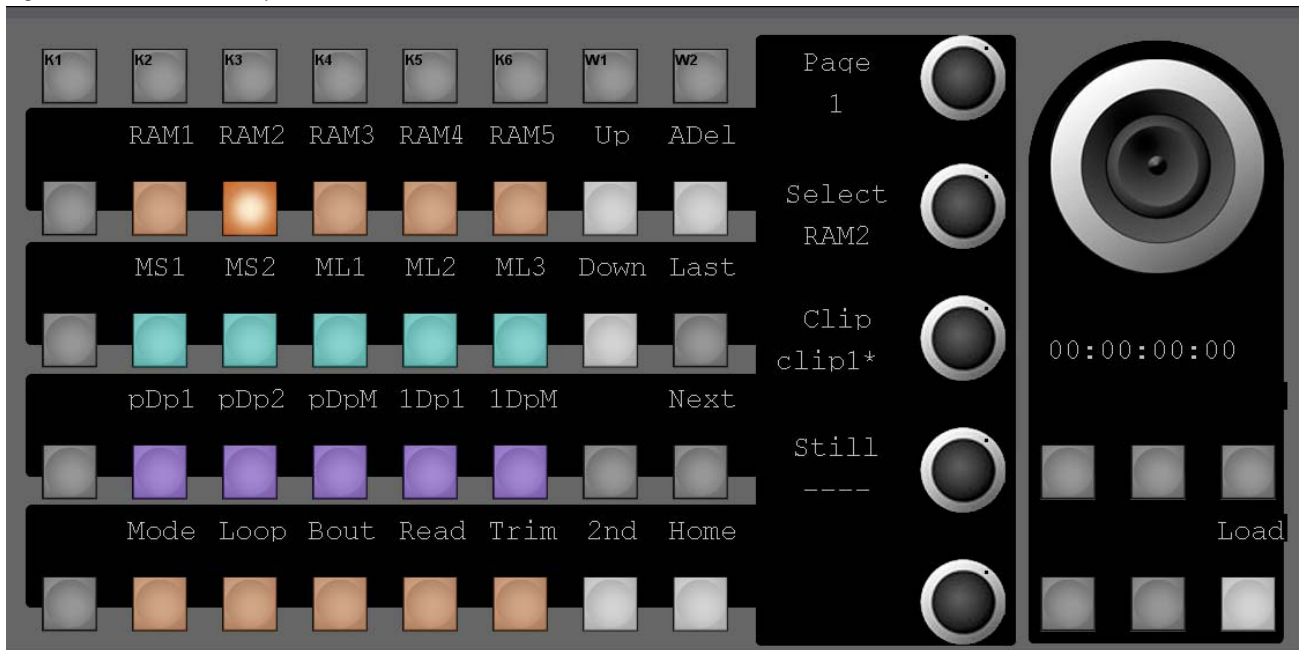
Bottom Row:

- **Mode** - play mode and record mode
- **Loop** - Loop on off bounce
- **Bout** - Breakout type for loops
- **Read** - readout for play and still mode
- **Trim** trim outside or inside of **Mark In / Mark Out**

**Note** Press the selected button (like **Mode**) again to return to normal operation mode.

## Ram Recorder - Selecting a Clip or a Still

Figure 164. RAM LoadClip



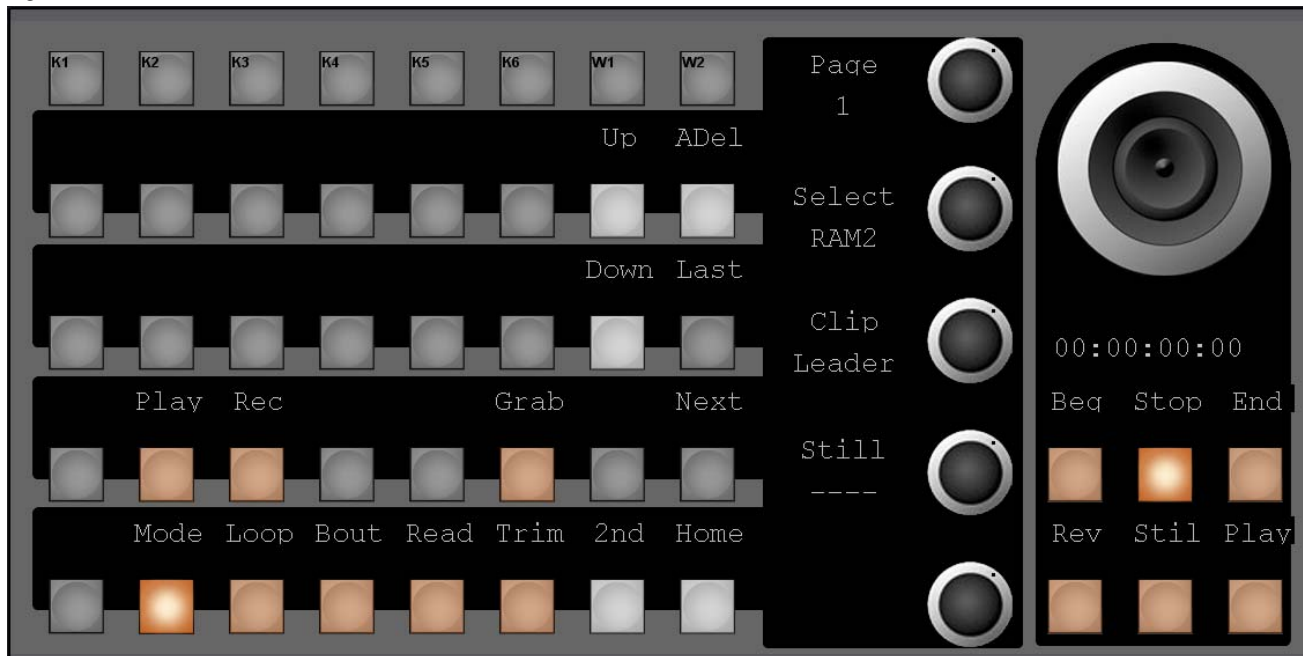
Turn the according digipot to scroll through the list of available clips/stills

Press **Load** to load the selected clip/still or press the digipot to cancel the action.

Since a Ramrecorder channel can only hold a clip or a still at a time, one of the two displays always will read "----"

## Ram Recorder - Mode (Play Mode / Record Mode)

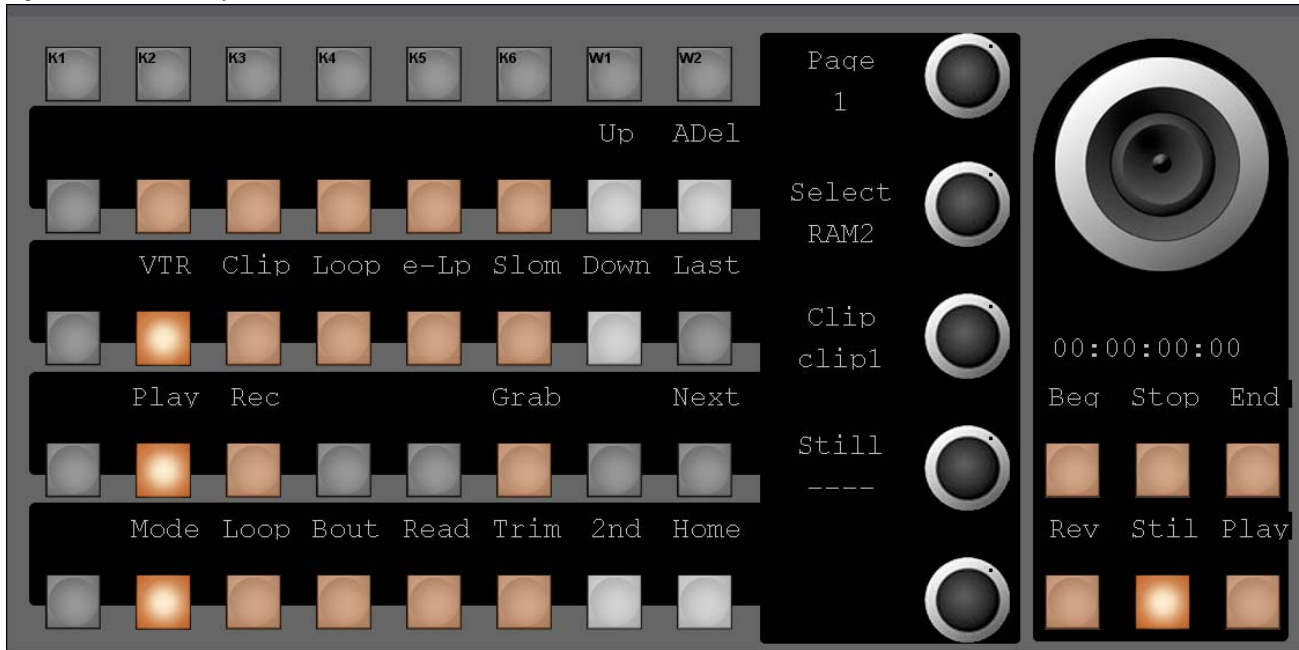
Figure 165. RAM Mode



When you press **Mode** a subselection of **Play** (play modes), **Rec** (record modes) and a **Grab** button is available.

## Ram Recorder - Play Mode

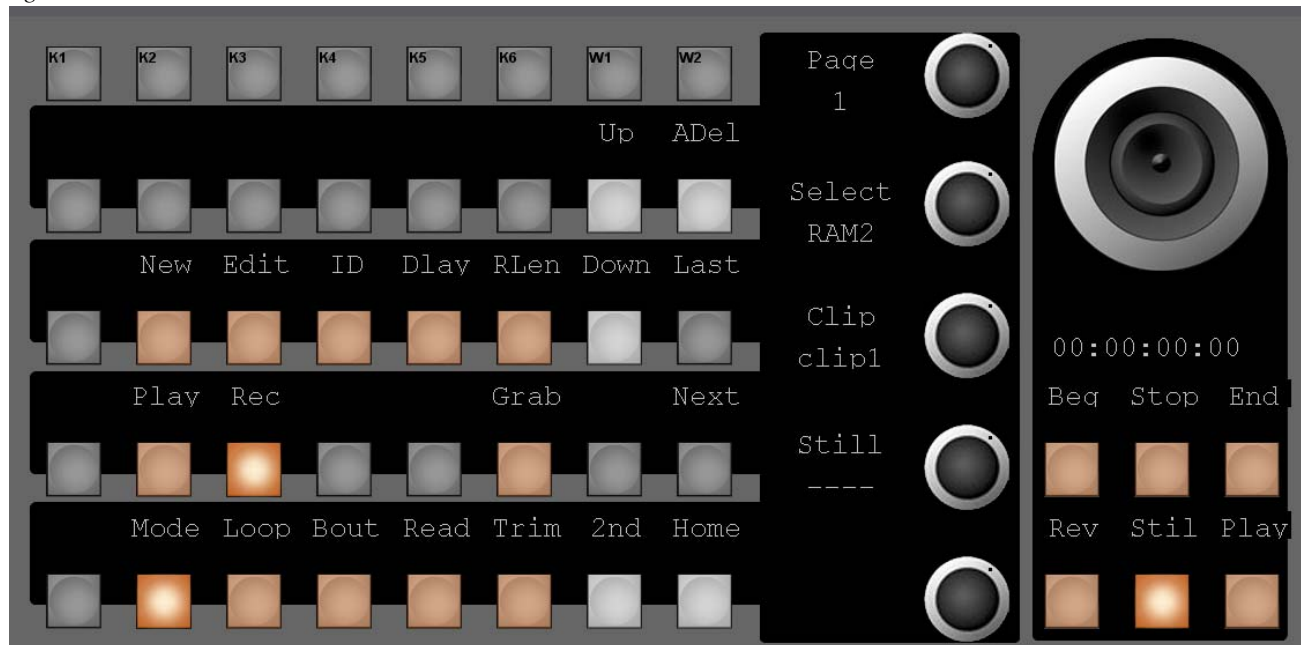
Figure 166. RAM Play Mode



- **VTR** (VTR Mode)  
Plays clip from begin to end.
- **Clip** (Clip Mode)  
Plays clip always from **Mark In** to **Mark Out**, n times (n = loop count, default = 1).
- **Loop** (Simple Loop Mode) - Like Clip Mode, but starts at the current position (no jump back to **Mark In** at a play command).
- **eLp** (Extended Loop Mode)  
Like Simple Loop Mode, but allows an "After Play" (after Mark Out when finished the n loops).
- **Slom** (Live Slomo Mode)  
Not yet implemented.

## Ram Recorder - Record Mode

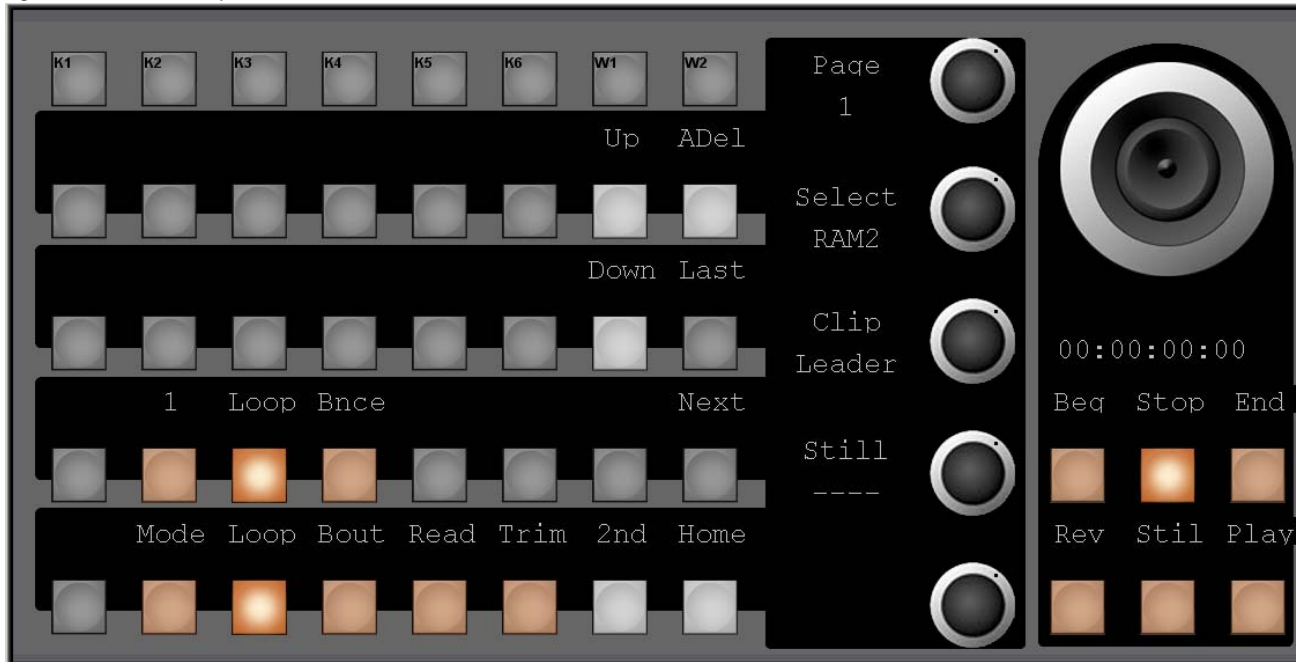
Figure 167. RAM Record Mode



- **New** (New Record)  
Records a new clip on the next free position.
- **Edit** (Edit Record)  
Starts recording at the current position of the current clip. This allows to expand an already recorded clip.
- **ID** (Record ID)  
Starts recording a new clip at a defined position.
- **Dlay** (Delay Line)  
Starts an endless recording loop (length is Record Length) and plays out with the according delay.
- **RLen** (Record Length)  
Set the record length, used for clip recording, delay line and as After Play time in play mode Extended Loop.

## Ram Recorder - Loop

Figure 168. RAM Loop

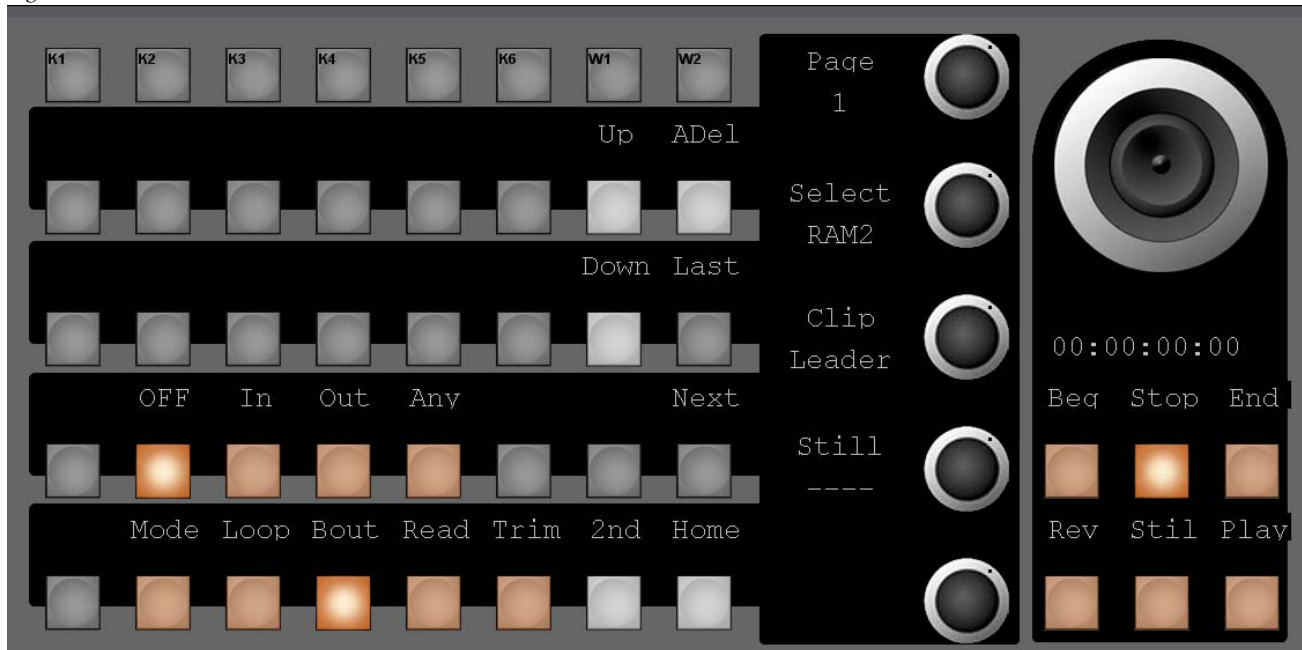


- **1** (number of loops)  
Set the number of loops for Clip Mode, Simple Loop Mode, and Extended Loop Mode. For an endless loop enter 0.
- **Loop / Bnce** (Bounce)  
Select either Loop (play always in forward direction with jump from end to begin) or Bounce (play forward and reverse).



## Ram Recorder - Bout (Break Out)

Figure 169. RAM Break Out

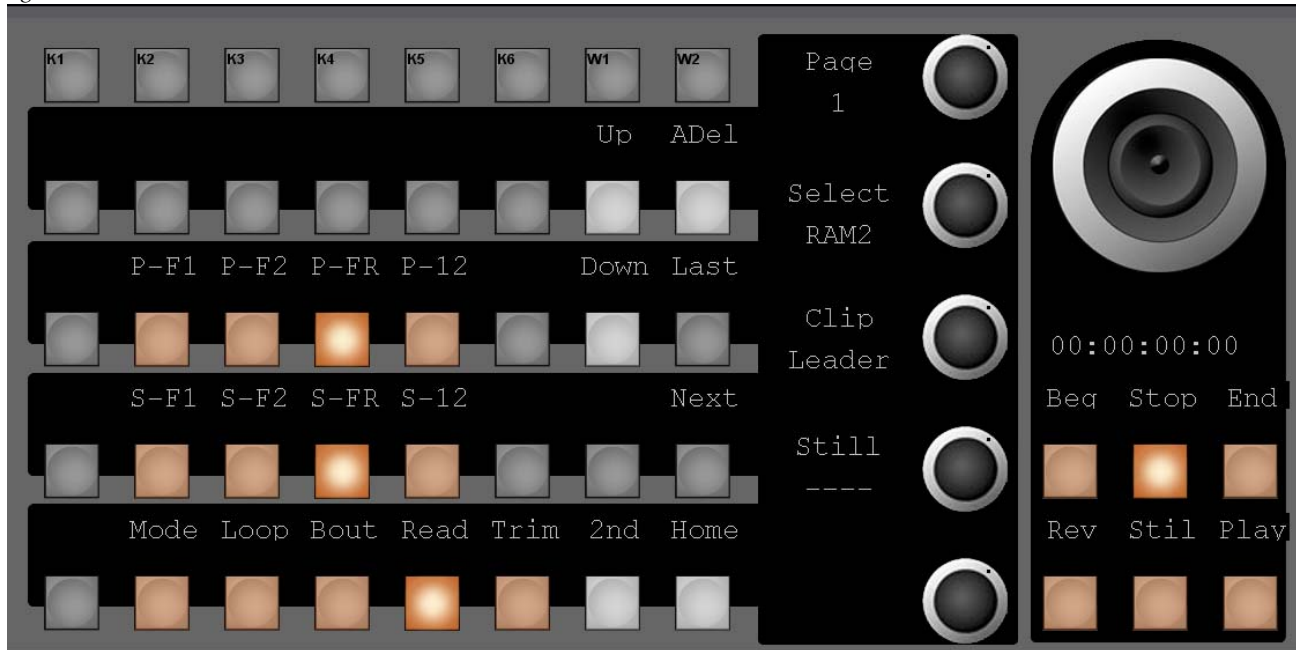


Break out commands are used to end an endless loop or a loop before it has reached its defined number of counts.

- **OFF** (no break)  
No break out command will be accepted.
- **In** (break at Mark In)  
After a break out command is received the loop will be left during reverse play and will play the part of the clip before Mark In.
- **Out** (break at Mark Out)  
After a break out command is received the loop will be left during forward play and will play the part of the clip After Mark Out.
- **Any** (break at Mark In or Out)  
The loop will be left at the next possible Mark.

## Ram Recorder - Read (Read out)

Figure 170. RAM Read Out



- **P-F1** (Play Field 1)  
Set the Readout Mode for Play to Field 1 creating kind of "filmlook".
- **P-F2** (Play Field 2) same as **P-F1** but with Field 2.
- **P-FR** (Play Frame)  
Set the Readout Mode for Play to Frame (standard mode).
- **P-12** (Play Field 1/2)  
Set the Readout Mode for Play to Field 1/2.

This mode can be used when you want to swap the field order in a frame (either because it was faulty recorded or by purpose):

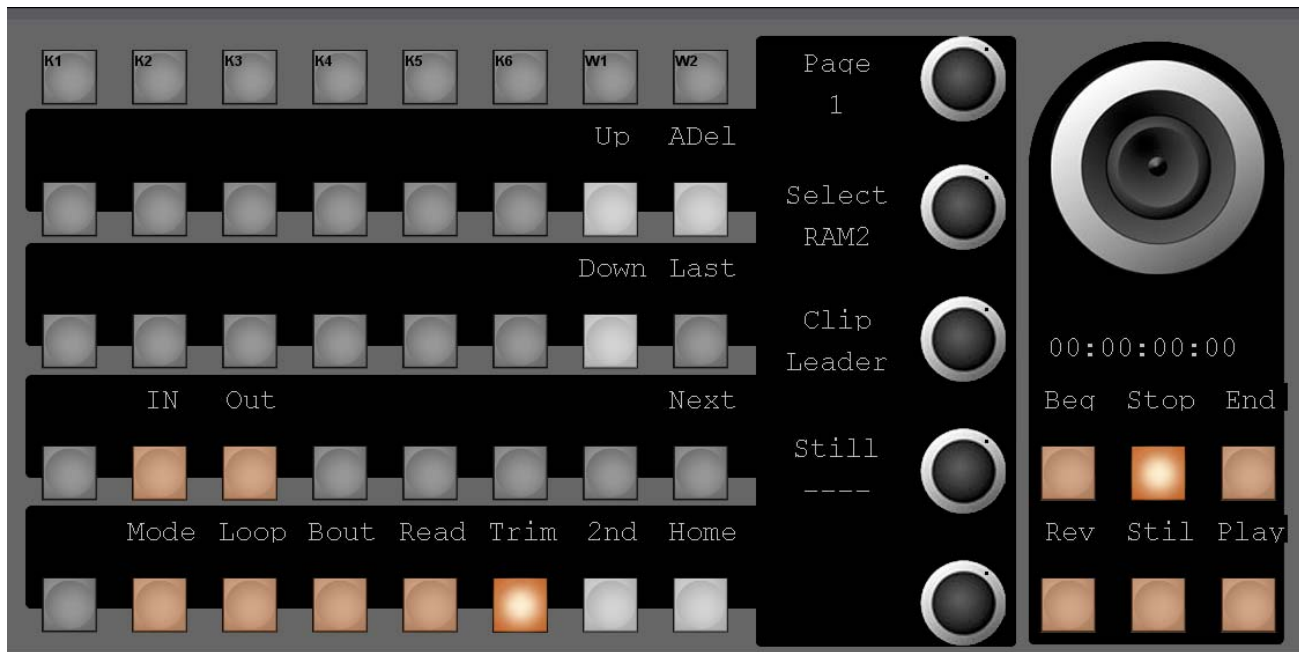
- Set still readout to S-F12, step to field 2 and start to play.
- Now your play out field order will be field 2 / field 1 per frame.

Another use of **P-12** is when you control the Ram Recorder with your fader (define a Mark In and a Mark Out, assigned the ramrecorder channel to a Misc component in the ME menu). With **P-12** the transition under fader control will look smoother than with frame read out.

- **S-F1** (Still Field 1)  
Set the Readout Mode for Still to Field 1. A single step command will advance by frame but always read out field 1.
- **S-F2** (Still Field 2) same as **S-F1** but with field 2.
- **S-FR** (Still Frame) set the Readout Mode for Still to Frame (chance of motion jitter).
- **S-12** (Still Field 1) set the Readout Mode for Still to Field 1/2. A single step command will advance by field.

## Ram Recorder - Trim (Trim Clip)

Figure 171. RAM Trim Clip

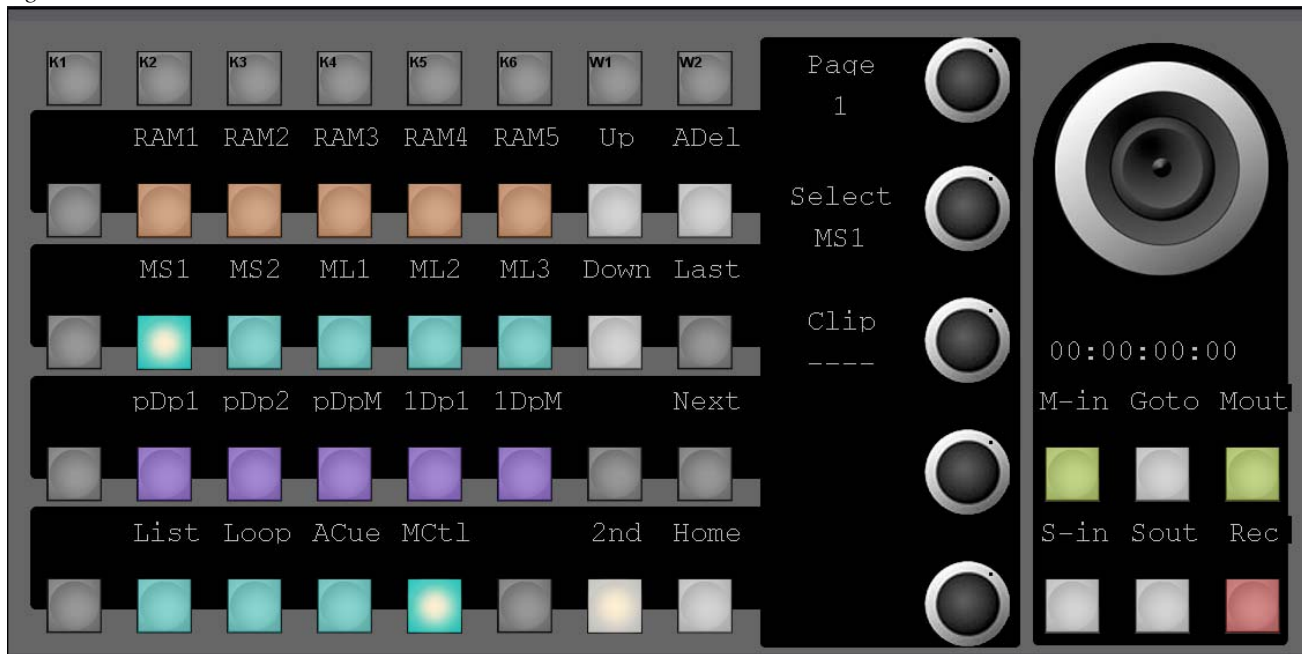


- **IN** (Trim inner part) All frames between Mark In and Mark Out will be deleted. The part before Mark In and after Mark Out will be joined.
- **OUT** (Trim outer part) All frames before Mark In and after Mark Out will be deleted.

**Note** Only the video track will be trimmed. Audio will stay in its original length. To play only the video part, play mode Clip should be used which will only play the part between Mark In and Mark Out.

## External Machines

Figure 172. External machines1



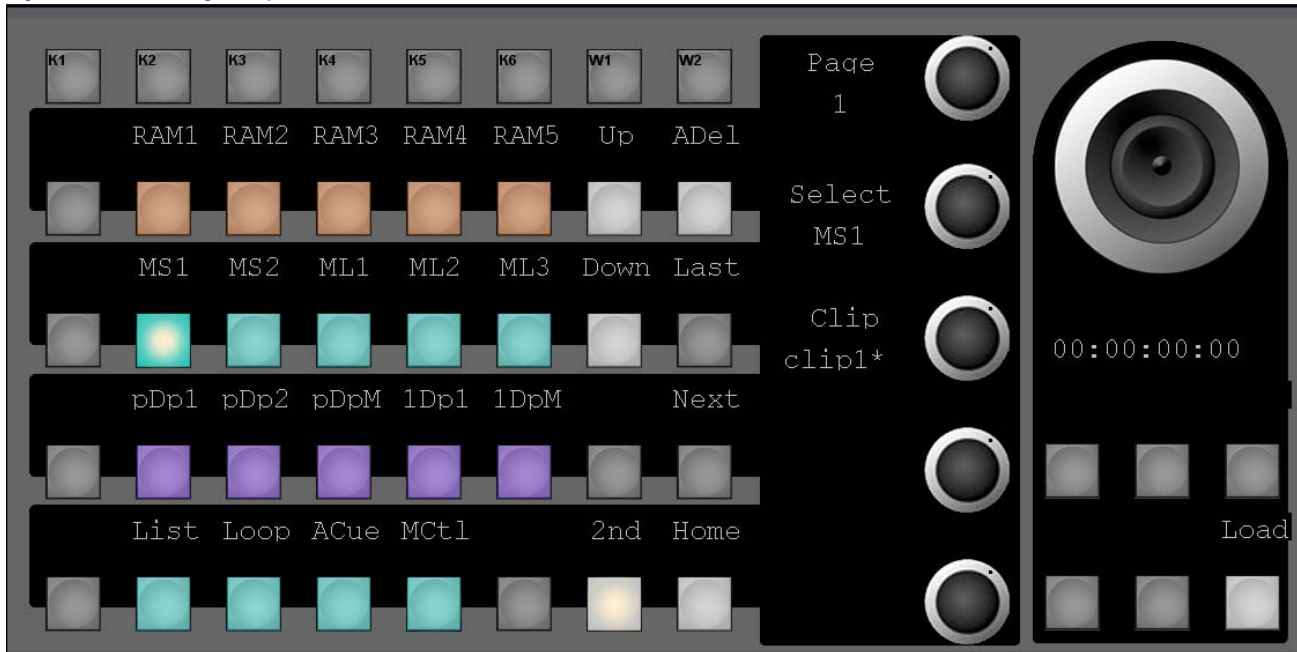
The Kayenne XL Package supports control of up to 4 external machines (e.g. disk server, betacams etc.) via a serial connection (RS422) and in addition the control of up to 32 external Servers over LAN (AMP protocol using TCP/IP).

Before an external machine becomes available in the device assignment section of the module, it has to be selected in the installation menu of the Kayenne XL menu. For serially controlled machines, a port and a protocol have to be selected. For machines which are controlled via LAN, the IP address and the desired video channel have to be selected. In addition a protocol has to be chosen (currently only the AMP protocol is available for LAN controlled devices).

Serially controlled machines are indicated with **MS1** through **MS4**, LAN controlled machines with **ML1** through **ML32**

## External Machines - Selecting a Clip

Figure 173. Selecting a Clip



- Turn the according digipot to scroll through the list of available clips/stills.
- Press **Load** to load the selected clip/still or press the digipot to cancel the action.

### External Machines - Bottom Row Buttons

- **List**  
Updates cliplist of selected device. This function is mainly used for serially controlled machines. By pressing this button, the names and durations of all clips which are available in the current working folder are transferred to the switcher XL system. This has to be done for instance on system startup or after the working folder has been changed. For devices which are controlled over LAN, the cliplist is updated automatically in most cases (e.g. change of working folder, startup).

**Note** Note: If a new clip has been locally created on an external device, or an existing clip has been deleted, the cliplist has to be updated manually - even on VTRs con-trolled over LAN.

- **Loop**  
Enable or disable Loop Mode for AMP controlled devices.

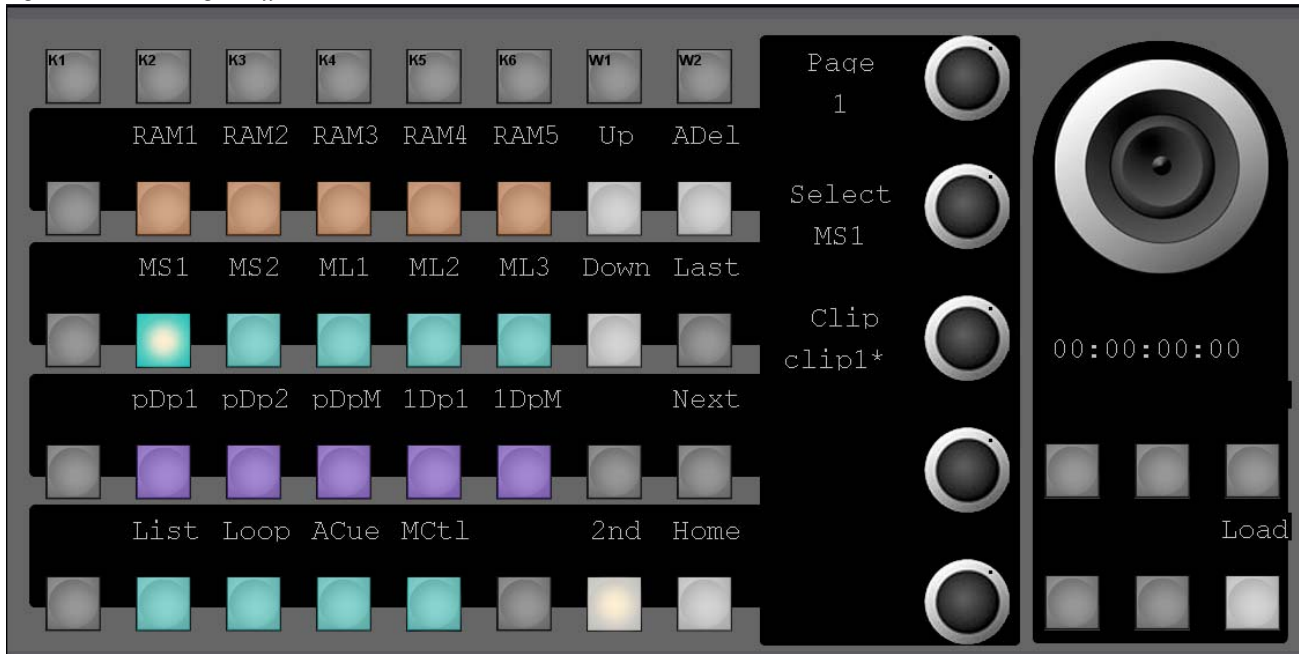
**Note** On serially controlled machines (using the AMP protocol), the current IN and OUT marks are ignored for the loop. In other words, a clip is always played from SOM (start of material) to EOM (end of material) or vice versa. This also applies to LAN controlled machines when the "Mark Control" feature is disabled. If "Mark Control" is enabled (see "MCtl" section for details), the IN and OUT marks are taken into account for the loop.

- **ACue (Autocue)**  
When enabled, a clip is automatically cued to its IN mark after it is loaded by a snapshot or timeline recall.
- **MCtl (Mark Control)**  
This feature is only available for machines which are controlled over LAN. When Mark Control is enabled, the IN and OUT marks stored within the metadata of a clip are controlled directly. In other words, metadata of a clip can be changed. In combination with the loop mode, a clip can be played in loop between its IN and OUT marks. This kind of loop is completely controlled by the external machine and therefore 'absolute accurate'.

For more Details about IN/OUT Mark Handling see section [Some More Details About IN/OUT Mark Handling on page 158t](#).

## iDPM / eDPM - Selecting an Effect

Figure 174. Selecting an Effect



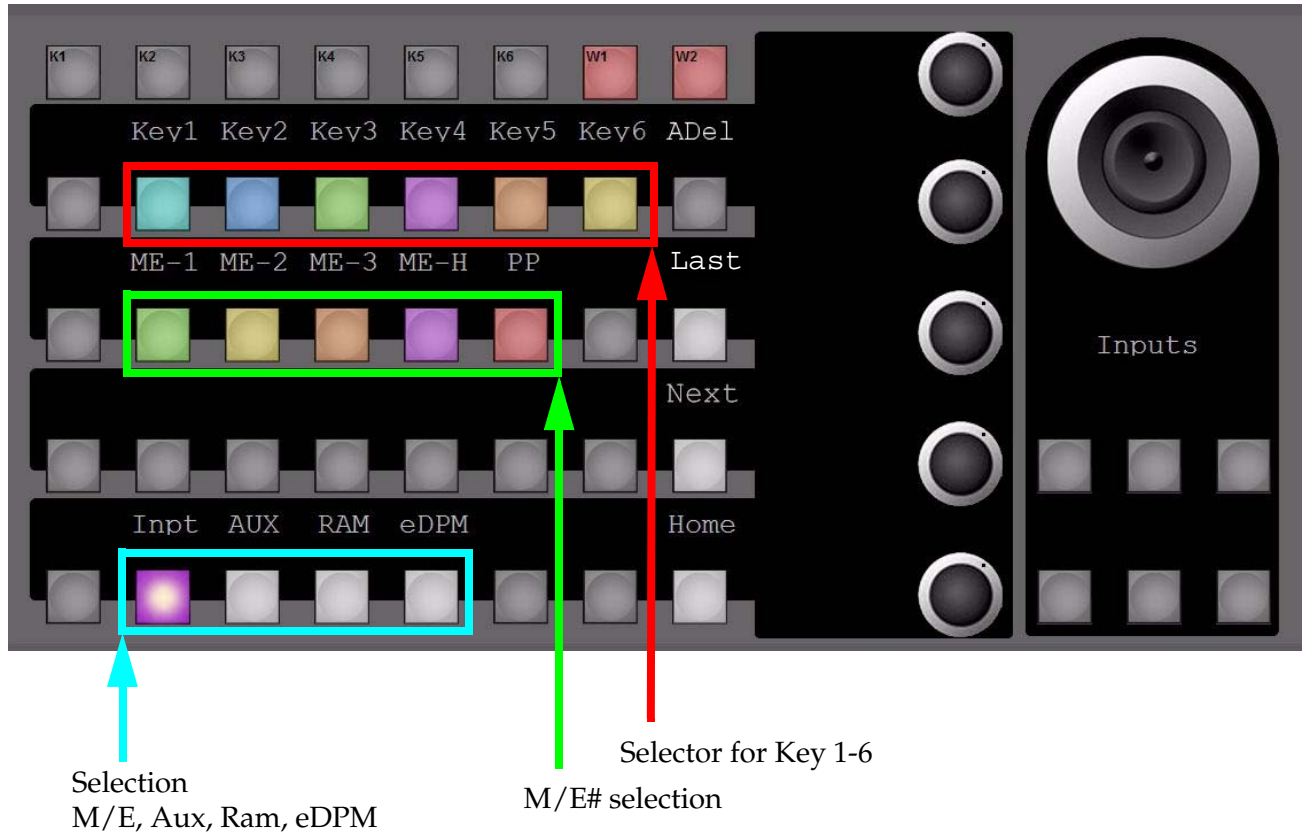
- Turn the according digipot to scroll through the list of available effects.
- Press **Load** to load the selected effect or press the digipot to cancel the action.



# Input Selection

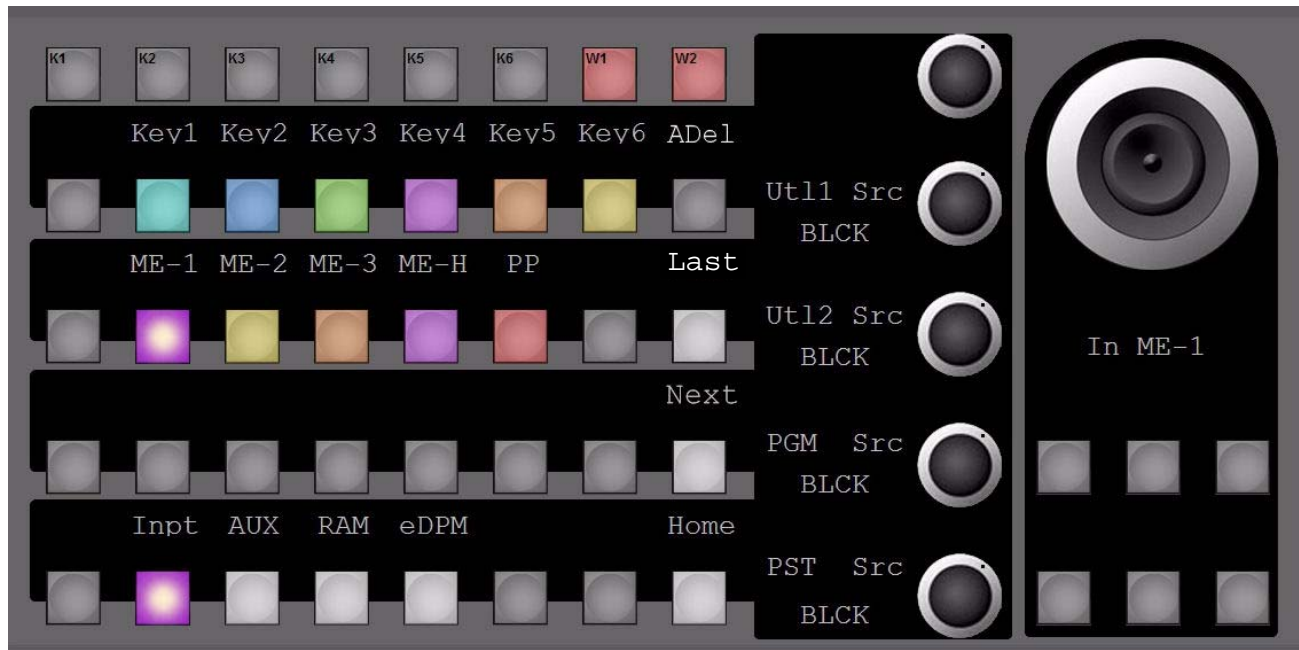
## Input (M/E# Keys, Aux, Ram, eDPM)

Figure 175. Input Selection Overview



## Input (M/E# Crosspoints)

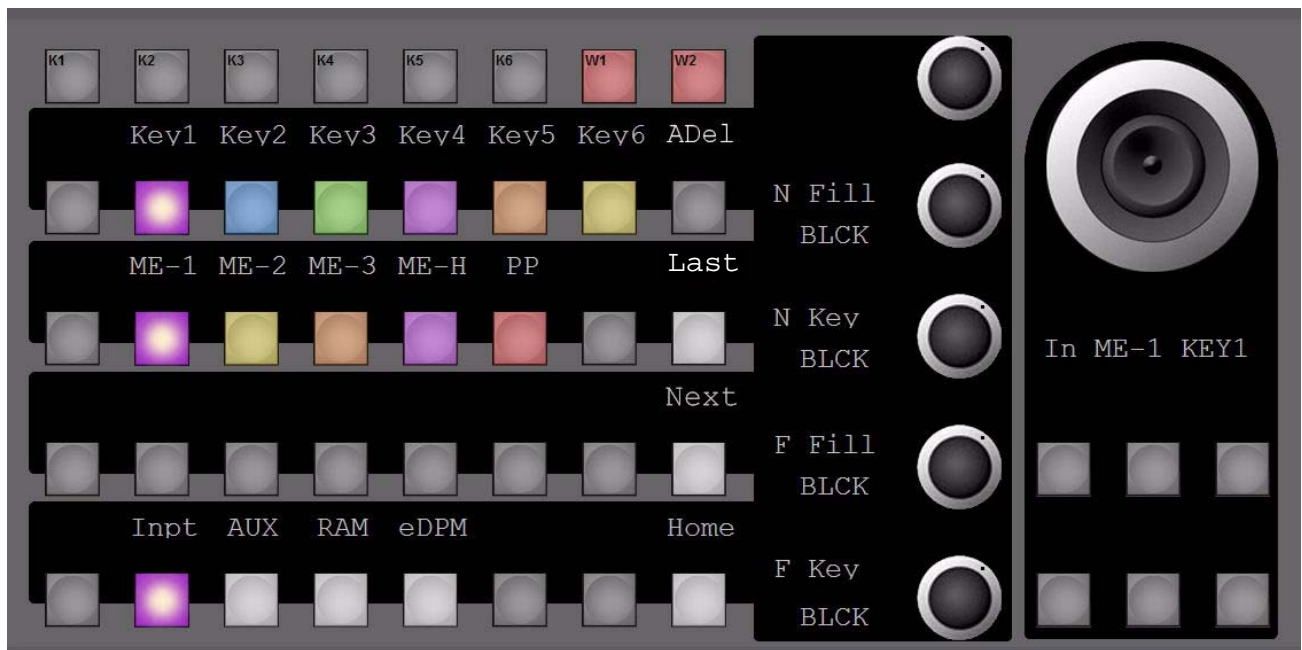
Figure 176. Multi Function - M/E Crosspoints



While an M/E# is selected, the digipots are delegated to related Utility 1 and 2 crosspoints, as well as to the dedicated Program and Preset crosspoint selectors.

## Input (M/E# Keyer)

Figure 177. Multi Function - Keyer

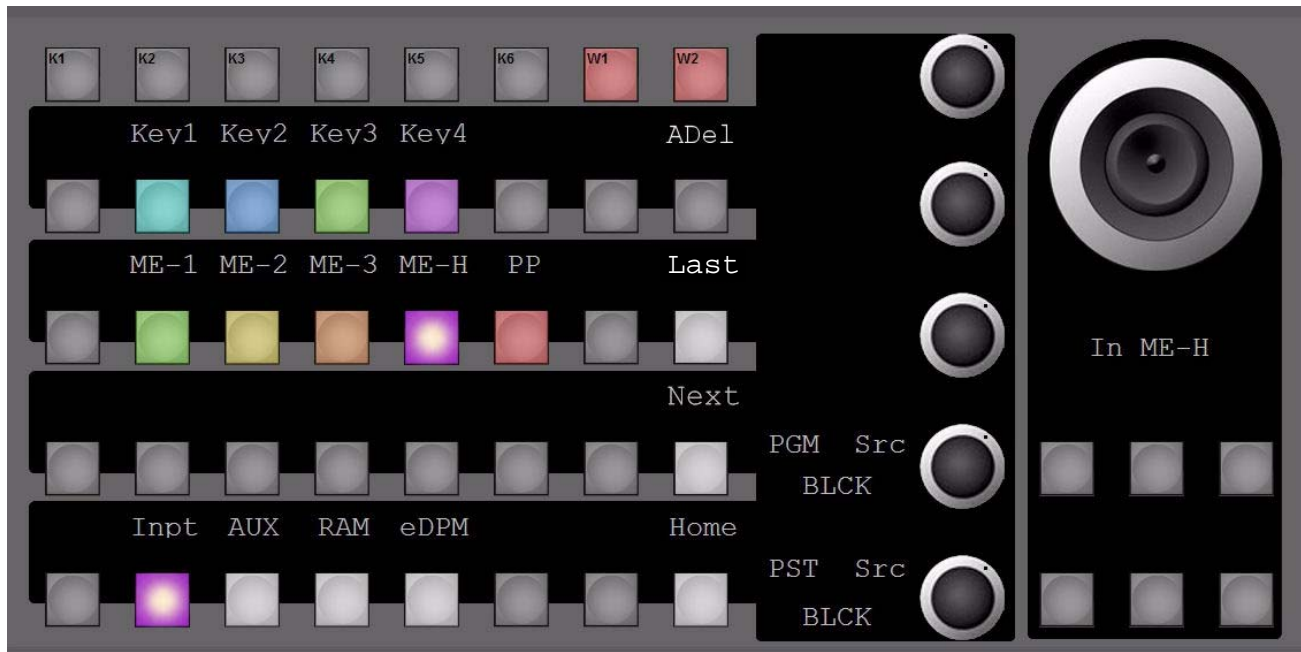


While an M/E# Keyer 1-6 is selected, the digipots are delegated to:

- **N Fill** = Near Side Keyer-Fill signal
- **N Key** = Near Side Keyer-Key/Matte signal
- **F Fill** = Far Side Keyer-Fill signal
- **F Key** = Far Side Keyer-Key/Matte signal

## Input (M/E-H)

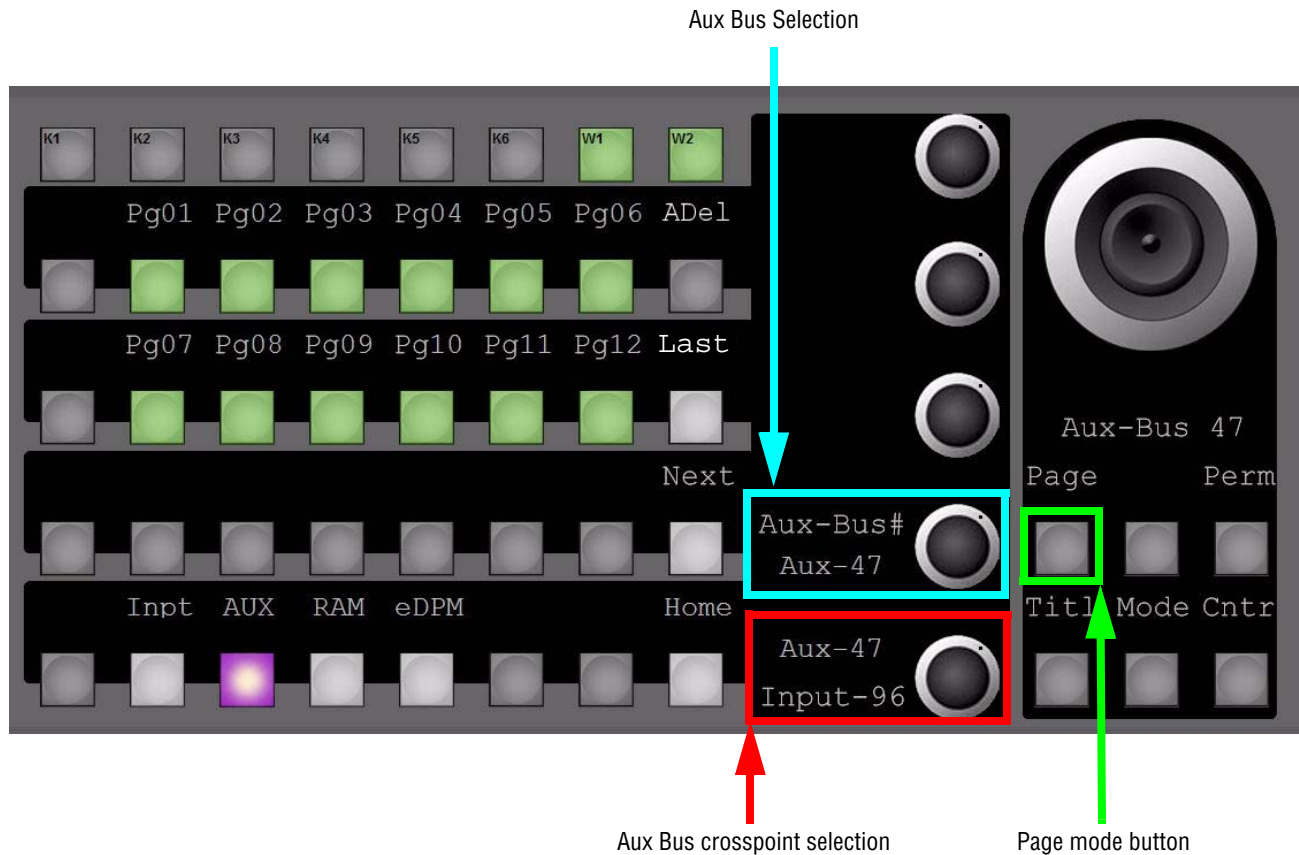
Figure 178. Multi Function - Half M/E



Once **M/E-H** is selected, Keyer 5 - 6 and Utility 1 - 2 are unavailable (due to hardware architecture).

## Input (Aux - Non Page Mode)

Figure 179. Multi Function 33



While **Page**-mode is not enabled, the lower 2 digipots are controlling the selectable Aux buses and the available crosspoints.

Pressing either digipot will open the numeric keypad, in order to enable numeric entries to select Aux-Bus number and Aux-Bus crosspoint.

When pressing and holding the button **Perm** (Permanent Input to Aux Bus) and also pressing the lower digipot (crosspoint selector), the selected crosspoint will toggle the function "Permanent Input" for this particular Aux-Output On/Off, and this is indicated on the button **Perm**. When a designated Aux-Bus is already in "Permanent" mode, the related display will change from "Aux-XX" to "Perm-XX".

The **Titl** (Safe Title) and **Cntr** (Center-Cross) buttons are delegating related controls to the digipots, when pressing and holding together with the lower digipot. Pressing the **Titl** or **Cntr** button again will turn the digipots back to Aux selection.

The **Mode** button determines which function(s) is activated, and toggles through all possible states: Center-Cross /Safe Title /Both /OFF

**Note** The controls for "Permanent", "Safe Title", "Center-Cross" and "Mode" are identical, regardless if "Non-Page"- or "Page"-mode is selected. In Fig.35 "Permanent", "Safe Title", "Center-Cross" and "Mode" are disabled.

### Input (Aux Safe Title / Center Cross Delegation)

Figure 180. Multi Function - Safe Title

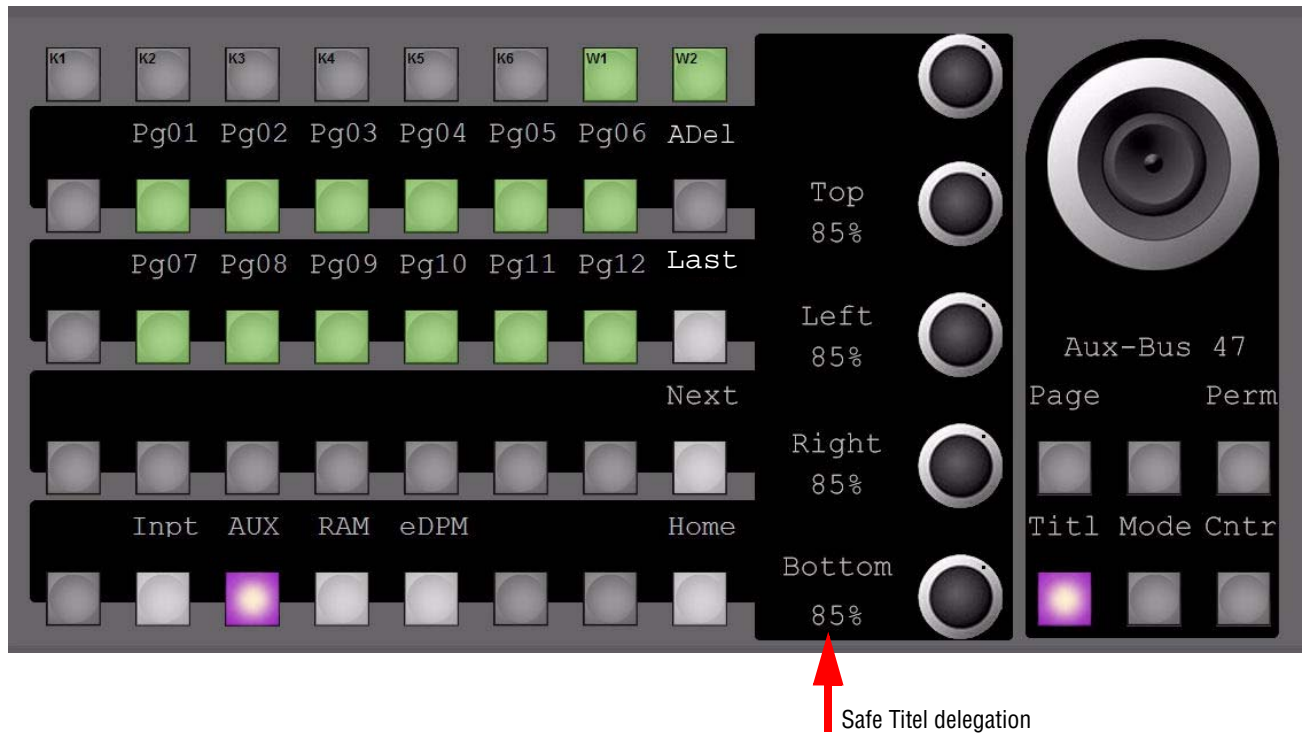
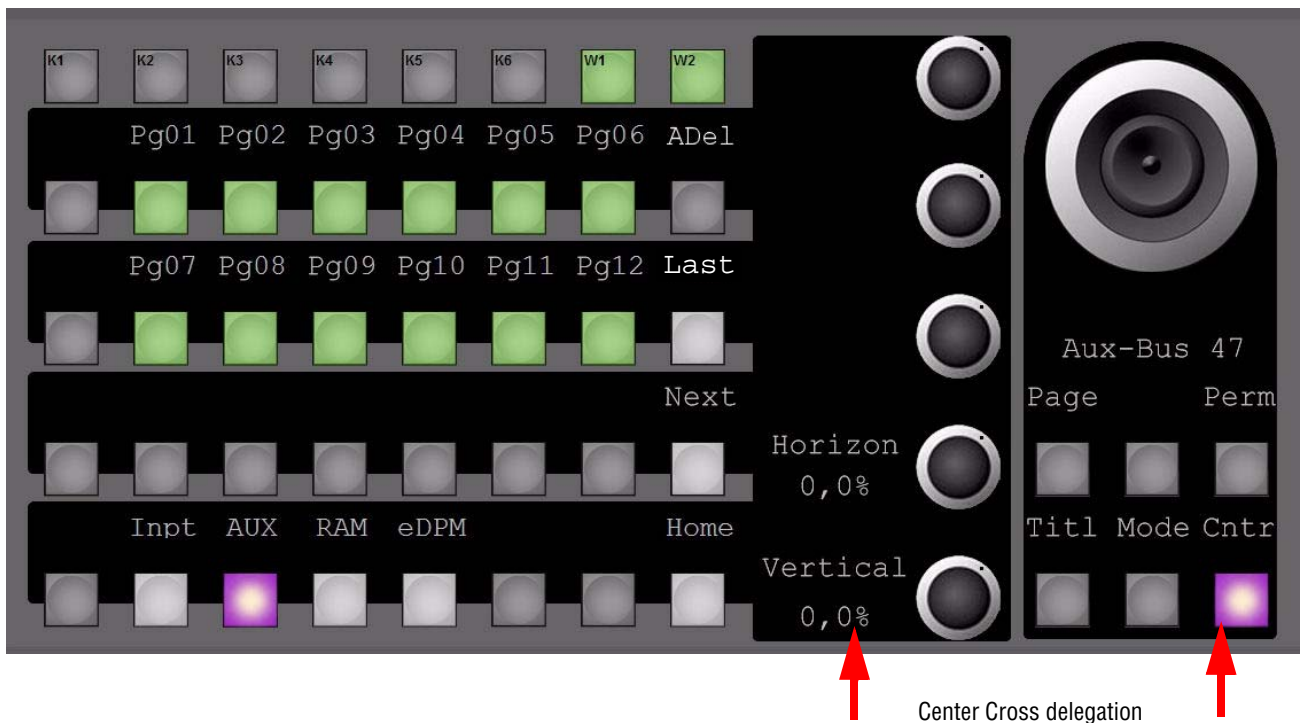


Figure 181. Multi Function 34





### Input (Aux Safe Title / Center Cross Modes)

Figure 182. Multi Function - Safe Title

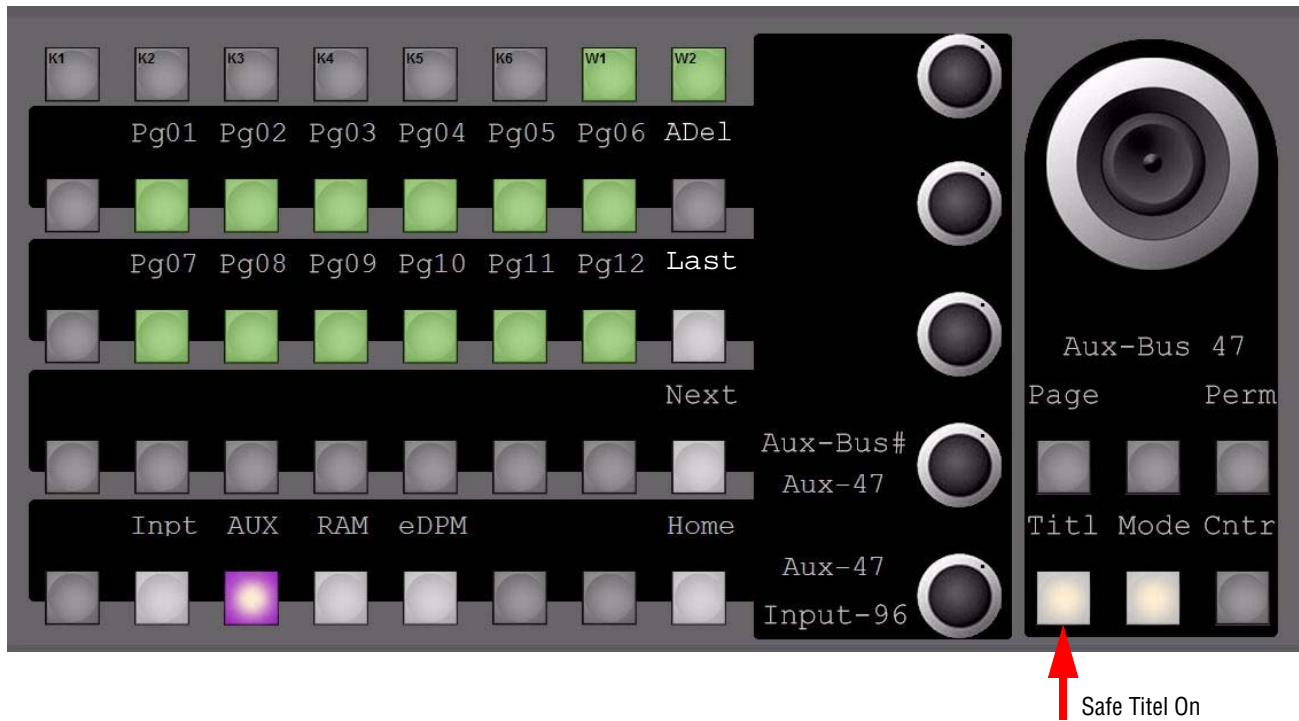
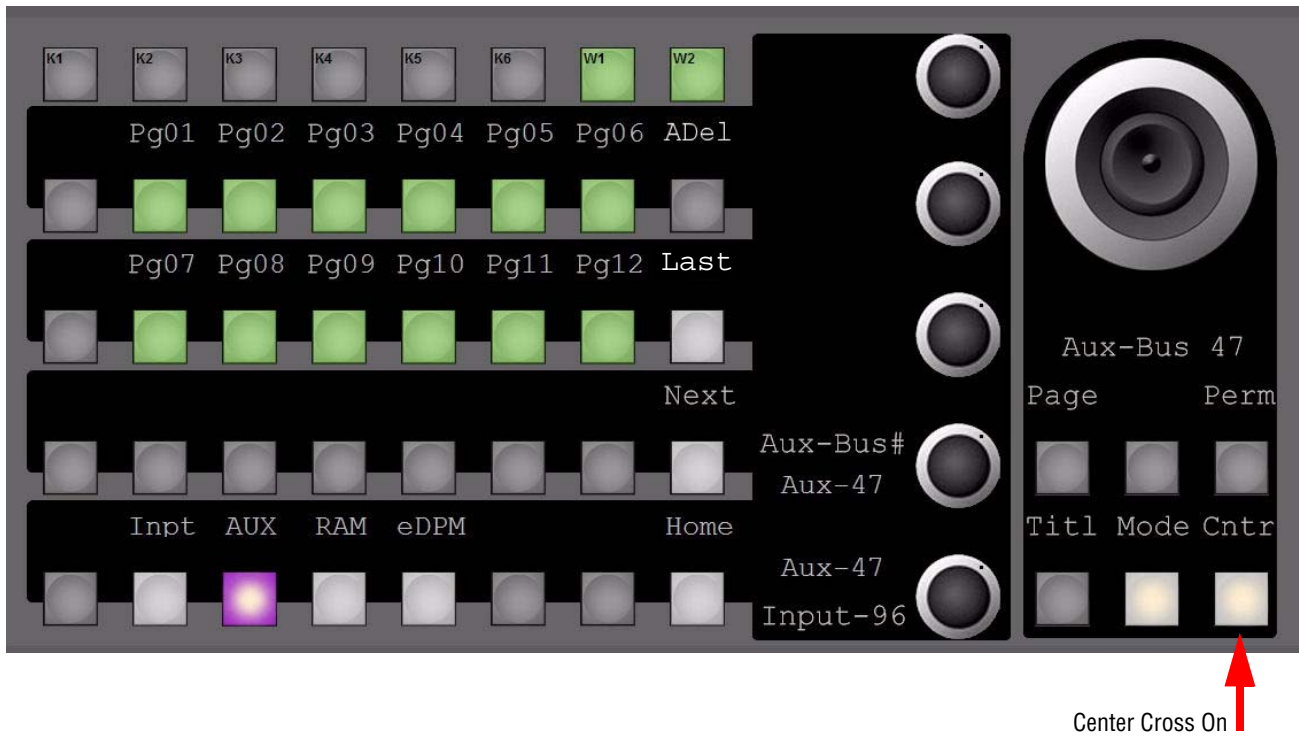


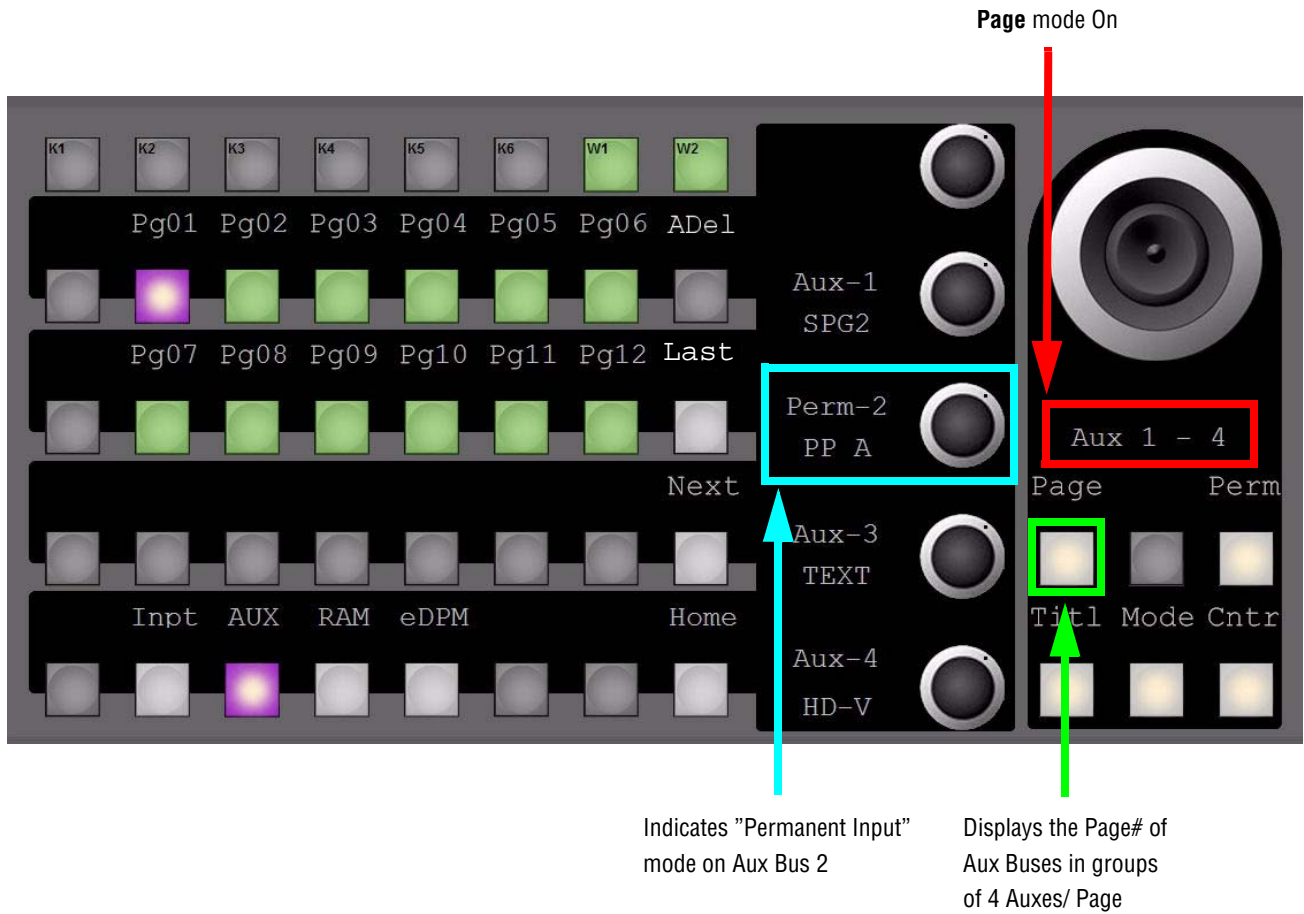
Figure 183. Multi Function - Center Cross





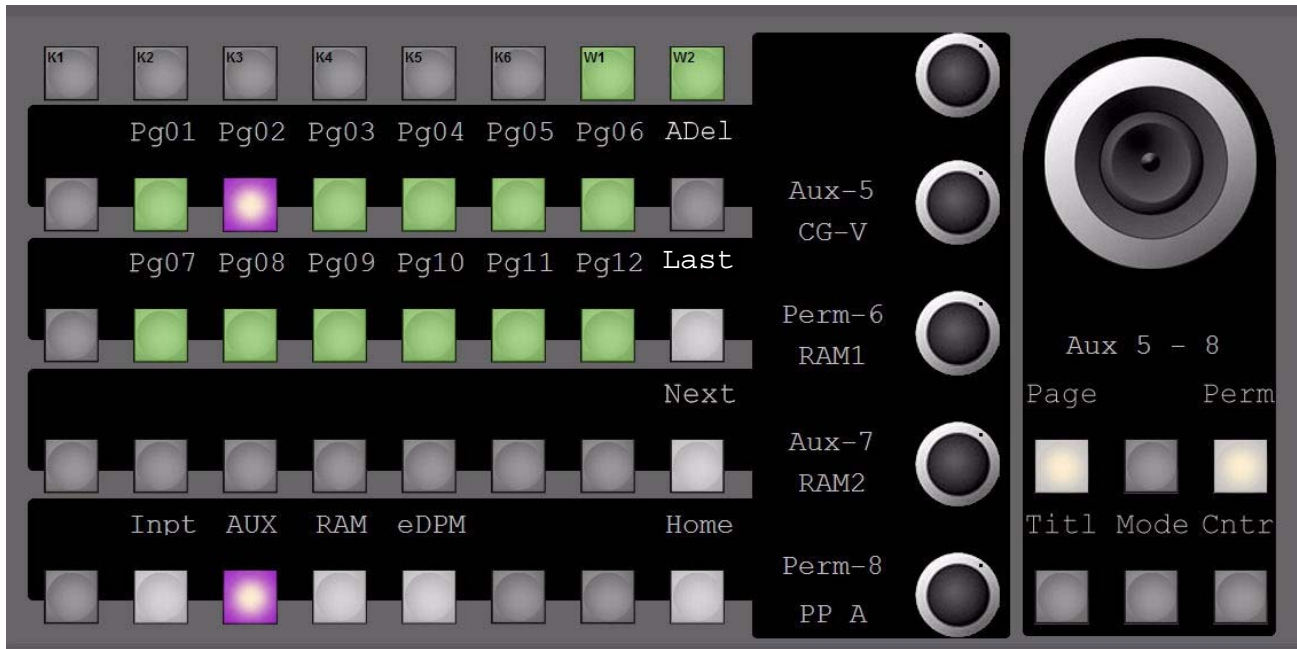
## Input (Aux Page Mode "Page01", "Page02" and "Page12")

Figure 184. Multi Function - Aux Pages



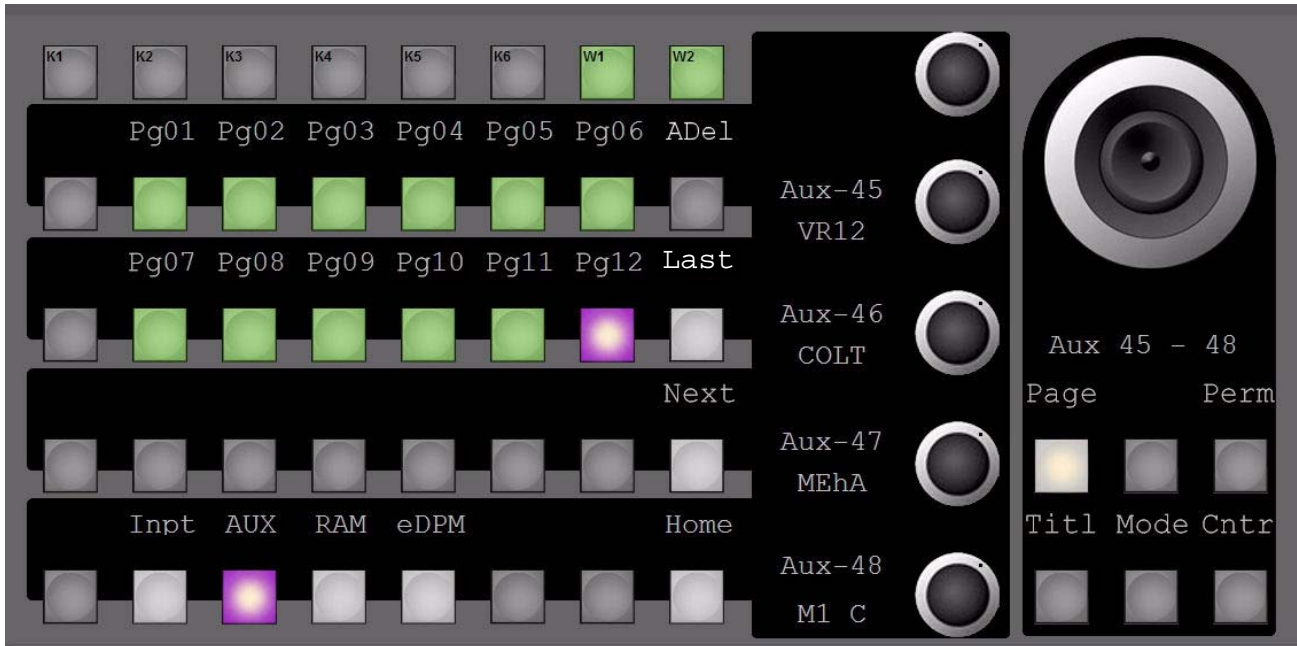
**Note** The buttons for "Permanent Input", "Safe Title", "CenterCross" and "Mode" are indicating that at least one of the Aux buses out of this group has such a modifier activated. The mode for "Permanent Input" is also displayed next to the related digipot.

Figure 185. Multi Function - Aux Buses



**Note** Aux-6 and Aux-8 are set to "Permanent Input" as displayed at the related digipot. "Safe Title", "CenterCross" and "Mode" are disabled for the entire group

Figure 186. Multi Function - Aux Buses

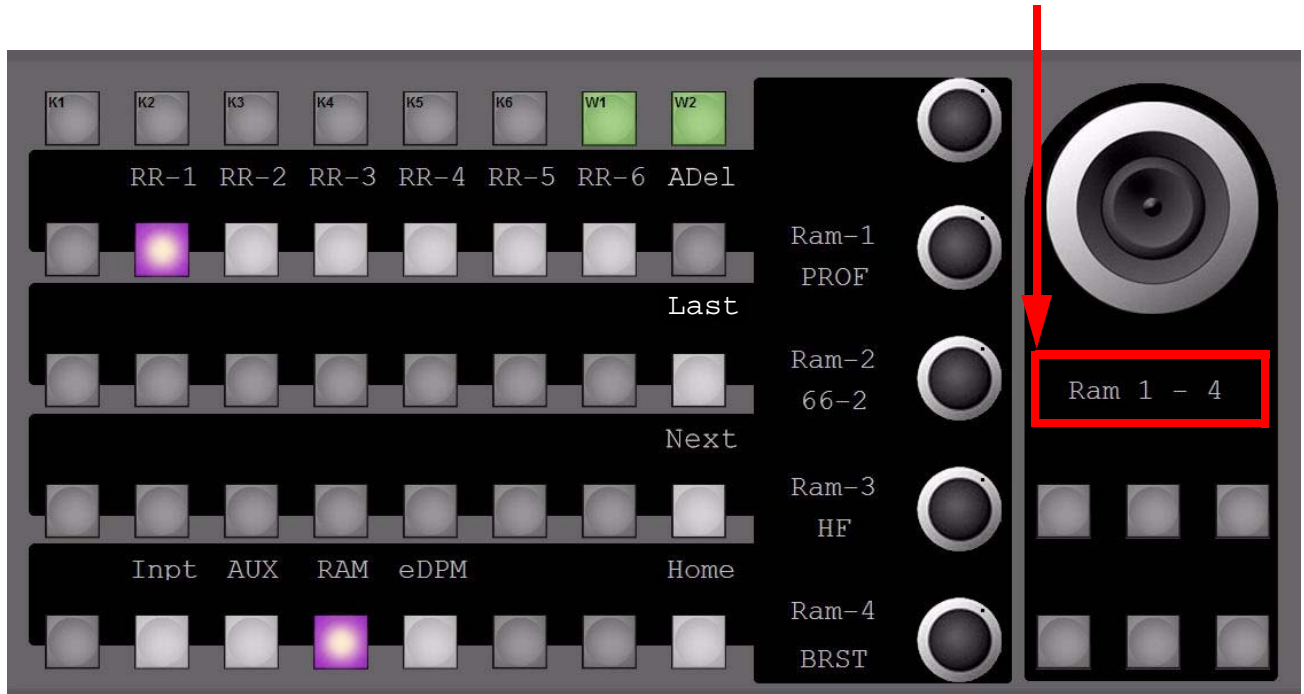


**Note** "Permanent Input", "Safe Title", "CenterCross" and "Mode" are disabled for the entire group.

## Input (Aux - RamRecorder Inputs)

Figure 187. Multi Function - RamRecorder

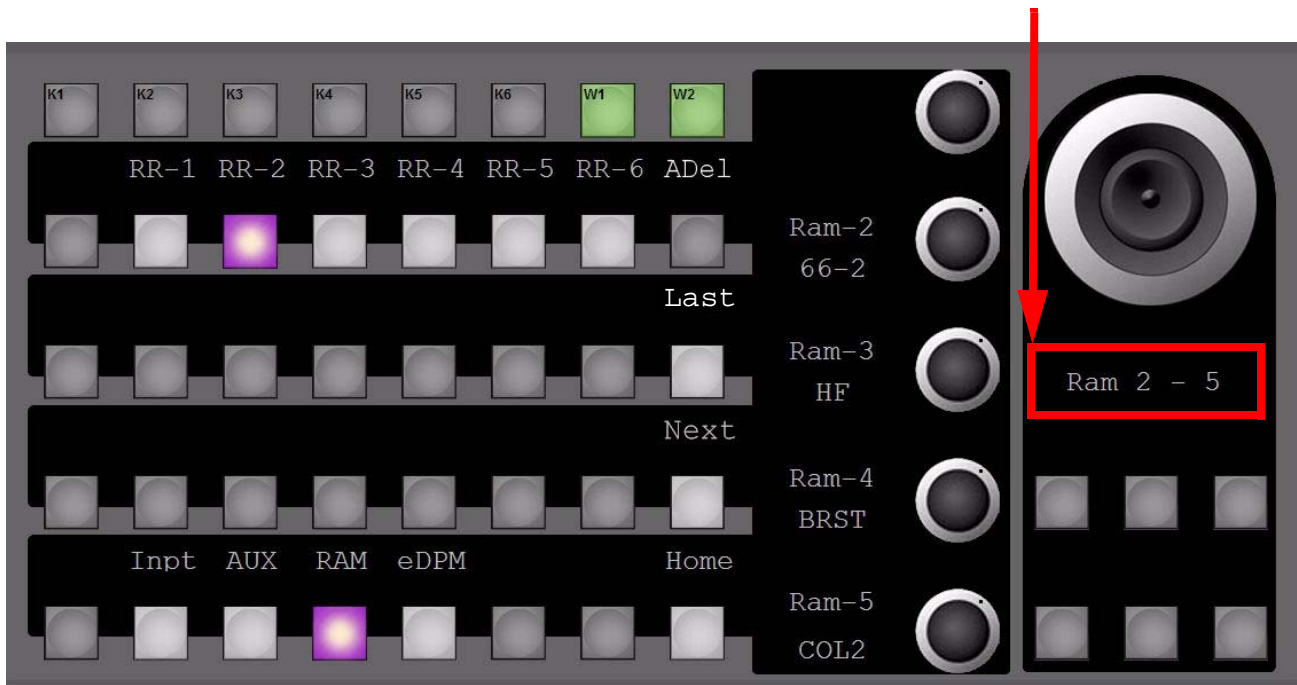
Displays number of input controlled RamRecorder Channels



**Note** When **RR-1** (RamRecorder Channel-1) is selected in delegation row, 4 Channels are delegated to the digipots: Ram-1, Ram-2, Ram-3, Ram-4.

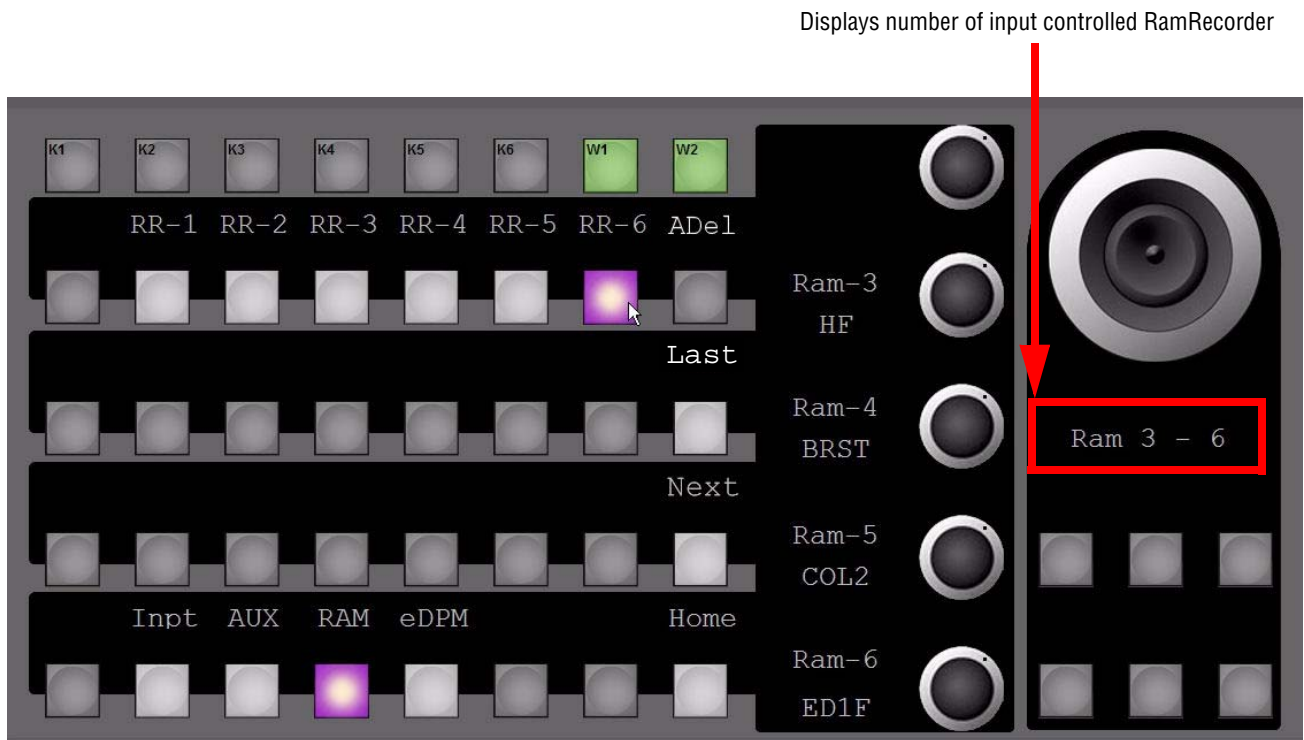
Figure 188. Multi Function - Display Ram Channels

Displays number of input controlled RamRecorder Channels



**Note** Selecting **RR-2** (RamRecorder Channel-2) in delegation row will scroll down the list and the next 4 Channels are delegated to the digipots: Ram-2, Ram-3, Ram-4, Ram-5 .

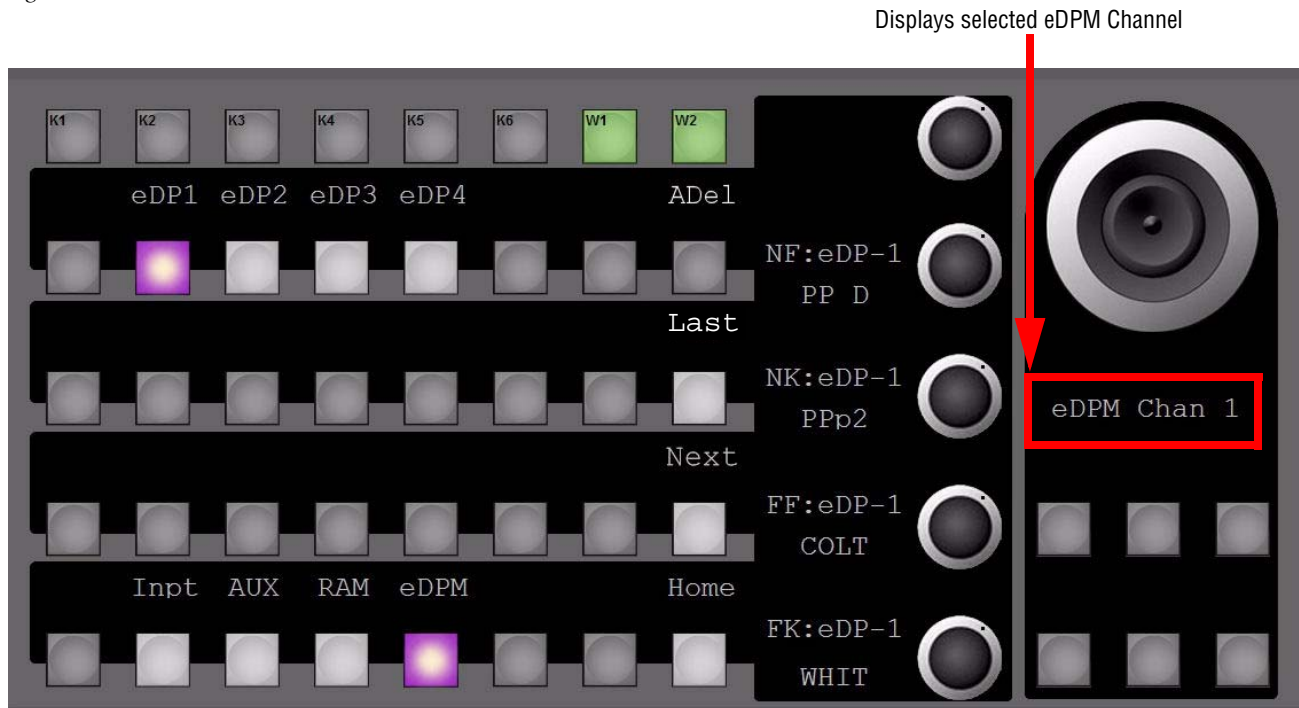
Figure 189. Multi Function - Display Ram Channels



**Note** Picking up **RR-6** (RamRecorder Channel-6) straight in the delegation row navigates the list to the end, and the last 4 Channels are delegated to the digipots: Ram-3, Ram-4, Ram-5, Ram-6. (selecting RR-3,4,5 would have caused the same delegation). Now when selecting RR-5 (after RR-6 was selected), the delegation would start with: Ram-2, Ram-3, Ram-4, Ram-5.

## Input (eDPM1)

Figure 190. Multi Function - eDPM Channels



The activated digipots from top to bottom are controlling these Inputs per selected eDPM Channel:

- **NK:eDP-1**= eDPM Cannel-1 Near Side Key send signal
- **FF:eDP-1**= eDPM Cannel-1 Far Side Fill send signal
- **FK:eDP-1**= eDPM Cannel-1 Far Side Key send signal

# *Menu Overview*

## **Introduction**

The Kayenne XL Package Menu panel provides capabilities that complement the operation of the control panel. The Menu panel controls most system functions, and has additional controls not available on the control panel (for example, the configuration menus). During live production the operator spends most of his time working directly on the control panel. The Menu panel is used for setup and effects creation, and its functions are extensively self-explanatory.

A second way of full control is an additional Sidepanel program. The Sidepanel program can run on a separate Windows PC.

## Menu Panel Description

The Menu panel has a touch screen display and five soft knobs on the right. The menu's navigation area on the left enable easy navigation inside the menu tree.

Figure 191. Touch Screen Display



## 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 enable 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.



## **Soft Knobs (Digipots)**

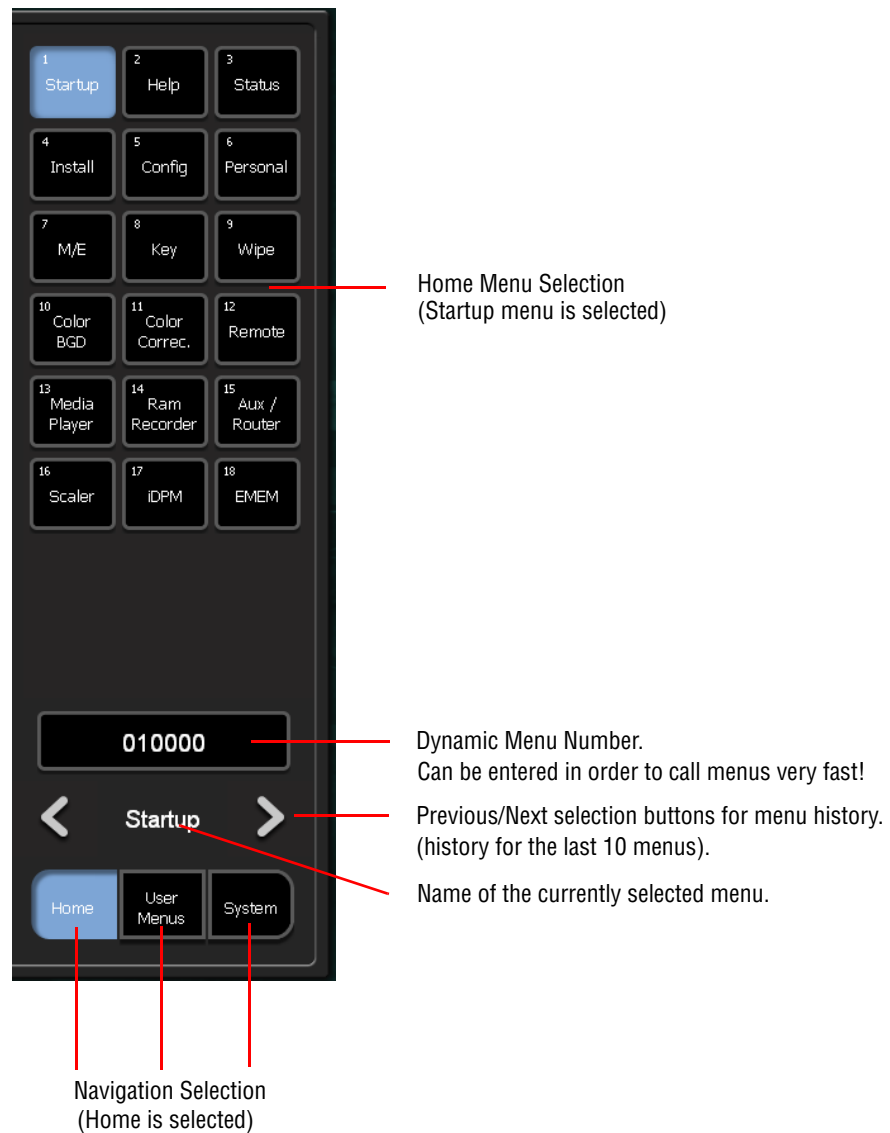
Knobs along the right side of the Menu panel can be used to dial in parameter values for functions displayed on the touch screen. When a knob is active, the touch screen displays the parameter name and its current value on a data pad. The parameter can be adjusted by turning the knob, or the data pad can be touched to bring up a numeric keypad. On some menus, a soft knob may be able to control parameters or scroll a list located elsewhere on the screen.

## **Navigation Area**

In order to have a very fast and easy access to the menus the navigation area of the Kayenne XL Package menu can be switched in three modes:

- **Home**
- **User Menu**
- **System**

Figure 192. Navigation Area - Home Mode



### Main Menu Selection

Touching one of these buttons takes you directly to that menu category. The currently selected category is shown by the touch button turning blue.

Some menus have additional subcategory selections available at the left of the menu. In addition some menus have additional subpage selections available at the bottom of the menu.

Figure 193. Navigation Area - User Menu Mode

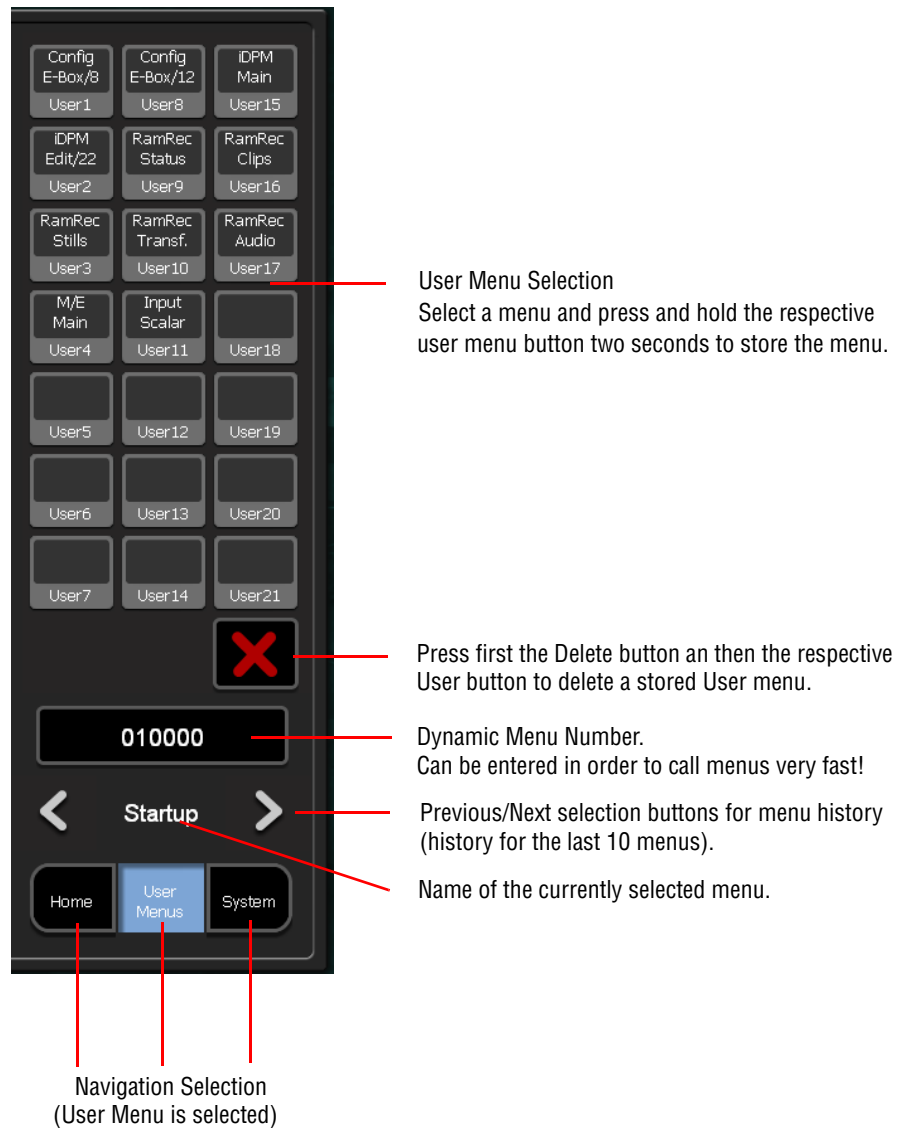
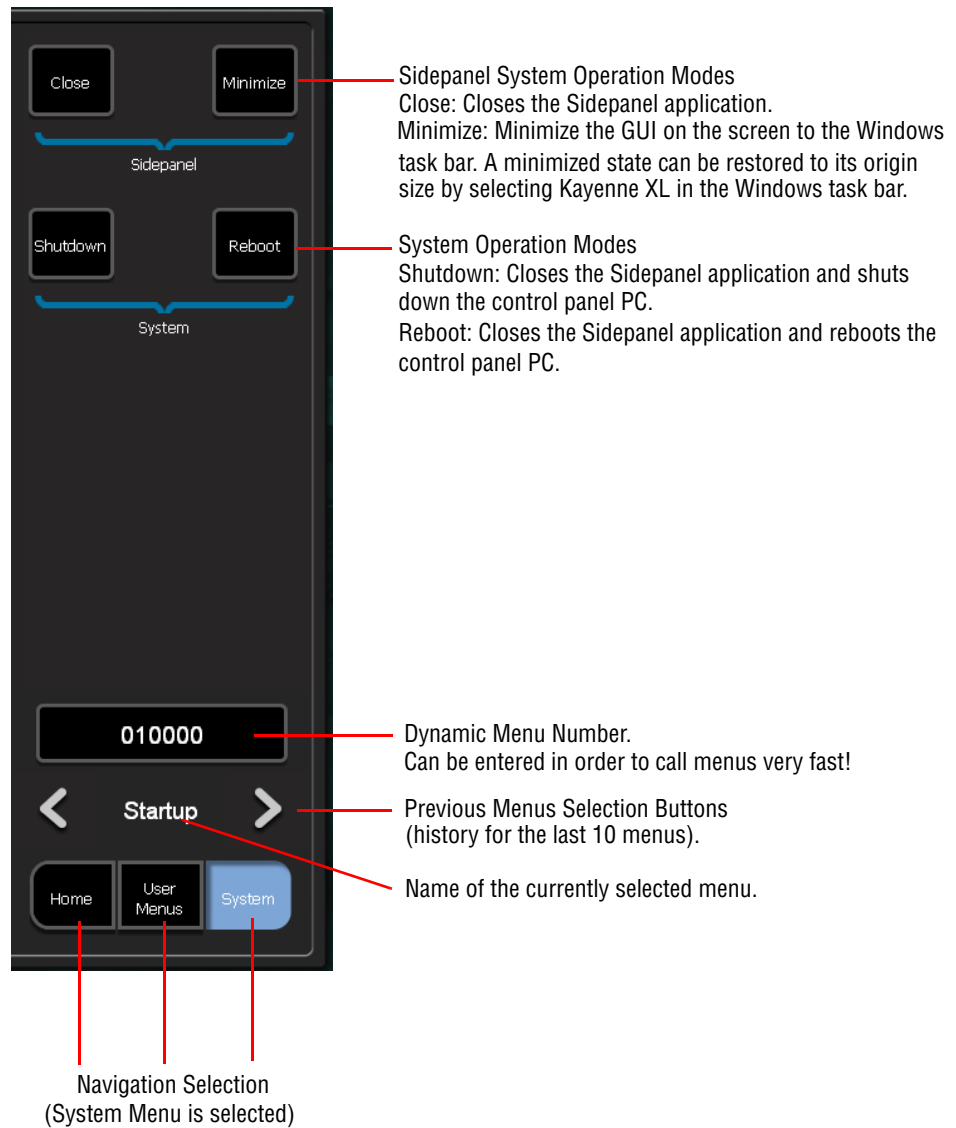


Figure 194. Navigation Area - System Mode



## Navigation Inside the Menu and Modify

In order to navigate inside the menus or lists and change the entries, the button of the menu contains cursor buttons and a **Modify** button.

As long as the **Menu Lock** button is switched on, the Auto Menu function is inhibited. No further auto menu delegation is performed.

Figure 195. Lower Menu Part



## 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 196. Numeric Key Pad



## Alphanumeric Keypad, Typewriter

Touching the pad for a text parameter brings up an alphanumeric keypad with typewriter layout (style US English).

Figure 197. Alphanumeric Key Pad



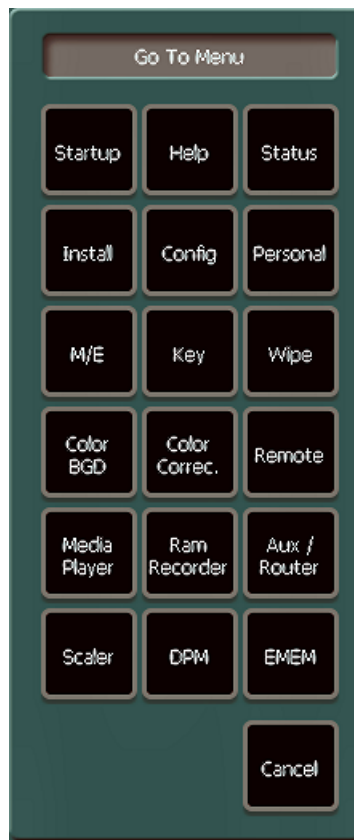
## Using a Mouse

The menu can also be controlled by means of a mouse. Doing so, all functions contained in the menu are controllable with the mouse, thus enabling an operation without softkeys and digipots. That means, operation is possible from a normal PC without special hardware.

The functions are initiated by clicking or double-clicking with the left mouse button on the individual elements in the menu.

Clicking with the right mouse button calls a pop-up menu which enables a change into the other menu groups. This function duplicates the menu navigation buttons arranged to the left of the display.

Figure 198. Go To Menu







# Menu Summaries

In this section various Kayenne XL operation menus are presented to familiarize you with various screen layouts. Cross references are provided for more detailed information. Because each menu controls different aspects of the system, the screen parameters and organization will vary, but the basic principles previously described are followed.

## Menu Structure Overview

Top level menu	Sub-menus	ID
Startup	Startup	010000
Help	Help	020000
	Editor	020200
Status	Main	030000
	M/E Mapping	030400
Install	Main	040000
	E-Box	040100
	Panel	040200
	System	040300
Config	Diagnose	040400
	Main	050000
	E-Box	050100
	Panel	050200
	Panel Colors	050300
Personality	Attached Macros	050400
	Flex Licenses	050500
	Main	060000
	M/E	Main
Wipe Trans		070200
Offset Transi		070300
Key	Main	080000
	Matte	080100
	Mask	080200

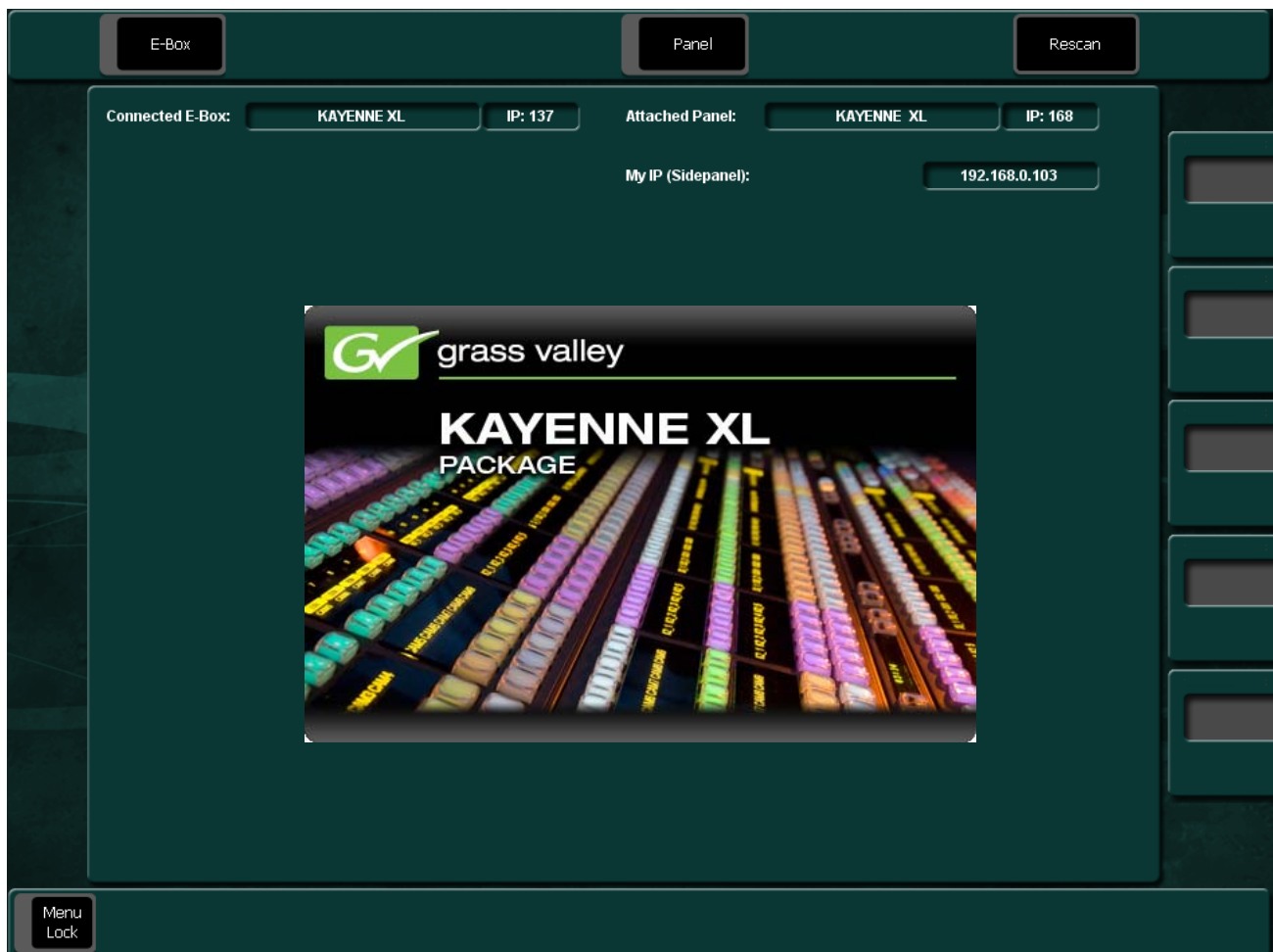
Top level menu	Sub-menus	ID
	Chroma Key Main	080300
	Chroma Key Suppression	080400
Wipe	Adjust	090000
	Select	090100
Color BGD	Color BGD 1, 2, 3	100000
	Color Signal	100100
Color Correction	YUV Input	110000
	YUV M/E-Bus	110100
	YUV Auxbus	110200
	RGB Input	110300
	RGB M/E-Bus	110400
	RGB Auxbus	110500
Remote	Main	120000
	GPI-Out	120100
	P-BUS	120200
Media Player	MP Status	130000
	MP Clips	130100
RamRecorder	Status	140000
	Clips	140100
	Stills	140200
	Transfer	140300
	Image Converter	140400
	Audio	140500
	Active Area	140600
Aux /Router	Main	150000
Scalers	Input Scaler	160000
	Auxbus Scaler	160100
DPM DVE	iDPM Main	170400
	iDPM Edit	170300
	eDPM Main	170200
	eDPM Edit	170100
	DVE Extern	170000
EMEM	Select	180000
	Define	180100

# Startup Menu

After program start, the **Startup** menu is called with the Kayenne XL logo and then automatically the menu available last with all selected parameters.

With initial startup, the **Startup** menu is called in order to enable selection of the mainframe (**E-Box** button), control panel (**Panel** button) and establishing the connection. With the **Rescan** button the network will be rescanned in order to find new panel devices.

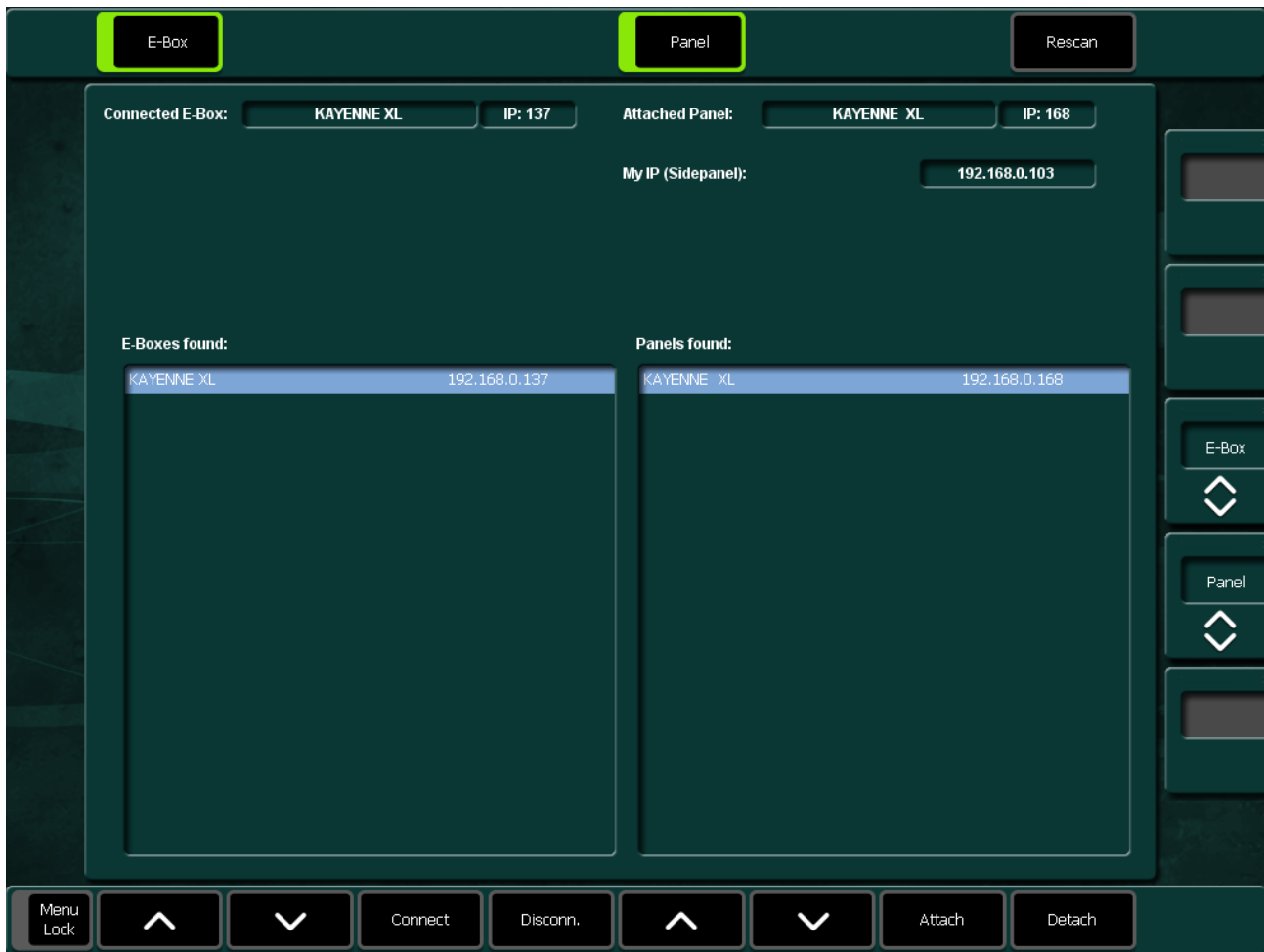
Figure 199. Startup Menu,



The menus show the state of the switcher system:

- Connected mainframe (E-Box)
- Attached panel
- IP address

Figure 200. Startup Menu 1



## Selection of the Mainframe

Actuating the **E-Box** button brings up a list box in which the mainframes connected to the mains are listed with IP Net Address. After selection of a mainframe with the arrow buttons, the **Connect** and **Disconn** buttons are activated.

A corresponding selection connects or disconnects the connection.

## Selection of an Attached Panel

Actuating the **Panel** button calls a list box in which the switcher panels connected to the mains are listed with IP Net Address. After selection of a panel with the arrow buttons, the **Attach** and **Detach** buttons are activated.

A corresponding selection connects or disconnects the connection.

# Help Menu

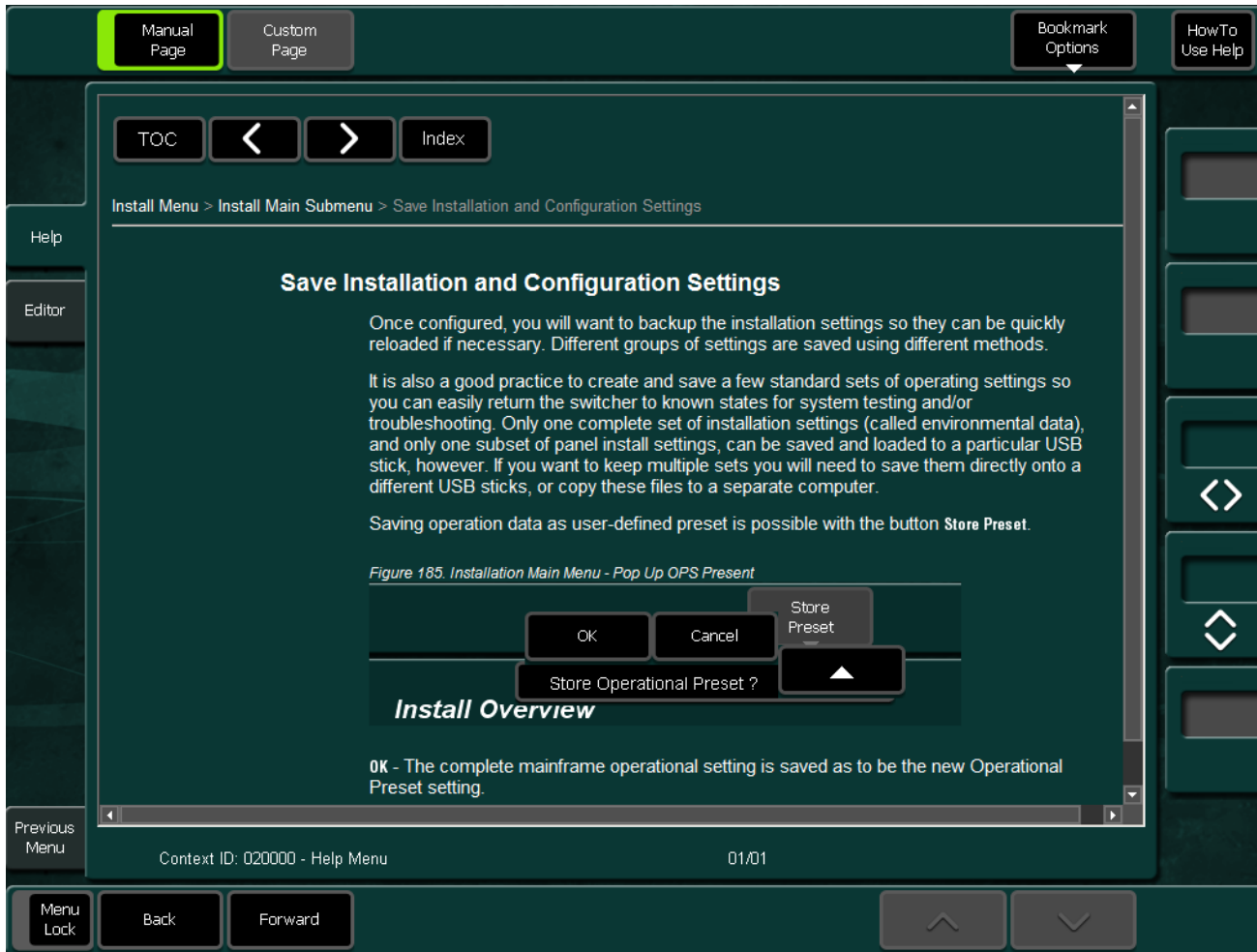
The switcher provides a context sensitive help system that means, pressing the help button on any menu screen brings you to the according page of the user manual. Please use the </> buttons for more information.

## Manual Page

Once in the help dialog the user can navigate by different means:

- **TOC**  
Shows the table of contents and enable the user to select any chapter of interest.
- **</>**  
Navigating from the current position in the manual backwards or forwards.
- **Index**  
Provides a more detailed description of specific topics used in the manual.
- **Back / Forward**  
Like any web browser these commands can be used to walk through the navigation history.
- **Manual Page**  
Calls the current version of the help information. This information is based on the current User Manual.
- **Custom Page**  
Calls the user-defined notes or supplement belonging to the currently selected manual help page. Refer section [Help Editor on page 267](#) how to generate custom pages.
- **Bookmark Options**  
The current version only enable setting one bookmark.

Figure 201. Example for a Help Page

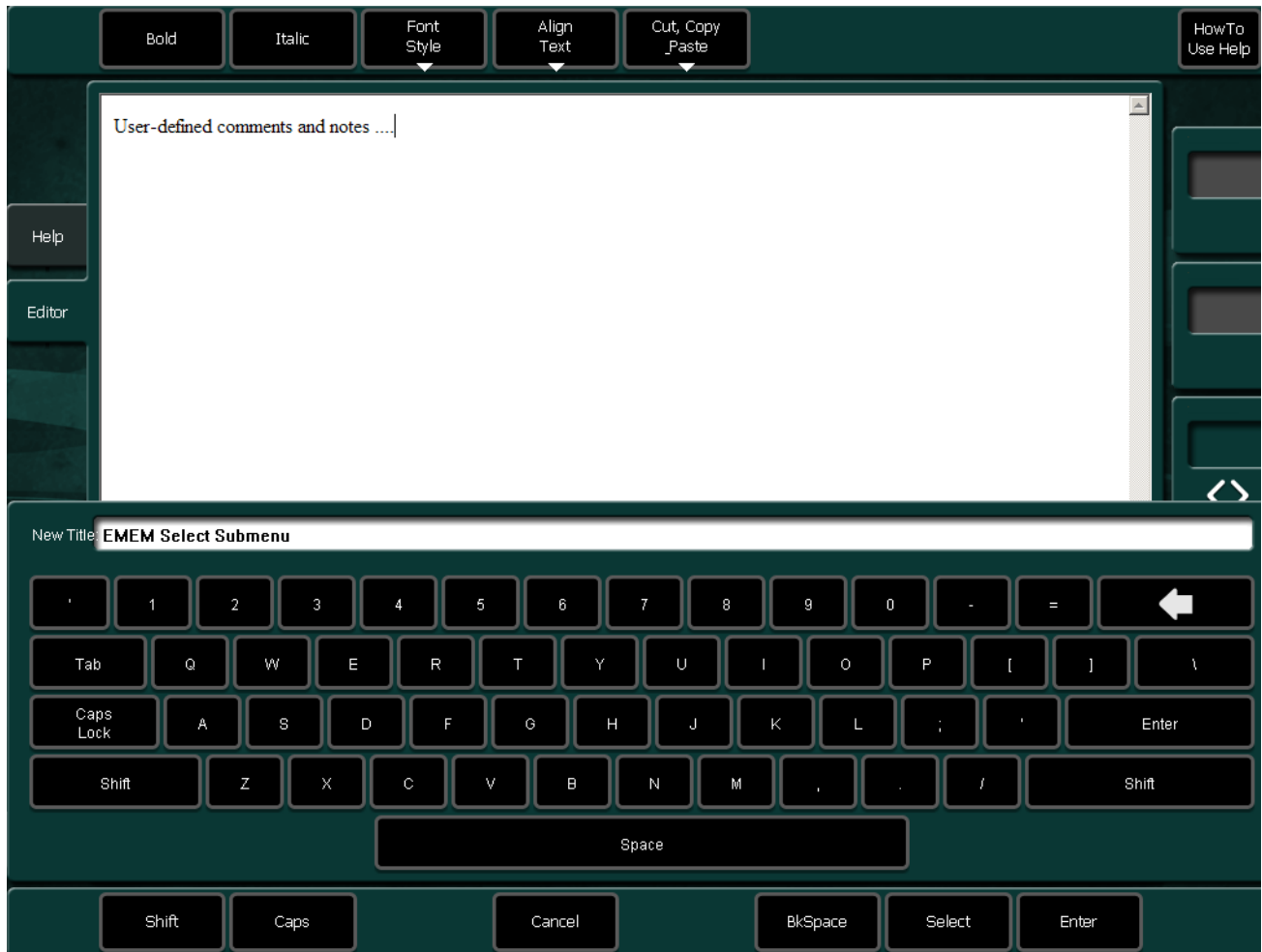


## Help Editor

The **Help Editor** can be used to add user-defined notes and supplements to each help page. So, the user can write his one user manual with comments, hints and notes for special workflows and modes of operation.

This **Custom Pages** are stored separately. Therefore, the pages are not lost and overwritten after a software update.

Figure 202. Help Editor Page



The editor page appears with a keyboard, in order to enter the page title.

With the buttons on the top of the page, basic text formatting can be selected:

- **Bold:** Font style „**Bold**“
- **Italic:** Font style „*Italic*“
- **Font Style:** Predefined text formatting for headlines and standard text.
- **Align Text:** Align the text to **Left, Center, Right**
- **Cut, Copy, Paste:** Edit functions

Figure 203. Help Editor Page,



With the buttons on the bottom of the page, advanced functions can be selected:

- **File Options:**
  - **Save:** Press **Save** to store the current custom page.
  - **New:** Press **New** to start a new (next) custom page belonging to the same currently selected manual page.
  - **Import:** Press **Import** to import an external text file. A dialog appears to select a file on your computer or USB device.
- **Custom Editor:** Possibility to define and start an external text editor.
- **Add Index Keyword:** Possibility to enter a keyword belonging to the current custom page.
- **Up/Down Arrows:** Navigation buttons. Buttons are active, when more than one page is available inside the current custom page.



# Status Menu

## Status Main Submenu

The root menu of the switcher is the **Status** menu. From **Status** the top level menus of other groups can be selected (when clicking the right mouse button) via the pop-up menu, or by pressing the respective menu buttons.

Figure 204. Status Main Menu



## Selecting the M/E Main Menus

**M/E1 - M/E2 - M/E3- P/P - M/Eh**

Press the associated dialog button to select the associated M/E Main menu which serves to modify the switcher parameters.

**Note** The menu contents is depends on from the connected mainframe.

## Enable / Disable the Faders

### Fader Active: M/E1, M/E2 M/E3, P/P

Press the associated button to enable or disable the panel fader of the individual mixing levels and the menu fader in the M/E Main menus. The active status is displayed in the button. In Kayak HD only PP is available.

## User Definable Presets

User definable preset of the mainframe operational state is possible for a single M/E or the complete switcher. For a recall of the complete switcher preset select the Status menu. A single switcher preset can be recalled in the M/Ex Main menu.

### Recall Preset

The following presets can be recalled:



- **Factory Preset:** Recall the factory preset.
- **Operation Preset:** Recall the user-defined operation preset.
- **Undo:** Recall the last user settings.

Refer to [Install Main Submenu on page 273](#) to save the preset data.

## **M/E Mapping Submenu**

In Preparation

## Install Menu

The Install menu contains the engineering setup controls. Engineering Setups are not likely changed on a daily basis and grouped separately from Configurations and Personality Settings. Facility maintenance personnel or the engineer in charge of a production truck generally manages Engineering Setups. These parameters are usually set during installation.

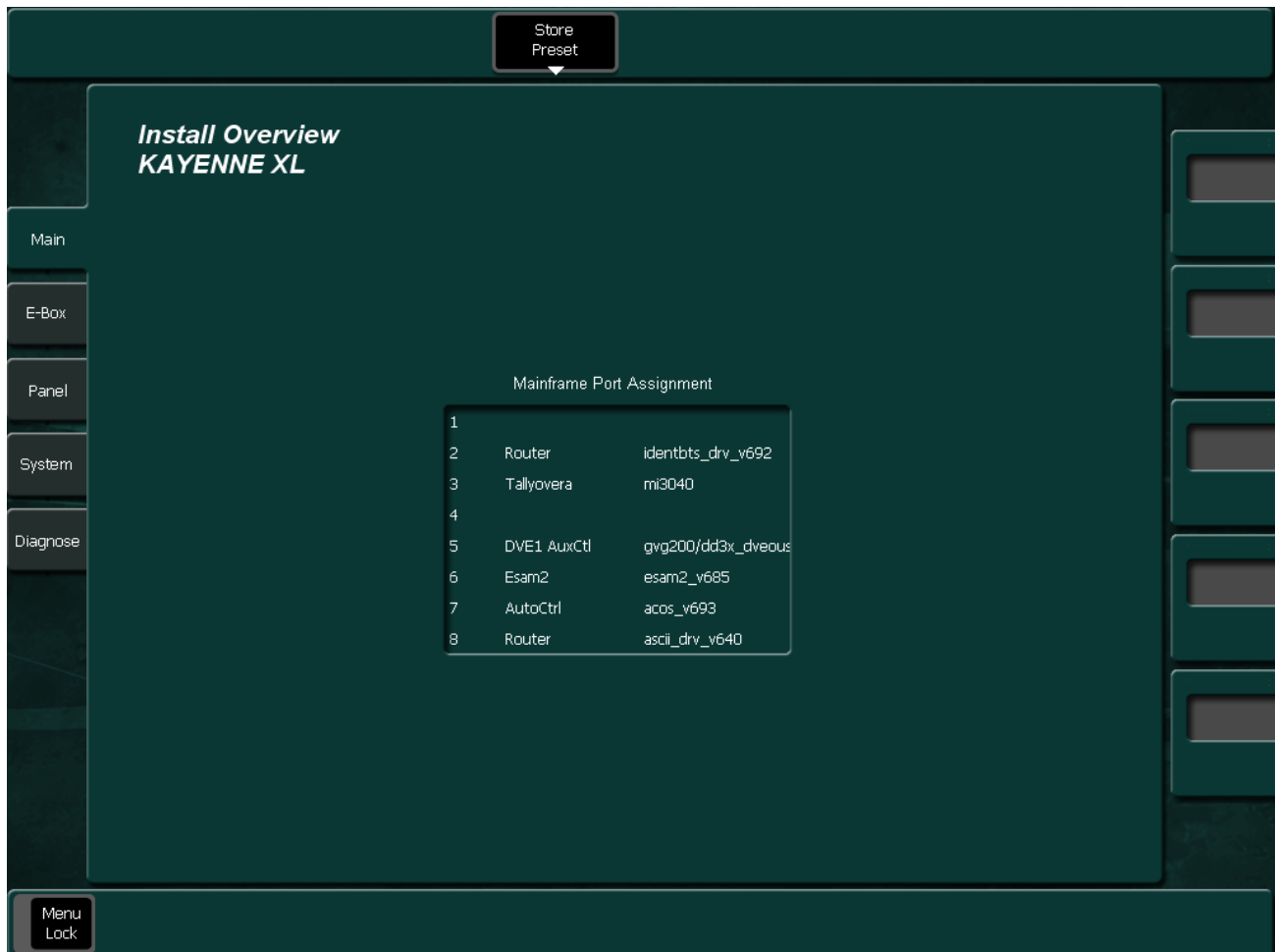
The installation menus are organized in five subgroups:

- Main
- E-Box
- Panel
- System
- Diagnose

## Install Main Submenu

The Install main menu shows the current control panel and mainframe port assignment.

Figure 205. Installation Main Menu



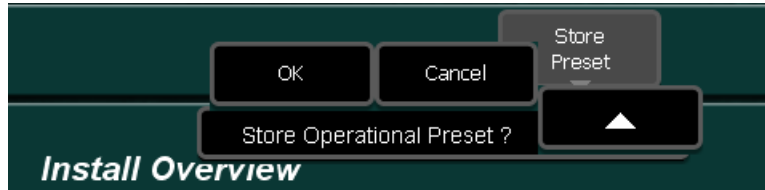
## Save Installation and Configuration Settings

Once configured, you will want to backup the installation settings so they can be quickly reloaded if necessary. Different groups of settings are saved using different methods.

It is also a good practice to create and save a few standard sets of operating settings so you can easily return the switcher to known states for system testing and/or troubleshooting. Only one complete set of installation settings (called environmental data), and only one subset of panel install settings, can be saved and loaded to a particular USB stick, however. If you want to keep multiple sets you will need to save them directly onto a different USB sticks, or copy these files to a separate computer.

Saving operation data as user-defined preset is possible with the button **Store Preset**.

Figure 206. Installation Main Menu - Pop Up OPS Present



**OK** - The complete mainframe operational setting is saved as to be the new Operational Preset setting.

**Cancel** - Cancels the save procedure.

## Install E-Box Submenu

The installation menu is designed by using subpages. Each subpage contains all settings belonging to the mainframe (E-Box) installation functions.

- AuxCP Page
- Tally
- Input
- GPI
- GPO
- Ext. DVE
- Editor
- Router
- Timing
- UMD
- Machine
- P-Bus
- Aux Bus
- Ext. Key

**Copy** (button on the upper right of the menu)

With the **Copy** button it is possible to store or load the files ENVIRON.INI and License.txt (E-Box) or ENVIR\_CP.INI (panel) from a USB Flash Memory or hard disk.

**CAUTION** After loading the environment file, the switcher will reset.

## Aux CP Page

The Aux CP menu page serves for installing the AUX Control Panels connected with the Kayak HD. Up to four AUX Control Panels can be installed.

Figure 207. Install E-Box AUX CP





To program an Input, select the channel from the scrolling list in the central pane. Then select **Modify** to change the parameters:

- **Type:** Shows a pop-up window with all types of AUX Control Panels.

Figure 208. Install E-Box AUX CP Type



- **Port:** Shows a pop-up window with all ports plus **None** like in all other menus where a port must be configured.

**Note** The port must be different to the ports used for DVEs, Editors, ext. DSKs, etc.

- **MPK-Address:** Opens the typewriter pop-up window. The physical MPK address of the AUX-CP must be entered. Refer the label at the rear of the panel modules (for example, **CP-3020: e0002d43**).

## Tally Page

The tally signalling for the system works via serial communication line with the option to hook a hardware device onto that (those) serial line(s) to provide tally for those cases where it is not connected to a control system, for example, Jupiter from Grass Valley. For that optional hardware device the already existing Tally Distributor MI-3040 was chosen. This device is driven via the serial MPK protocol and has 40 opto-isolated inputs and 40 relay outputs. Because the maximum needed amount of inputs and outputs is greater than 40, more then one (up to three) MI-3040 boxes are needed.

The menu serves for installing the Tally Distributors connected with the Kayenne XL. For installation details refer to your MI-3040 manual.

You can configure Tally outputs in the Kayenne XL control panel software from the **Config - GPO/Tally** menu which is described in more detail in section **Config** menu.

Figure 209. Install E-Box Tally



**Note** Two MI-3040 boxes can be addressed as to be one box with 80bits if they have the same MPK address and if they are installed in neighbor columns in the table above. Within a tally channel (Red, Green, Yellow) same box addresses may be used. However, a box address cannot be used in different colors. For details refer to the section on Tally Signaling in the *Installation and Service Manual*.

- Select the desired Tally channel with: **Red, Green, Yellow** buttons.
- Select the additional assignment pages with **Setup, Out Assign, In Assign** button.

A modified state of each channel will be displayed in the headline of the assignment table.

Figure 210. Install E-Box Tally Out Assign



- **Copy Assign:** Copies assignment from channel to channel

Figure 211. Install E-Box Tally OutAssign Copy



- **Reset Assign:** Reset the channels to Default or None

Figure 212. Install E-Box Tally OutAssign Reset



Figure 213. Install E-Box Tally In Assign



## Input Page

All Kayak HD system video inputs and outputs are configurable. For cabling configuration flexibility, each external primary input can be mapped to any panel source select button, as can each internal video system source. Any switcher system video signal, such as M/E Program (PGM), Preset (PST), clean feed (CLNFD), or Preview (PVW) can be mapped to any output bus to be accessed on a specific connector, or an output bus can act as an AUX bus.

The **Install Input** menu page serves for setting the input name transfer parameters and the software patch panel.

Figure 214. Install E-Box Input

**Install E-Box KAYENNE XL**

Input Substitution Table: none

Input Name	Long Name	Patch to	Ext. Name	Router Output	Router Level	Event Preroll	Event
1 Cam1	Camera 1	1	No	1	0	0	none
2 Cam2	Camera 2	2	No	2	0	0	none
3 Cam3	Camera 3	3	No	3	0	0	none
4 Cam4	Camera 4	4	No	4	0	0	none
5 Cam5	Camera 5	5	No	5	0	0	none
6 Cam6	Camera 6	6	No	6	0	0	none
7 Cam7	Camera 7	7	No	7	0	0	none
8 Cam8	Camera 8	8	No	8	0	0	none
9 Cam9	Camera 9	9	No	9	0	0	none
10 VTR1	VTR 1	10	No	10	0	0	none
11 VTR2	VTR 2	11	No	0	0	0	none
12 Pro1	Profile1	12	No	0	0	0	none
13 Pro2	Profile2	13	No	0	0	0	none

select the "Event" column to display the complete command

Timing UMD Machine P-Bus Aux Bus Ext. Key

Aux CP Tally **Input** GPI GPO Ext. Dve Editor Router

Menu Lock < ^ v > Modify

To program an Input, select the channel from the scrolling list in the central pane. Then select **Modify** to change the parameters:

- **Input Name:** Enter a four digit short name.
- **Long Name:** Enter a desired long name.
- **Patch to:** Option “Software Patch Panel”, Software License Key is required.
- **Ext. Name:** Enable / Disable the name transfer mode with Yes/No.
- **Router Output:** Select the router output channel.
- **Router Level:** Select the level of the routing system (for example, Prosan router).
- **Event Preroll:** Select a pre roll time.

**Note** Preroll is used to delay a command which assigned to an input using the Event Tab.

- **Event:** Assign/create command for On Air execution.

**Note** Assigned commands are only executed if transition trigger/cut trigger in the Config/M/E/Misc. menu is enabled.

### Setting Preroll Time

- Move the cursor to the **Event Preroll** column and press **Modify**. A popup with the predefined pre roll times appears.

Figure 215. Install E-Box Input - Event Preroll

Input 1: Preroll (in fields)												
✓0	22	44	66	88	110	132	154	176	198	220	242	able: none
1	23	45	67	89	111	133	155	177	199	221	243	
2	24	46	68	90	112	134	156	178	200	222	244	Event
3	25	47	69	91	113	135	157	179	201	223	245	Preroll
4	26	48	70	92	114	136	158	180	202	224	246	Event

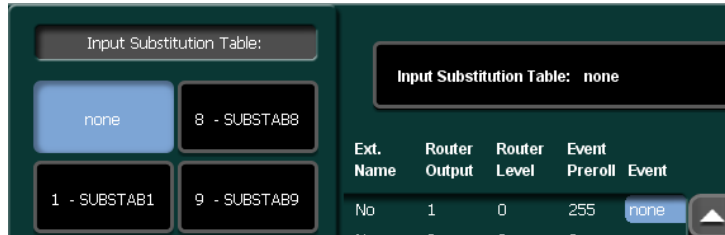
### Selecting a Substitution Table

- Move the cursor to the **Event** column and press **Modify**. A popup with the available substitution tables appears. Refer also to the **Config / Panel / SubstTab** menu.

The substitution tables are used for Simulcast mode.

This entry in this menu page card can only be modified if in the side panel PC's registry the value "USERINTERFACE / INPUT\_SUBSTAB\_SELECTABLE is set to "1".

Figure 216. Install E-Box Input Substitution



### Reset the Patch Panel Settings

- Press the **Reset Patch Panel** button and then **OK**

Figure 217. Install E-Box Input - Reset Patch Panel





## GPI Page

The purpose of the GPI In pins is to provide a stimulus from the customer's equipment to the switcher.

A simple connection to the two connectors (or four in the case of the 8 RU frame) activates the corresponding input. This kind of control is suitable for a connection to a relay contact or to an open-collector output.

**WARNING** When connecting to an open-collector output, there is no ground potential isolation between the Video Processor frame and controlling devices.

Since the circuit ground is led out of the device, the cabling has to be shielded for this kind of control. Non-shielded cables may cause EMC and/or ESD problems.

To activate a GPI In, you must provide switch closure between a particular GPI In pin and one of the two GPI In Com pins.

The function of each GPI input is user assignable. The activation of the function can be programmed to occur on the leading (rising) edge or the trailing (falling) edge of the closure, or both edges. The switch must be closed for at least one field.

The GPI menu page serves for modifying the GPI parameters.

Figure 218. Install E-Box GPI



To program a GPI, select the GPI from the scrolling list in the central pane. Select **Modify** to determine whether the rising or falling edge of the arriving signal (**GPI 1 ... 16**) is to be used.

Figure 219. Install E-Box GPI - Edge Definition



A GPI is considered Active when current flows through the LED of the opto-coupler at the GPI input. When no current flows, the GPI is Inactive.

Hence a Rising edge is the transition from Inactive to Active, and a Falling edge is the transition from Active to Inactive.

## GPO Page

GPO Output contact closures are used by the switcher system for simple trigger control of external devices. See Installation Manual for pinout and voltage specifications.

In this **Install - GPO** menu the physical properties of up to 128 GPO channels can be adjusted.

Figure 220. Install E-Box GPO



To program a GPO, select the GPO input from the scrolling list in the central pane. Then select **Modify** to change the parameters:

- **Shape:** Pulse / Static

Figure 221. Install E-Box GPO Shape



- **Idle State:** open / closed

Figure 222. Install E-Box GPO Idle State



- **Pulse Duration:** Enter the preroll time in frames (max. 255 frames)

Figure 223. Install E-Box GPO Pulse Duration



## Extern DVE Page

Menu page for selecting and modifying the parameters of an external Digital Video Effect System (DVE). For details, refer to the Installation Manual of your external DVE unit.

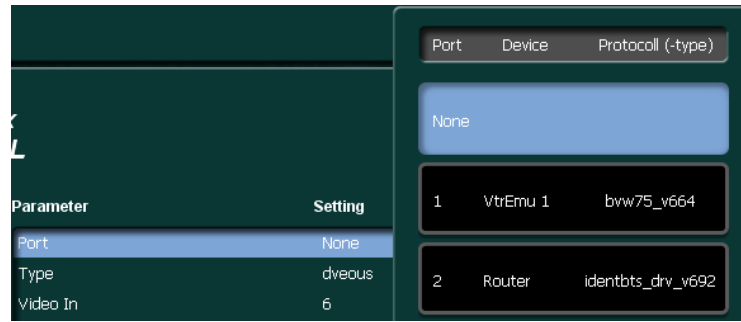
Figure 224. Install E-Box Extern DVE



To program an external DVE, select the parameter from the list in the central pane. Then select **Modify** to change the parameters:

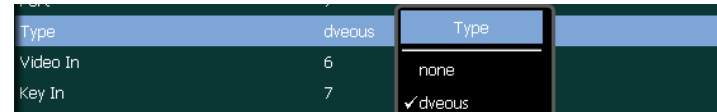
- **Port:** The first item in the menu is the port number. This defines which unused RS422 port on the mainframe will be connected to the DVE, here **Port 7** is shown.

Figure 225. Install E-Box Extern DVE Port



- **Type:** Select the protocol usable for your DVE from the list, here **DVEOUS** is selected.

Figure 226. Install E-Box Extern DVE Type



- **Video / Key In:** Define the video / key in channel. Any input can be used for video or key. The DVE LOOP function needs this information.

Figure 227. Install E-Box Extern DVE Video In

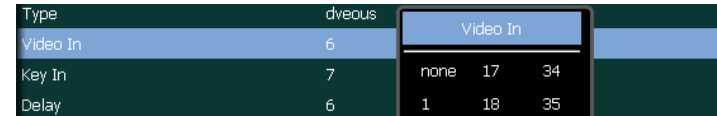
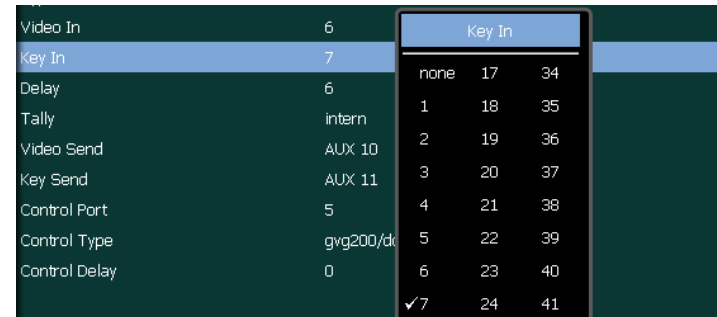
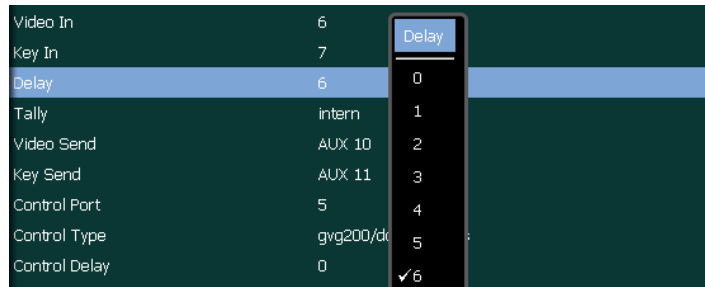


Figure 228. Install E-Box Extern DVE Key In



- **Delay:** The DELAY setting is how many fields the switcher waits after a DVE effect is finished before taking the DVE out of the loop. The setting for this depends on the DVE model (the time spent to process serial control commands). In case of DVXtreme it should be set to 8. If the delay is too short, there will be a jump interference at the end. Or a flash frame at the begin (DVE winding to correct position while already being on air).

Figure 229. Install E-Box Extern DVE Delay



- **Tally:** Define the tally properties
  - **Internal** means that every time the DVE is On-Air, the Sources on the feeding Aux Buses get an on-air tally too. No external wiring needed.
  - **External** means that the DVE (the inputs in INSTALL--EBOX--DVE) AND the tally-in for the feeding Aux Buses must be on-air to get the feeding sources on-air. This covers when the DVE is ON through a key but the image on the DVE is invisible. The DVE however must supply an appropriate Tally signal.
  - **External Only** means that the switcher just propagates the Tally-In of the feeding Aux Buses. Any logic must be wired externally. Or must be done inside the DVE.

Figure 230. Install E-Box Extern DVE Tally



- **Video / Key Send:** The video and key sends define which Aux Buses the switcher is using to feed the inputs of the DVE. These would normally be fed to inputs 1 and 2. In the example, **Aux 10** and **Aux 11** are being used. Again, this information is needed for the DVE LOOP. More Aux Buses can be used to feed multiple channel DVEs.

Figure 231. Install E-Box Extern DVE Key Send Aux

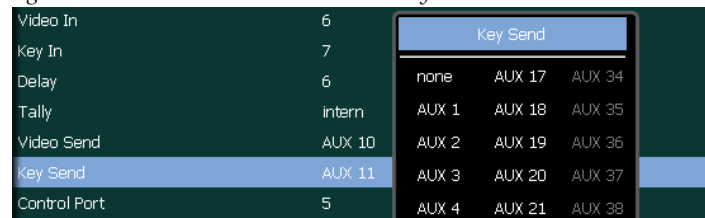




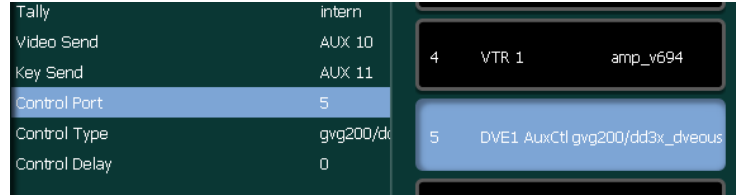
Figure 232. Install E-Box Extern DVE Video Send Aux

Video In	6	Key Send		
Key In	7			
Delay	6	none	AUX 17	AUX 34
Tally	intern	AUX 1	AUX 18	AUX 35
Video Send	AUX 10	AUX 2	AUX 19	AUX 36
Key Send	AUX 11	AUX 3	AUX 20	AUX 37
Control Port	5	AUX 4	AUX 21	AUX 38

The last three items are for the AuxBus option on the DVE.

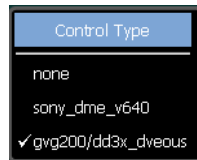
- **Control Port:** The port number once more defines the physical RS422 port on the mainframe. This needs to be connected to a second serial port of the DVE.

Figure 233. Install E-Box Extern DVE Port Aux



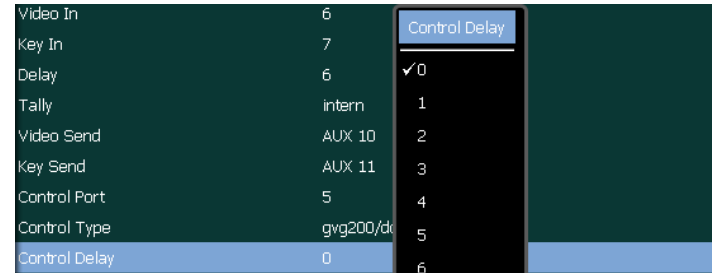
- **Control Type:** The control type sets the protocol, this should be set for example, to **GVG200/dd35** as shown. The DVE can then control any of the switchers Aux Buses.

Figure 234. Install E-Box Extern DVE Aux Control Type



- **Control Delay:** The control delay sets a time offset in fields so any front/back switching switches in the correct place. Recommended value is: zero (0).

Figure 235. Install E-Box Extern DVE Aux Control Delay



## Editor Page

Menu page for selecting and modifying the parameters of an external Editor. For details, refer to the Installation Manual of your external Editor unit.

The Kayenne XL Package can be controlled by up to four editing systems via the RS422 interface of the switcher mainframe. Control is made by means of different protocol types which can be supported by the switcher.

Basic editor control of the Kayenne XL system is supported. Capabilities include: Source selection, Key selection, Wipe selection, Preview, Timeline control (Jog/Go to Time, Run, Rewind), Transition Mode, Rate, and Triggers, All Stop, EMEM.

Figure 236. Install E-Box Editor



To program a external Editor, select one of the Editors 1 ... 4 first and select the parameter from the list in the central pane. Then press **Modify** to change the parameters:

For some remote protocols configuration options are selectable:

- **Wipe Mapping:** Select the desired number type: **GVG Pattern Numbers** or **XtenDD Pattern Numbers**
- **DSK Support:** Select Default or BVE2000
- **BVE2000 DSK Mapping:** Select the desired keyer to **Key3** or to **Key4**

## Router Page

The Kayak HD system can interface with an external routing system such as Encore, Jupiter and Pro-Bel automation systems. 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 Kayak HD mainframe input and be configured as a routed switcher source. The router acts as a pre-selector for the switcher source, and so increases the number of inputs available to a button on a Kayak system bus.

**Note** Router take commands are applied to single or all router levels depending on the configuration. The external routing system's destinations must be configured correspondingly.

The following control features are supported in Kayenne XL:

- Destination Assignment
- Level Assignment (Encore, Pro-Bel)
- Source name transfer
- Source name and configuration change notification

The Router menu page is used to setup your Kayenne XL for control of an external router system. In the Crosspoint Control pane the used serial port, the router protocol type and additional router options can be selected. In the Mnemonics Transfer pane the additionally necessary serial port for the source name transfer with Jupiter can be selected.

Figure 237. Install E-Box Router



To program a external Router, select the **Setup** page first and select the parameter from the list in the central pane. Then press **Modify** to change the parameters:

### Mnemonic Transfer

- **Port:** The first item in the menu is the port number. This defines which unused RS422 port on the mainframe will be connected to the Router.
- **Type:** Select the protocol usable for your Router from the list.
- **Port Parity:** Select **even** or **odd parity**

### Crossbar Control

- **Port:** Select an unused RS422 port on the mainframe.
- **Type:** Select the protocol usable for your Router from the list.

### Audio Follow Video

- **Port:** Select an unused RS422 port on the mainframe.
- **Type:** Select the protocol usable for your Router from the list.
- **Force PST = PGM:** Switcher sends always the command for PGM / PST

**Note** Switcher doesn't send the command for PST if the PST includes audio channels which are already selected on PGM.

- **Source Bit Order:**
  - Normal ESAM:** physical input = audio channel
  - Reverse O3D:** different assignment of physical inputs and audio channels

An external router can be configured into levels, to enable 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.

Figure 238. Install E-Box Router Bus Assignment



To program the bus assignment of an external Router, select the **Bus Assignm** page first and select the parameter from the list in the central pane. Then press **Modify** to change the parameters.



## Timing Page

The Timing menu page reports the status of the Kayak HD system sync generator. It is used to switch between HD and SD operating modes and to adjust the internal system timing.

Figure 239. Install E-Box Timing



To program the video timing of your switcher system, select the parameter from the list in the central pane. Then press **Modify** to change the parameters.

- **Genlock Phase:** Fine adjustment of the video timing. Refer to [Adjust Internal System Timing on page 303](#).
- **Input Standard:** Use this parameter to select the Video Standard you want to use for the Kayenne XL switcher. Press this button to display a list of the possible video standards, including **HD Auto Detect** and **SD Auto Detect**.

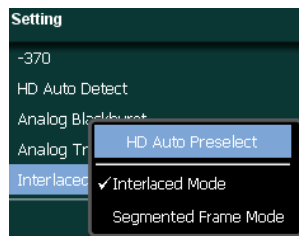
- **SD Reference Input:** This parameter is used to select the SD (Standard Definition) Reference source which can be either the SD Analog Reference or any one of the serial digital video inputs to the switcher. The digital input must match the video standard that the switcher is running.
- **HD Reference Input:** This parameter is used to select the HD (High Definition) Reference Input video source which can be either the HD Analog Reference or any one of the serial digital video inputs to the switcher. The digital input must match the video standard that the switcher is running.

Figure 240. Install E-Box Timing SD Reference Input

In Ram		HD-Reference Input	
		✓ Analog Tri-Level Sync	17 34
		1	18 35
		2	19 36
		3	20 37
		4	21 38
		5	22 39
Parameter	Setting	6	23 40
Genlock Phase	-370	7	24 41
Input Standard	HD Auto	8	25 42
SD-Reference Input	Analog E		
HD-Reference Input	Analog		
HD Auto Preselect	Interlace		

- **HD Auto Preselect:** Select **Interlaced Mode** or **Segmented Frame Mode**. For details, refer to section [Select SF Mode on page 303](#)

Figure 241. Install E-Box Timing HD Auto Preselect



- The currently selected video standard is reported in the **Current Standard** field on the top menu page.
- The incoming reference signal rate is reported in the **External Reference** field.

If you are using **Auto Detect**, the video standard you have selected persists until a different video standard is detected and locked for use by the switcher.

If the reference signal is temporarily lost, the system will continue using the previous reference standard and a **NONE** status will be reported.

**Note** The Kayenne XL cannot support both SD and HD at the same time; you must choose one mode or the other. If you change the mode from SD to HD (or vice versa) then the switcher hardware must reprogram itself to process the change. This takes a minute, but you only have to do it when changing from HD to SD, or from SD to HD.

### Select SF Mode

The Kayak HD system supports 1080sf (segmented frame) video formats at 23.9, 24, 25 and 30 fps. Segmented frame video captures a frame of video progressively, but displays the frame as two interlaced fields.

This can give a slightly different look to the resulting video playback. Interlaced and segmented frame video requires different internal system video processing techniques. These include changes to crosspoint cut points, wipe pattern geometry, and interpolation.

When using Auto Detect, the switcher system automatically detects the line and frame rate of the incoming video reference signal and reports its sync reference status on the menu. However, the system cannot always directly determine whether the incoming video is interlaced or segmented frame. If HD Auto Detect is selected as the video standard, you must set the SF Mode manually for some rates.

Because 1080-24/23.9 fps video is only produced in segmented frame, the system always uses segmented frame processing whenever it operates with a 1080-24/23.9 fps sync signal.

To select the SF mode for the switcher, set the parameter **HD Auto Preselect** to **Segmented Frame Mode**.

### Adjust Internal System Timing

**Genlock Phase** adjusts/moves the switcher’s internal system timing with respect to the selected reference. Adjusting the phase affects the phase of all inputs and outputs of the switcher with respect to the external reference.

Grass Valley recommends that you use the AUX1 bus to check the video timing of all inputs. This compares the video source selected on the AUX1 bus to the switcher’s internal system timing.

Figure 242. Install E-Box Timing Aux1 Source Select

Aux1:					
BARS	HD_Bars	IN26	BLCK	Mhp1	VR00
✓ CAM1	WSDHD	IN27	COL1	PP C	VR01
IN03		IN28	COL2	PP D	VR02
IN04		IN29	COL3	M1 C	VR03

One method to determine the correct system timing phase is to select a source on the AUX1 bus and then adjust the switcher's phase to center the source in the timing window. Record this phase setting. Repeat this process for all external video sources.

**Note** Internal video sources cannot be measured and do not show up in the measurement window when selected.

Find the average Phase value by adding the highest and lowest Phase numbers together and then divide by two. Now recheck all sources with the new average Phase number. Fine tune the **Phase** adjustment if necessary.

There may be some sources that still do not fall within the legal timing window. For these sources you will have to go back to the video source itself and change its timing with respect to reference until it appears within the legal timing window.

To adjust the Internal System Timing on the Kayenne XL:

1. Observe the vertical black cursor in the timing window to see how the source you have selected compares with the internal system timing.
2. Now adjust the internal system timing by physically turning **Genlock Phase**. This adjusts the switcher sync in relation to the Reference you have selected.
3. Turn the Genlock Phase to position the vertical black cursor as close as possible to the middle of the green legal timing window. The vertical black cursor must be in the green and not moving.
4. Position the black cursor (representing the timing for the video source you have selected for AUX 1) near the center of the legal timing window. Green indicates that the source is within legal timing and yellow means that the source is outside legal timing window limits.
5. Write down the Phase number for each source to help determine the average Phase number for all sources.
6. Once you have checked the timing for the first video source you selected from the AUX1 bus, you must repeat the process for every other video source on the AUX1 bus. Select all video sources and record their Phase number.
7. Find the average Phase value by adding the highest and the lower Phase numbers together and then divide by two.
8. Now set the Phase as close as possible to the average number.
9. Recheck all video sources on AUX1 for timing. Fine tune the Phase adjustments if necessary.

10. There will always be a few video sources that may be out of legal timing range, even after you have adjusted the switcher for the best average timing for all sources. In that case, you need to go to the video source itself and adjust its timing.
11. Check the Asynchronous buses display. If any buses are displayed or blinking, that bus input is not in sync and the timing for its video sources must be re-adjusted.

**CAUTION** If you change the Video Standard setting in the Genlock menu, you must go back and check the timing for all video sources once again.

**Note** If you add additional M/Es to your switcher, you must also recalibrate your video timing to make sure all sources are within the new smaller green legal timing window.

## UMD Page

Grass Valley offers a wide range of programmable 8-character Under Monitor Displays, especially designed for use in Production Switcher applications and in Control Systems for indication of source names and Tally. Single, double and triple displays are available.

The standard modules offer green 8-character displays with red tally lights on both sides of the display, able to be switched individually on and off for yellow Tally. The latest versions comprise dual-color-8-character displays which will switch the source name characters from green to an intensive red for Tally indication.

The menu serves for installing the Under Monitor Displays connected with the Kayenne XL and setting the tally mode. For details, refer to your Under Monitor Display manual.

Figure 243. Install E-Box UMD

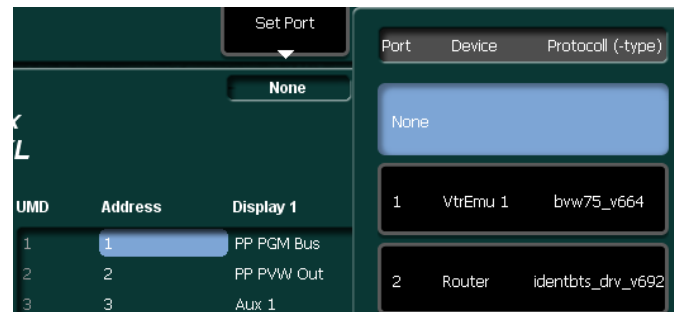


To program the Under Monitor Display connected to your switcher system, press the respective buttons on the top of the menu page:

- **Set Port:** Touching the **Port** button opens a dialog with all ports plus **None** like in all other menus where a port must be configured.

**Note** The port must be different to the ports used for Routers, DVEs, Editors, ext. DSKs, etc.

Figure 244. Install E-Box UMD Port



- **Reset:** Touching the **Reset** button sets the display assignment to default values.

Figure 245. Install E-Box UMD Reset



- **Tally Mode:**
  - **Red/Red:** The LEDs of the UMD will signal a red tally.
  - **Red/Yellow:** The right LED will signal a red tally and the left LED will signal a yellow tally.
  - **Red/Off:** The right LED will signal a red tally and the left LED is not used.

Figure 246. Install E-Box UMD Tally Mode



- **On Air Display:** Touching the **On Air Display** button switches the tally signalization on or off.

### **Modify UMD Addresses**

To modify the UMD address, select the parameter from the list in the central pane. Then press **Modify** to change the parameters.

Select the device address (see the HEX switches on the rear panel of the UMD devices). The UMD devices will use only the LSB of the physical MPK addresses (which is a 32 bit address).

Valid range: 00 ... BF (FF disables the device handling = not installed).

For details, refer to your Under Monitor Display manual.

### **Modify UMD Display**

To modify the display select the parameter from the list in the central pane. Then press **Modify** to change the parameters.

The name of the selected source on this bus will be displayed on the respective display of your UMD device



### Machine Page

Up to four external machines (VTR, Disc Recorders, Laserdisc Players) can be connected via Port 1...8. The Machine menu page serves to set the respective port numbers and protocol types.

For some remote protocols configuration options are selectable (all GVG200 based protocols, AMP, Odetics, VDCP, BVW75).

Figure 247. Install E-Box Machine Control Special Options BVW 75



To program an external machine, select the parameter from the left scroll list. Then press **Modify** to change the parameters.

### Machine Control Settings

- **Port:** The first item in the menu is the port number. This defines which unused RS422 port on the mainframe will be connected to the machine.

Figure 248. Install E-Box Machine Control Port



- **Type:** Select the protocol usable for your machine from the list, here **AMP\_V694** is selected.

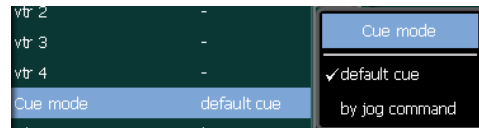
Figure 249. Install E-Box Machine Control Set Type



## Special Machine Control Options - VDCP Protocol

- **VTR 1 – 4:** Use these options to select the disk servers local video ports.
- **Cue mode: by jog command, default cue**  
When a clip is cued (**Go To Timecode, Go To MarkIn/MarkOut**), most disk servers are (re)initializing their local video port. While initializing the port, the signal is switched to black for a short time. After cueing is completed, it is usually not possible to play the clip to a timecode position less than the cueing timecode. The Cue Mode options **by jog command** prevents the disk server from (re)initializing the local video port.

Figure 250. Install E-Box Machine Control Special Options for VDCP



**Note** Not all disk servers are supporting this option.

- **Clip names: long names, short names**
- To select and activate clips with more than 8 character length, the option **long names** can be used. This option requires that the disk server also supports long clip names. The default setting **short names** should be supported by every disk server.

## Special Machine Control Options - ODETICS Protocol

- **Clip select: mode1 (cue up), default (in preset)**  
If clip selection with ODETICS doesn't work on default, use the **mode 1 (cue up)** option.
- **Show duration: supported, not supported**  
If the connected disk server supports an ODETICS protocol variant that supports clip duration requests, use the option **supported**.

### Special Machine Control Options - BVW-75 Protocol

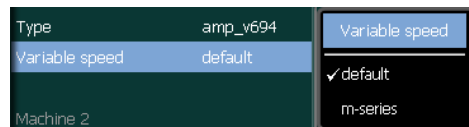
Table 6. Special Machine Control Available Options

Name	Available Settings (Default settings underlined.)	Function
Record Inhibit	"on" / " <u>off</u> "	Prevents deleting already recorded material. The Rec command will be switched to a Play command.
Synch.Play	"on" / " <u>off</u> "	Synchronized the Play command for 4 machines. This option is needed to synchronize all 4 machines (or these machines which have switched on this option). NOTE: Only the Play command will be synchronized.
Synch.all Cmds	"on" / " <u>off</u> "	Option like Synch.Play, all Tape Motion commands will be synchronized.
Cmd per Field	"on" / " <u>off</u> "	Because of the limitation of some VTRs in "on" state only one operating command per field will be transmitted.
Timecode	" <u>LTC</u> " / "CTL"	Selecting the timecode mode

### Special Machine Control Options - AMP Protocol

- **Variable speed** options: **m-series**, or **default**.  
If an M-Series server cannot be controlled by using the Variable Speed controls in the menu, select the option **m-series**.

Figure 251. Install E-Box Machine Control Special Options for AMP



## VTR Emulation Settings

VTR Emulation provides a mechanism to control internal VTR based switcher components by external editors using the BVW75 protocol. VTR based components in Kayenne XL are EMEM (Master, PP, M/E1, ...) and RamRecorder (Channel 1 - 6).

It is possible to control up to 5 component instances simultaneously.

Figure 252. Install E-Box VTR Emulation



To setup a VTR emulation session, select the number of the serial Kayak HD port (Port button) that is connected to a corresponding serial port of the editor. Select the BVW75 protocol with the Select Type button. After the internal component has been selected (Select Device button), the chosen switcher instance can be controlled by the editor device. To setup additional sessions, use the VTR Emulation Delegation button.

**Note** Port and protocol type are environment data and therefore independent from loading and saving an application. In contrast the type of the internal component to control is stored within an application.

Figure 253. Install E-Box VTR Emulation Port

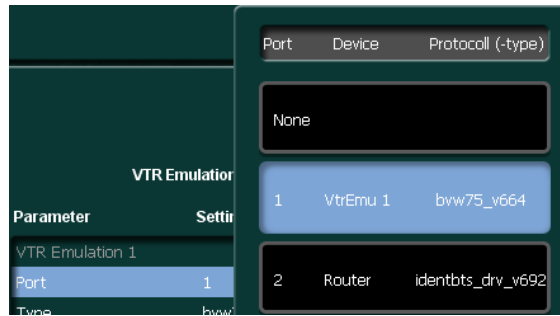
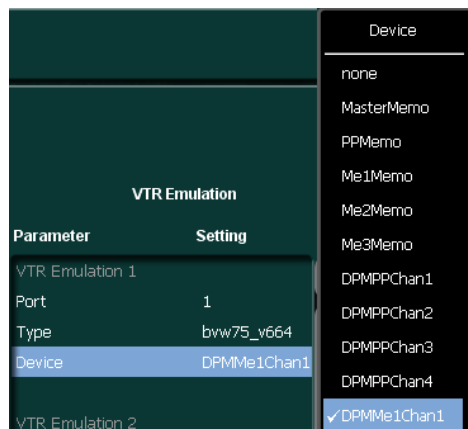


Figure 254. Install E-Box VTR Emulation Select Device



## P-Bus Page

The P-Bus menu page serves for setting the P-Bus (Peripheral Bus) parameters. The menu defines the machines which can be controlled via an RS422 bus. In the left list box of the P-Bus menu page, these machines can be provided with a name and can be activated or deactivated.

The right list box enables you to provide for each of these machines the trigger events with function names (for example, PLAY, SHUTTLE). For each machine there are the triggers from 0 ... 15 which can be assigned each to other function. The name can be selected from a list of default names which provides specific names for this application.

The list of trigger names consists of a fixed-programmed part and a freely definable part. The freely definable part – 16 names – can be adjusted in the sub-dialog **Edit Names**.

For controlling the machines, refer to the section Remote Menu.

Figure 255. Install E-Box P-Bus

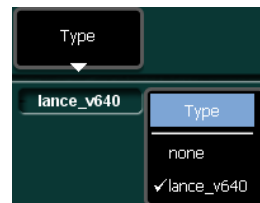


To program an external machine, select the parameter from the left scroll list. Then press **Modify** to change the parameters.

Figure 256. Install E-Box P-Bus Port



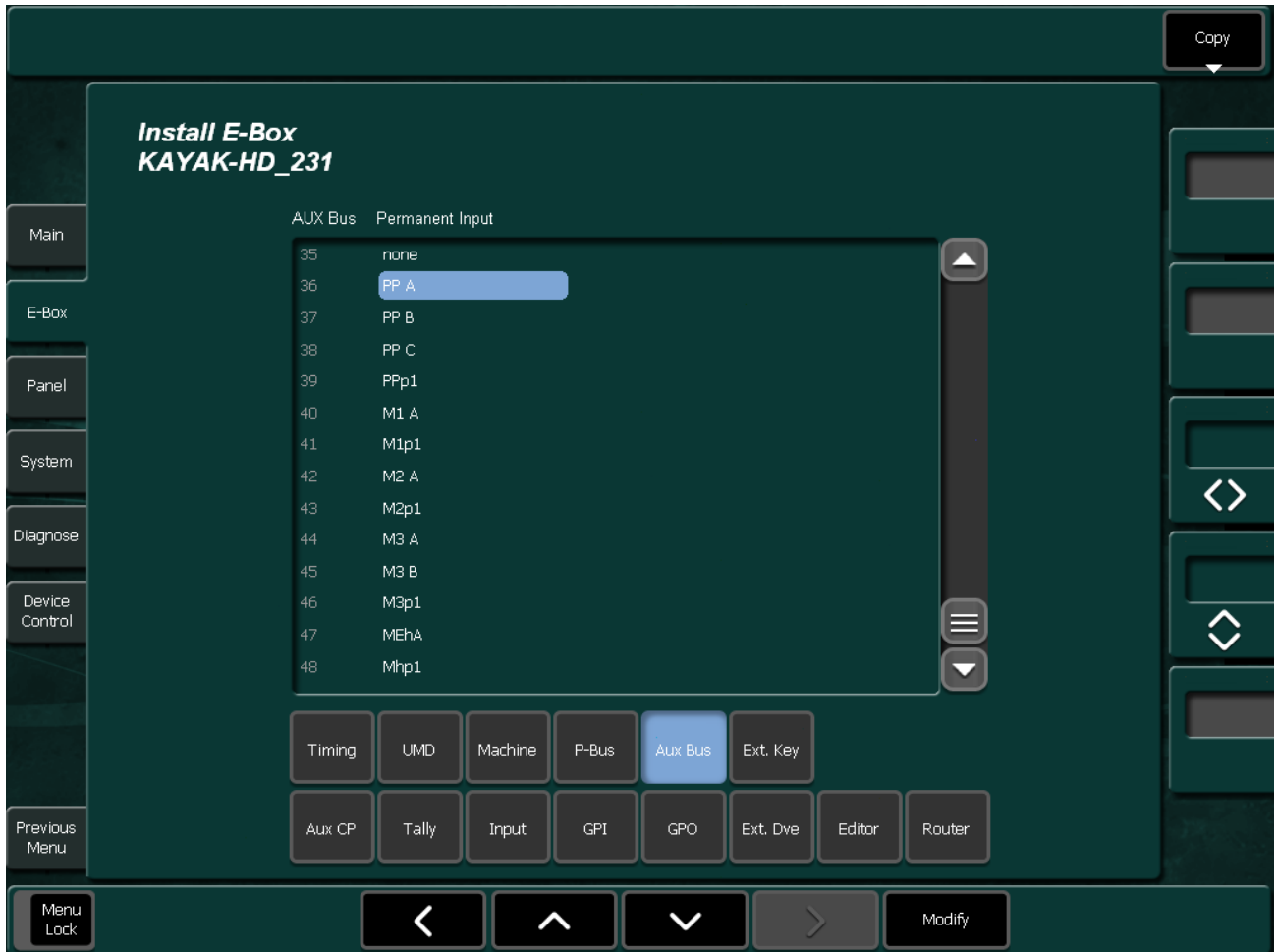
Figure 257. Install E-Box P-Bus Set Type





### Aux Bus Page

Since the KayakHD does not have dedicated ME-outputs the user defines in this subpage which ME outputs are needed. Up to 4 program and 2 preview outputs per ME are available to provide different types of Clean-feeds. It is also possible to set an auxbus to any other source of the switcher. When an auxbus is set to a source different from none it cannot be changed from anywhere else in the panel neither from an EMEM recall.



## Extern Key Page

The Kayak HD production switcher includes up to 6 built-in downstream keyers. These keying capabilities can be expanded by connecting up to three external keyers to the Kayak HD mainframe.

The external key module supports all functions which are supported in the internal keyers and can be controlled from the Kayenne XL control panel.

Since the functions cannot always be transmitted 1:1, certain behaviors have to be defined. These are keyer specific and are controlled for this reason by the controller in the mainframe.

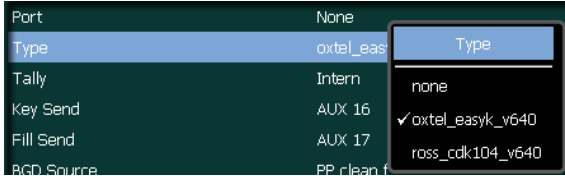
Figure 258. Install E-Box Extern Key



Figure 259. Install E-Box Extern Key Port

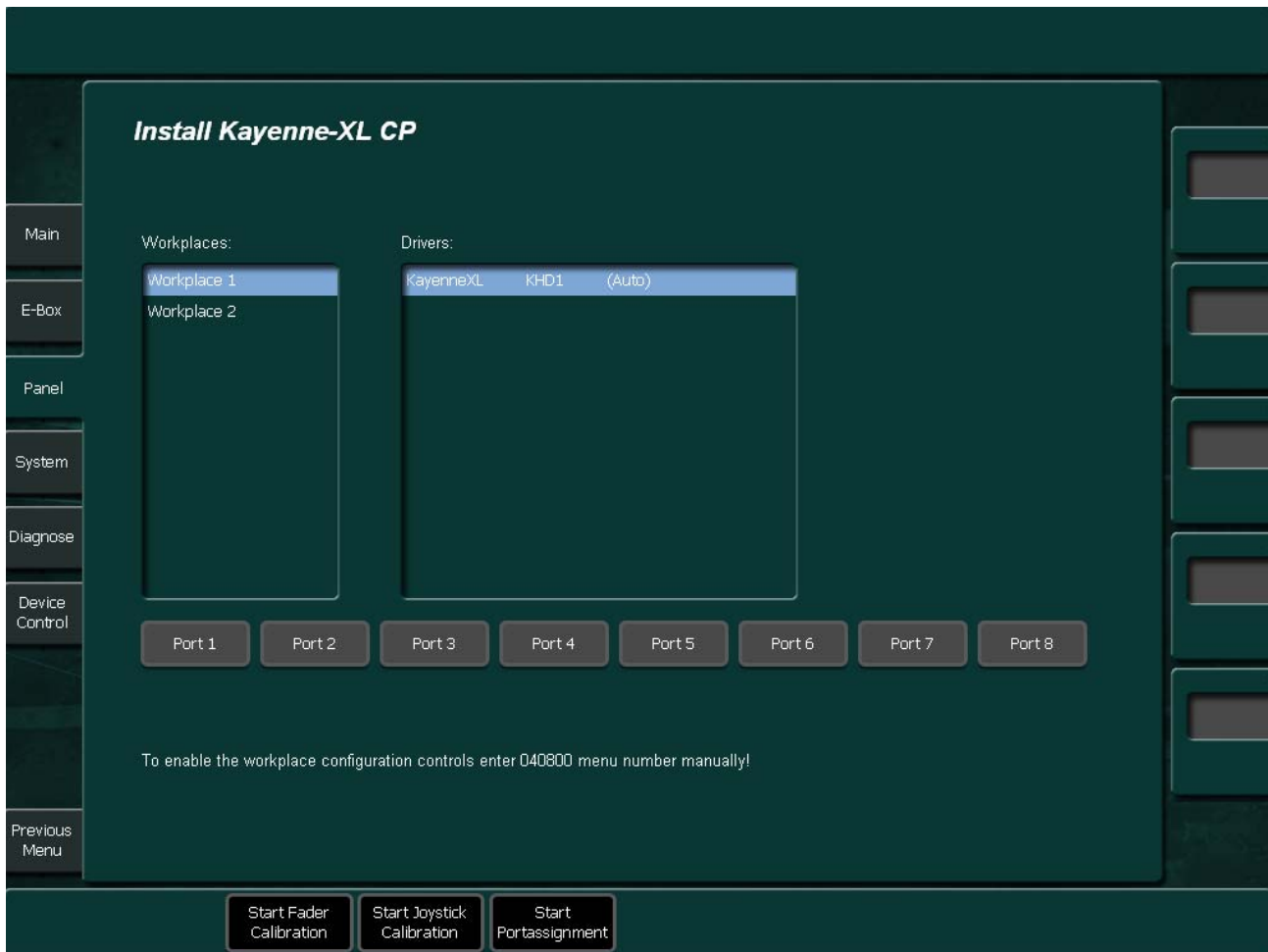


Figure 260. Install E-Box Extern Key Type



## Install Panel Submenu

Figure 261. Install Panel



Since the workplace configuration should only be adjusted by experienced technical staff, this part of the menu is grayed out to avoid accidental changes. For changing the workplace configuration enter the displayed menu number.

### Fader Calibration

Adjustment of the fader end position values. Lower end position: 0% signal, Upper end position: 100% signal.

End position means: Move the fader gently as far as it will go. During fader adjustment moving the fader does not affect video signals.

1. Press **Start Fader Calibration**. Instructions for the calibration procedure will now be shown in the display at the Transition Control Panel.
2. Move all faders to the lower end position and press the **Auto** button at the Transition Control Panel.
3. Move all faders to the upper end position and press the **Auto** button again, and the Fader Calibration is done.

## Joystick Calibration

1. Press **Start Joystick Calibration**. Instructions for the calibration procedure will now be shown in the display at the Multi Function Module.
2. Move the Joystick to bottom right corner and turn the joystick right end stop and press the **Next** button at the Multi Function Module.
3. Release the joystick that it returns to its center position and press the **Next** button again.
4. Move the joystick to top left corner and turn the joystick to the left end stop and press the **End** button. The joystick is now calibrated

## Workplace and Driver Configuration

### Add a New Workplace

The Kayenne XL Control Panel supports up to 7 workplaces. A workplace is usually a panel assembly, consisting of one or more stripes, each containing one or more modules. Thus, each port of the PCU is connected to one workplace (or none at all). It is not possible for modules which are connected to the same port to belong to different workplaces. Also, each mainframe driver is associated with exactly one workplace. If two workplaces are controlling the same mainframe, each will have to create its own mainframe driver instance to do so.

[Figure on page 320](#) shows a KayenneXL panel with one workplace and one KayenneXL Driver. All 8 Ports are assigned to that workplace.

- To add a second workplace you have to click on the **Workplace** button and press **Add**.

Figure 262. Add a new Workspace



- To finish that process select a driver in the popup menu (e.g. **Kayenne XL**).
- To finish that process select a driver in the popup menu. Currently only Kayenne XL drivers are available.
- Now you should see a new workplace with its own driver.

**Note** Only one Kayenne XL driver should have the "auto" IP-Address! Otherwise it is not able to connect to a mainframe! See section Setting IP-Address of Mainframe Drivers.

### Assign Ports to a Workplace

The buttons below the two list boxes show the ports of the current selected workplace. If you press a button of a port that is assigned to another workplace you steal that port from that workplace. It is an exclusive-OR relationship between ports and workplaces.

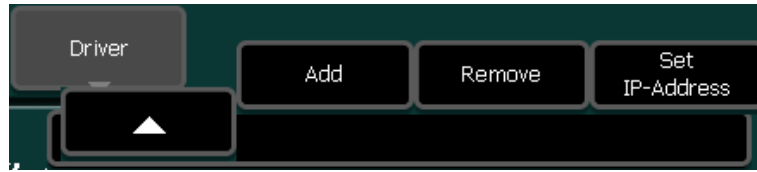
When you press a button of a port that is assigned to the current workplace the port will be unassigned (assigned to none).

**CAUTION** Already direct unassign and reassign again will change the port to stripe assignment and you will have to reassign the ports to the according stripes!

### Add a Driver to an Existing Workplace

- To add a Driver to an existing workplace select the workplace in the list, press the **Driver** button and the **Add** button in Driver popup.

Figure 263. Add a Driver



- To finish the process select a Driver in the popup menu (e.g. **Kayenne XL**). See [Figure on page 320](#).
- Now you should see an additional driver in the **Drivers** list box.

**Note** Only one Kayenne XL driver should have the "auto" IP-Address! Otherwise it is not able to connect to a mainframe! See section Setting IP-Address of Mainframe Drivers.

### Setting IP Address of a Driver

- Select the Driver and press **Driver -> Set-IP-Address**.
- After that a window pops up where you can enter the address of the driver. If you press default (0) and press enter, the default address of the Panel is used. This is indicated in the **Driver** list box with **(Auto)**.

## Fader Calibration

Adjustment of the fader end position values. Lower end position: 0% signal, Upper end position: 100% signal.

End position means: Move the fader gently as far as it will go. During fader adjustment moving the fader does not affect video signals.

1. Press **Start Fader Calibration**. Instructions for the calibration procedure will now be shown in the display at the Transition Control Panel.
2. Move all faders to the lower end position and press the **Auto** button at the Transition Control Panel.
3. Move all faders to the upper end position and press the **Auto** button again, and the Fader Calibration is done.

## Joystick Calibration

1. Press **Start Joystick Calibration**. Instructions for the calibration procedure will now be shown in the display at the Multi Function Module.
2. Move the Joystick to bottom right corner and turn the joystick right end stop and press the **Next** button at the Multi Function Module.
3. Release the joystick that it returns to its center position and press the **Next** button again.
4. Move the joystick to top left corner and turn the joystick to the left end stop and press the **End** button. The joystick is now calibrated.



## Install System Submenu

The **Installation - System** submenu is designed by using submenu pages. The menu pages can be selected by touching the respective buttons on the bottom of the menu.

The buttons on the top

- **Diagnose Enable** enables/disables the diagnosis in the attached control panel and in the connected mainframe.
- **Redundant Power** includes/excludes the optional redundant power supply of control panel and mainframe in the diagnosis.

## HW Option Page

The menu page shows the available hardware options. The installed options are highlighted.

Figure 264. Install System HW Option



## SW Option Page

The menu page shows the available software options and gives the possibility to load license files.

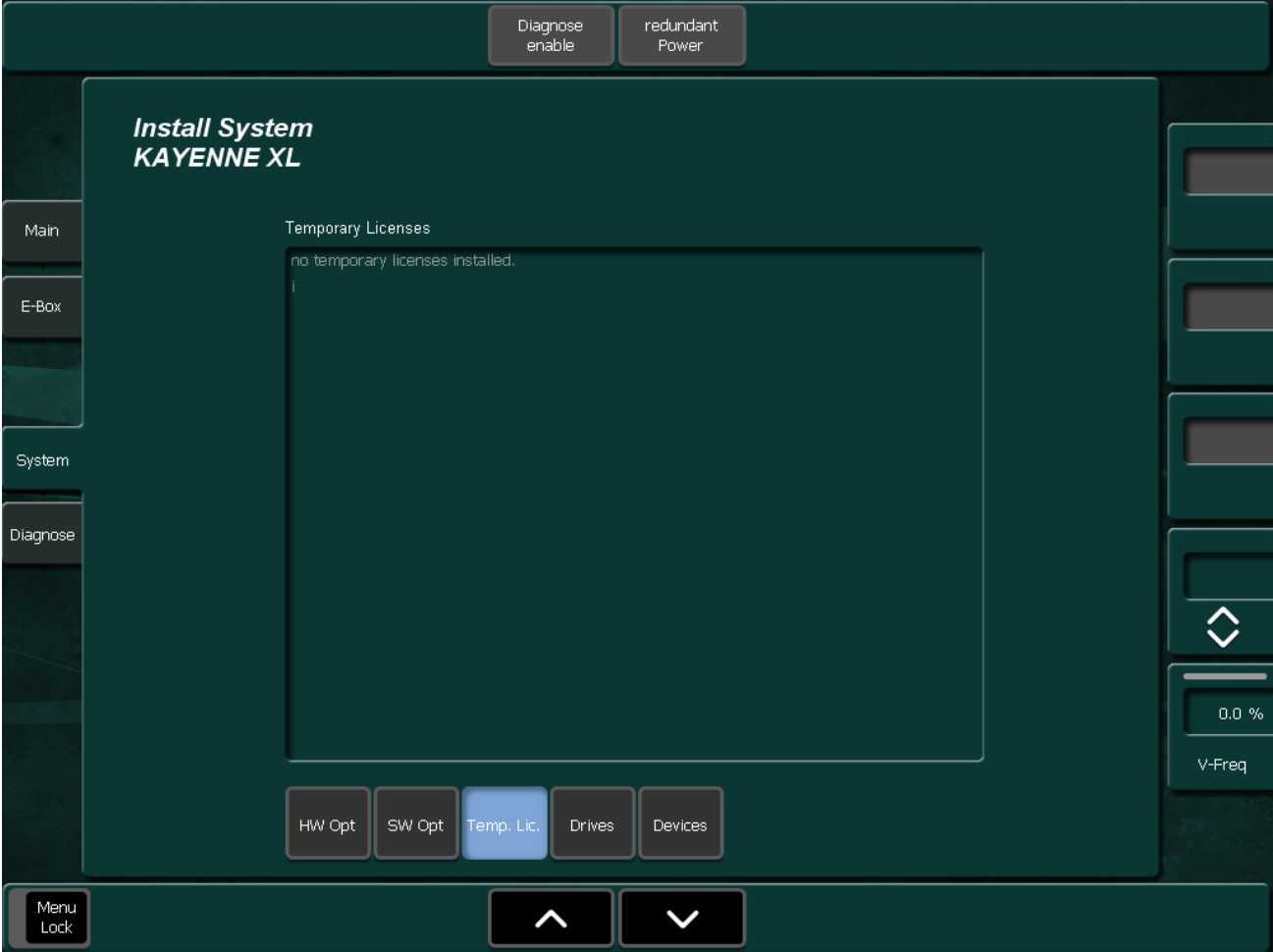
Figure 265. Install System SW Option



### Temporary Licenses Page

The menu page shows the available temporary licenses with expiration date.

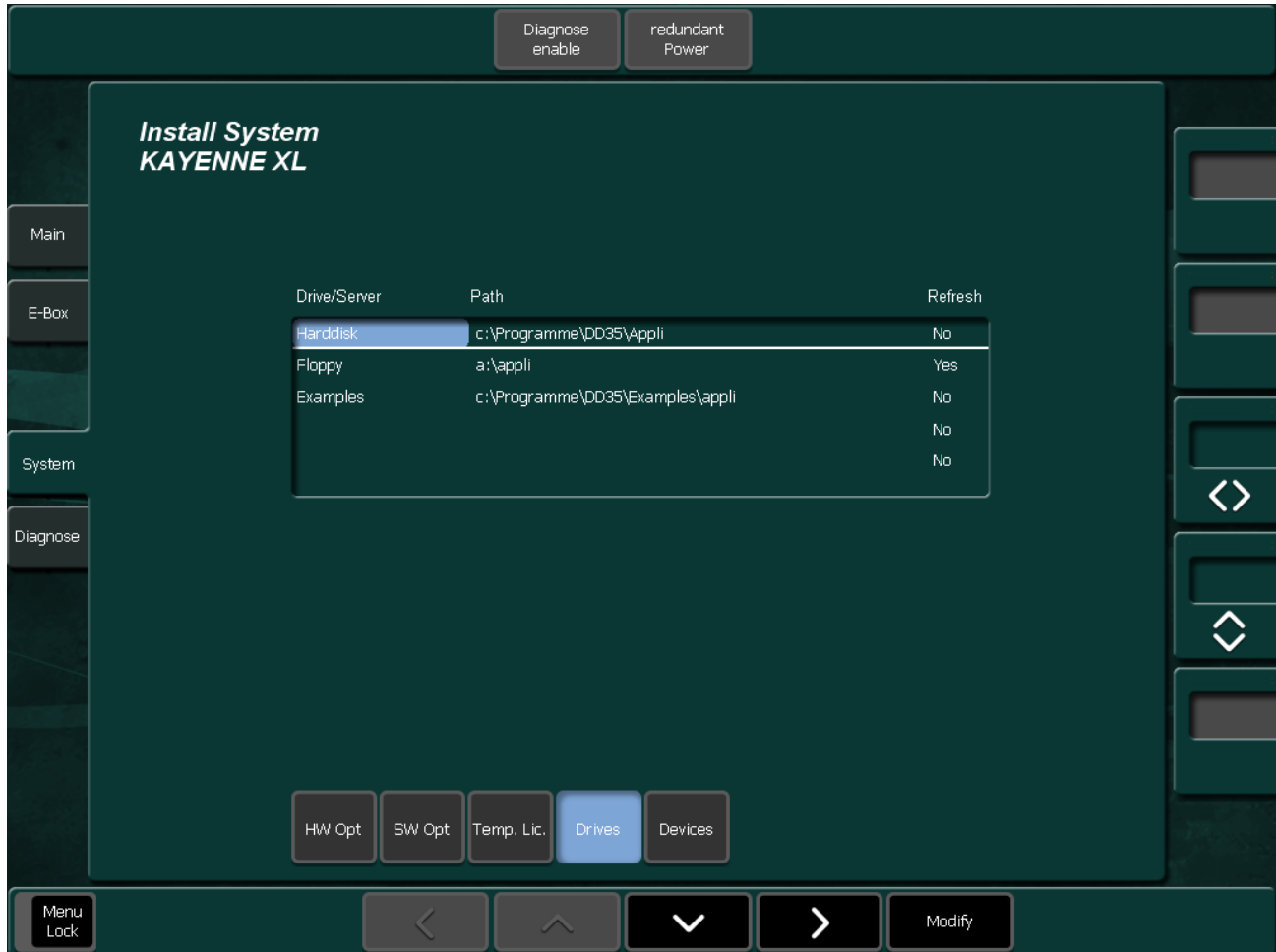
Figure 266. Install System Temp



## Drives Page

The menu page defines all drives which are provided with application data on the switcher.

Figure 267. Install System, Drives



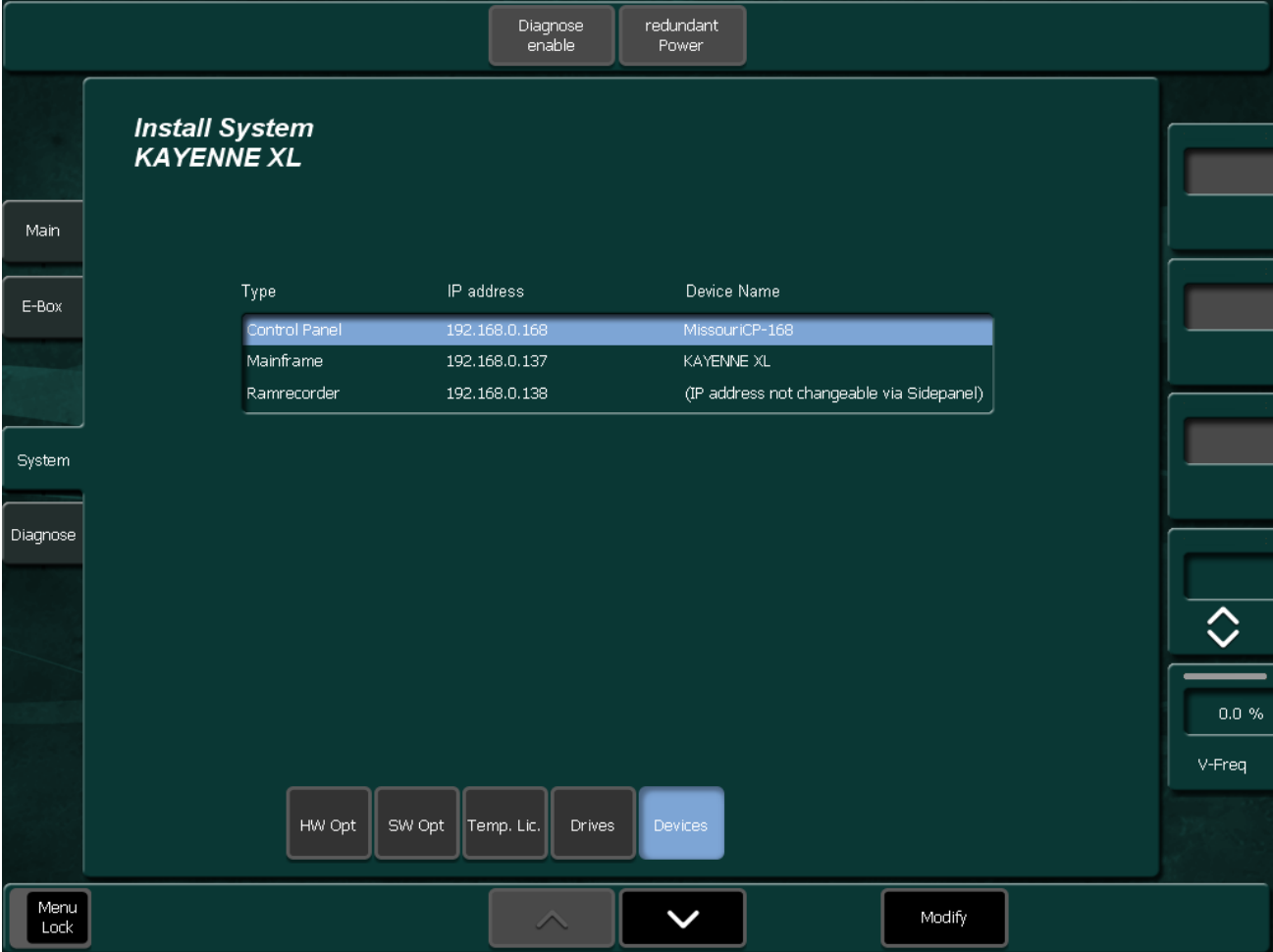
The drive in the top line (separated by a horizontal line from the other drives in the list) enables loading and storing applications. All other drives displayed in the list are only important for the copying procedures **Copy Config Simple** and **Copy Config Detailed**

- **Drive/Server:** Name of the drive or server
- **Path:** Path to the application directory
- **Refresh:** If **Yes**, it can be read in again in the **Copy Config** dialogs by means of the **Refresh** button.
- **Active:** If **Yes**, the drive is displayed in the **Copy Config** dialogs.

## Devices Page

The menu page shows the name and IP address of the connected devices.

Figure 268. Install System Devices



The Device name of control panel and mainframe can be renamed by using the **Modify** button.

## Install Diagnose Submenu

The menu page shows system and diagnosis information and gives access to the NetCentral settings.

Figure 269. Install Diagnose

The screenshot displays the 'Install Diagnose' submenu for a KAYENNE XL system. At the top, there are buttons for 'Diagnose enable' and 'redundant Power'. The main content area is titled 'Install Diagnosis KAYENNE XL' and features a table of device information. The table has columns for Device, Type, Version, Errors, and Error Description. The device 'KAYAK\_HD-231' is selected, showing 4 errors. Below the table, the 'Diagnose' section provides a detailed view of the error description for 'Board\_KHD\_MAINA:', including messages like 'no external reference', 'not locked to reference', and 'speed of Fan 4 (front) too slow'. At the bottom, there are fields for 'NetCentral Trap Target' (IP Address) and 'Community', along with buttons for 'Menu Lock', 'Modify Trap IP', and 'Modify Tr.Comm.'.

Device	Type	Version	Errors	Error Description
pcmenu 103	Sidepanel	DS0203.695.8	0	
KAYENNE XL	E-Box	DS0900.695.08	0	
KAYAK_HD-139	E-Box	DS0900.695.08	0	
MissouriCP-168	Panel		0	
pcmenux1-2	Sidepanel	DS0203.695.8	0	
KAYAK_HD-231	E-Box	DS0900.695.08	4	Board_KHD_MAINA:
KAYAK_SD-135	E-Box	DS0700.694.17	1	Board_KSD_MAIN:
KAYENNE XL	E-Box	DS0900.695.08	0	

**Diagnose**

Version	Error Description
DS0900.695.08	Board_KHD_MAINA:
DS0905.684	no external reference
DS0906.695	Board_KHD_MAINA: not locked to reference
SerialBoard# Backplane : 33143	Board_KHD_MAINA: speed of Fan 4 (front) too slow
	Board_KHD_MAINA:

NetCentral Trap Target:  
IP Address: \_\_\_\_\_ Community: \_\_\_\_\_

## **Config Menu**

The configuration menus are organized in five subgroups:

- Main
- E-Box
- Panel
- Panel Colors
- Attached Macros
- Flexible Licenses

## Config Main Submenu

The **Config Main** menu is designed to handle the use of applications within a Kayenne XL system.

The **Config Main** menu shows the currently running application of the Sidepanel connected to the mainframe and a list of applications (Available Applications) stored on the local hard disk which is located in the Panel Control Unit (PCU).

Applications can be loaded or stored by using the **Start** or **Save/Save As** button.

If **Running Applications** is selected, the currently running application (marked blue) can be stored to the local hard disk.

In order to Start an application, select the application you want to use from the **Available Applications** list box and press the **Start** button at the bottom of the menu. The list box **Available Applications** has two vertical sections. At the top there is a short section that shows the last four applications loaded to the mainframe. The applications are displayed in loading order with the latest one at the top. Below there is a complete list of all applications available on the hard disk. The applications are listed in alphabetical order. Each entry consists of an application name, a creation date and time.

The list box **Content Overview** displays the register resources of the control panel (MaKE memos) and the mainframe (EMEM, iDPM, eDPM).

## Save Application Data

All settings in the Config menu hierarchy and other operational settings (E-MEMs, etc.) are saved and loaded separately as Application via the Config / Main menu.

The Application menu shows a list of the available applications.

- **Save** Saves the current application
- **Save As** Saves the current application with a selectable file name.
- **Start** Loads the selected application file.
- **Rename** Opens a dialog window to rename the selected application file.
- **Delete** Deletes the selected application file.

**Note** If the TFTP-Server is not running start the TFTP-Server from 'Start - KayenneXL - TFTP-Server.



Figure 270. Config Main Submenu



Figure 271. Config Main Clear EMEM



**Clear Contents** is used to delete the selected registers like EMEM, Make iDPM and eDPM in the attached panel and connected mainframe.

Figure 272. Config Main Save

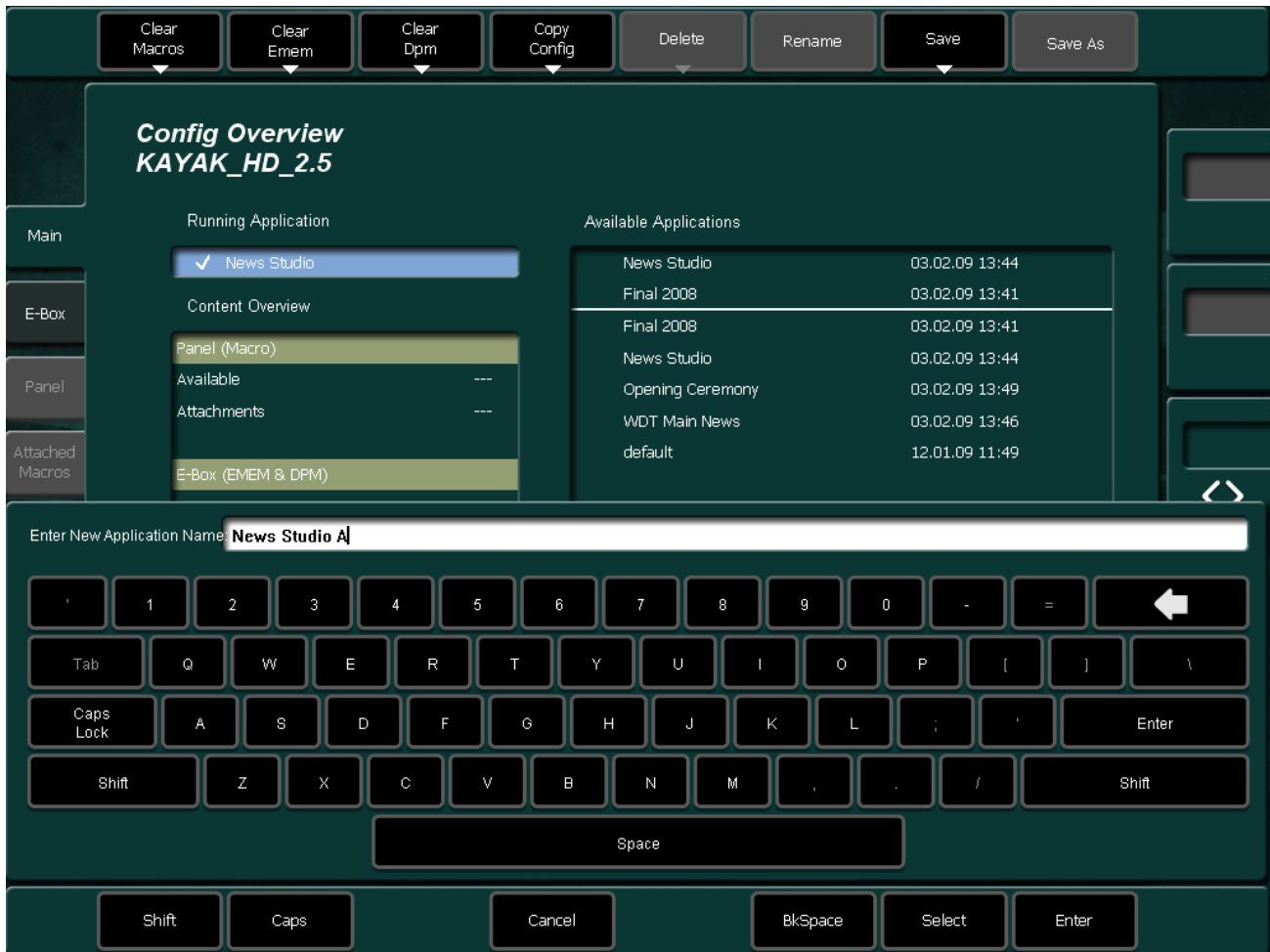


Figure 273. Config Main Protect



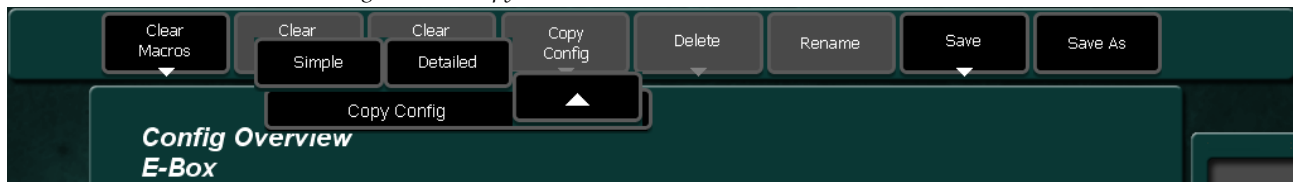
- **Delete:** The button is used to delete complete application entries on the local hard disk. Thus it is only relevant if the cursor points to an application stored there.
- **Rename:** The rename function is used with running applications and on stored applications. The new application name is read with an input dialog. For stored applications it renames the application name on the local hard disk.
- **Save:** Starts saving an application on the local hard disk. The button is only relevant if the cursor points to a running application.
- **Save As:** Starts saving an application on the local hard disk after entering a new name for the application. The new application name is read by an input dialog.
- **Cursor Up/Down/Left/Right:** The horizontal cursor buttons are used only to toggle between the two list boxes. The vertical cursor softkeys and the vertical cursor digipot are used to navigate within a list box.
- **Protect:** Write protection of the selected application in the list box "Available Applications". Protected applications are marked with a cross.
- **Start:** Loads an application from the local hard disk and starts it.

## Copy Config Menu

The **Copy Config** is used to save or exchange applications or user specific data from the PCU hard disk to a connected USB device.

- **Copy Simple:** Whole applications can be copied from one storage device to other storage devices listed in the device area.
- **Copy Detailed:** Single files such as DPM effects, Makros or EMEMs can be copied between two existing Applications.

Figure 274. Copy Menu



### Copy Simple

The menu shows lists for source and destination. In the lists, the available storage devices, the stored applications or the connected devices of an application can be shown.

- After copying an application from another switcher, the application might use devices which are not available here. The devices can be changed with the **Change Device** button.

Figure 275. Config Copy Simple Menu



- **Show Drive:** Internal hard disk and USB devices, if available, are shown in the two selection areas. There are all drives listed which are activated in the **Install/System/Drives** menu.
- **Show Application:** The applications of the selected drive are listed in the two selection areas.
- **Show Devices:** The devices of the selected application are shown.
- **Change Devices:** Allocates a different device (E-Box, Panel) for the currently selected application in the list box. A list of currently available devices is shown. Select the desired device. After copying an application from another switcher, the application might use devices which are not available here. The button is enabled only when **Show Devices** is selected.
- **Copy Direction:** Changes the copy direction from the left to the right and vice versa.
- **Refresh:** Reads the drive.
- **Delete App:** Deletes the selected application files from the selected drive.
- The Buttons **User Wipe, Wipe Pattern, Make Memo.....** at the bottom of the menu are acting as a filter for the shown application. Only the selected file types will be copied.

## Copy Config Detailed Menu

In the Copy Detailed menu, selected files can be copied between two existing applications. The menu shows two lists for source and destination. In each list, a specific part of an application can be viewed.

On the highest level, all drives activated in the Install / System / Drives menu and the Active Application are listed.

Use the Level+ and Level- buttons to navigate in the directory tree of the application. File types and files can be selected using the Select button or by double-clicking on an item in the source list box. In the destination list, the same directory level must be selected! Press the Copy button to copy the selected file.

**Note** Only one file can be copied in to a running application. If you select more than one file, an error message appears. You can copy more than one file between applications which are stored on the local hard disk.

## Config E-Box Submenu

The Config E-Box menu is designed by using subpages. Each subpage contains all settings belonging to the mainframe (E-Box) configuration functions.

- M/E
- Substitution Table
- M/E Couple
- Aux Bus Couple
- Aux Bus Save Title
- DPM
- Misc
- Audio
- Aux CP
- Tally In
- Input
- GPI
- GPO
- Ext. DVE
- Editor
- Router

### M/E Page

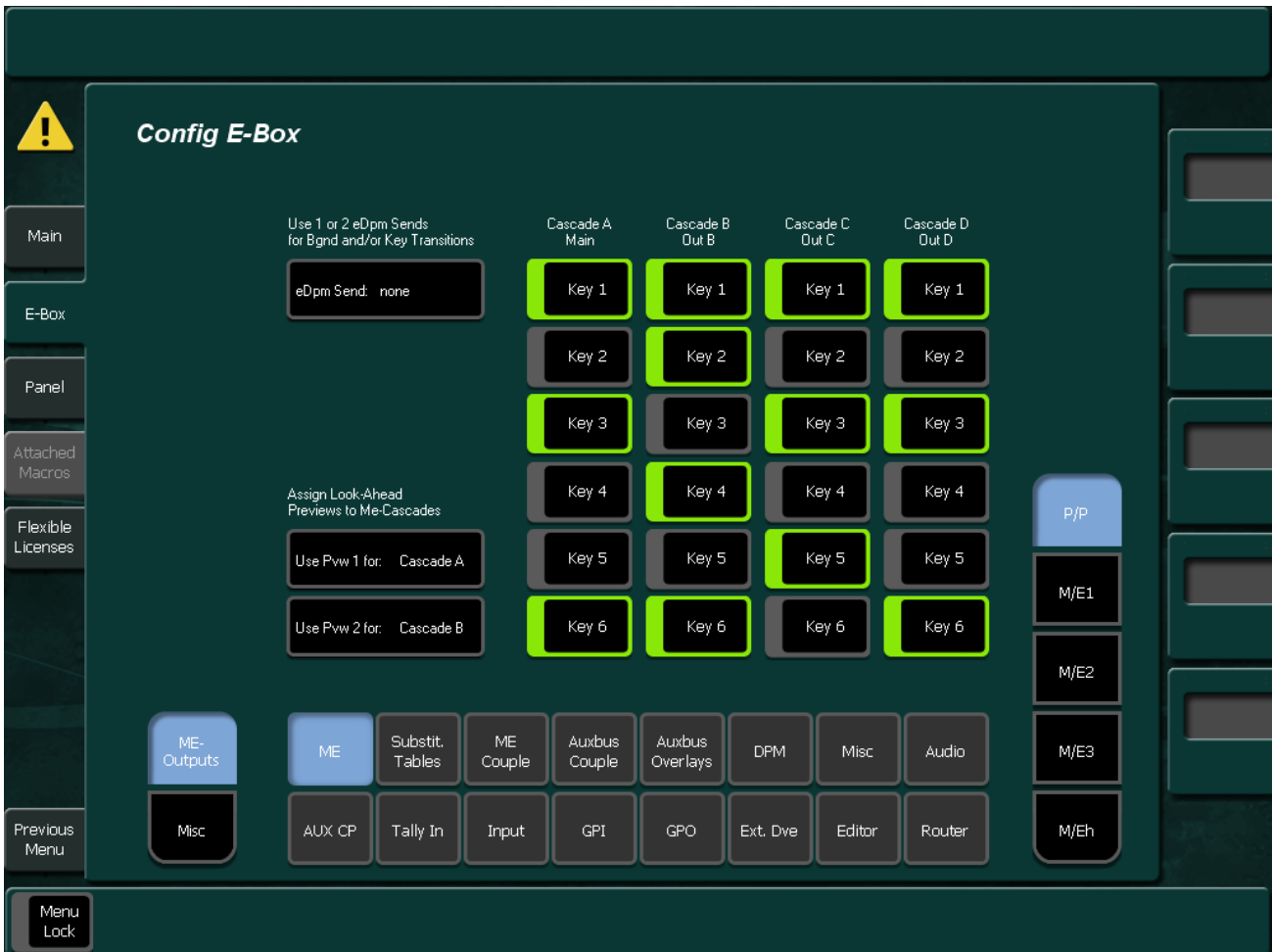
Menu page for global settings for M/E1, M/E2, M/E3, M/E-H and P/P. In order to configure the switcher parameters select the switcher level with the buttons **P/P**, **M/E1**, **M/E2**, **M/E3** and **M/Eh** on the right.

The M/E Page is split into two subpages:

- M/E Outputs
- Misc

### M/E Outputs Subpage

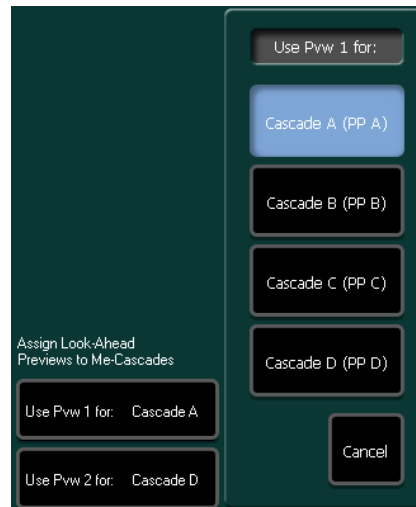
Figure 276. Config E-Box M/E Outputs





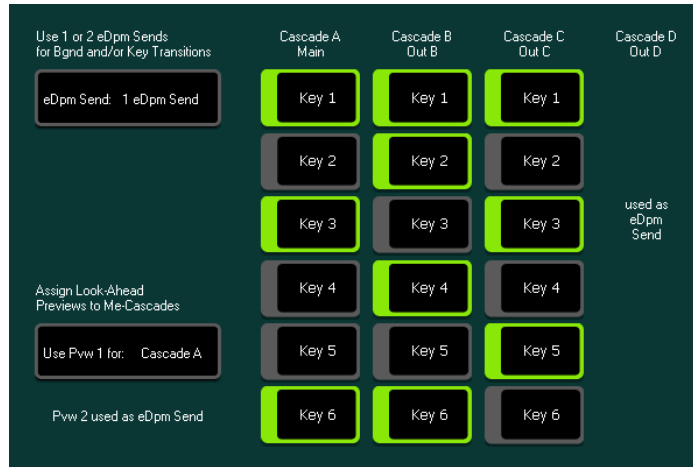
- The **Config - M/E - Output** menu enable the creation of up to four independent clean feed outputs per M/E (M/Eh only two). Any of the available keys can be freely assigned to these outputs in order to create a multi-client live program, by using any combination of keys.
- **Assign Look Ahead Preview** is used to assign the Preview outputs to one of the M/E outputs. The Preview outputs are normally assigned to your main live program output. If the preview output is correctly assigned to your main live program output, a to the Preview output connected, a monitor connected to the Preview output will show the end result of the upcoming transition. This lets the operator know in advance what will occur for that next transition.

Figure 277. Config E-Box M/E Output PVW Cascade



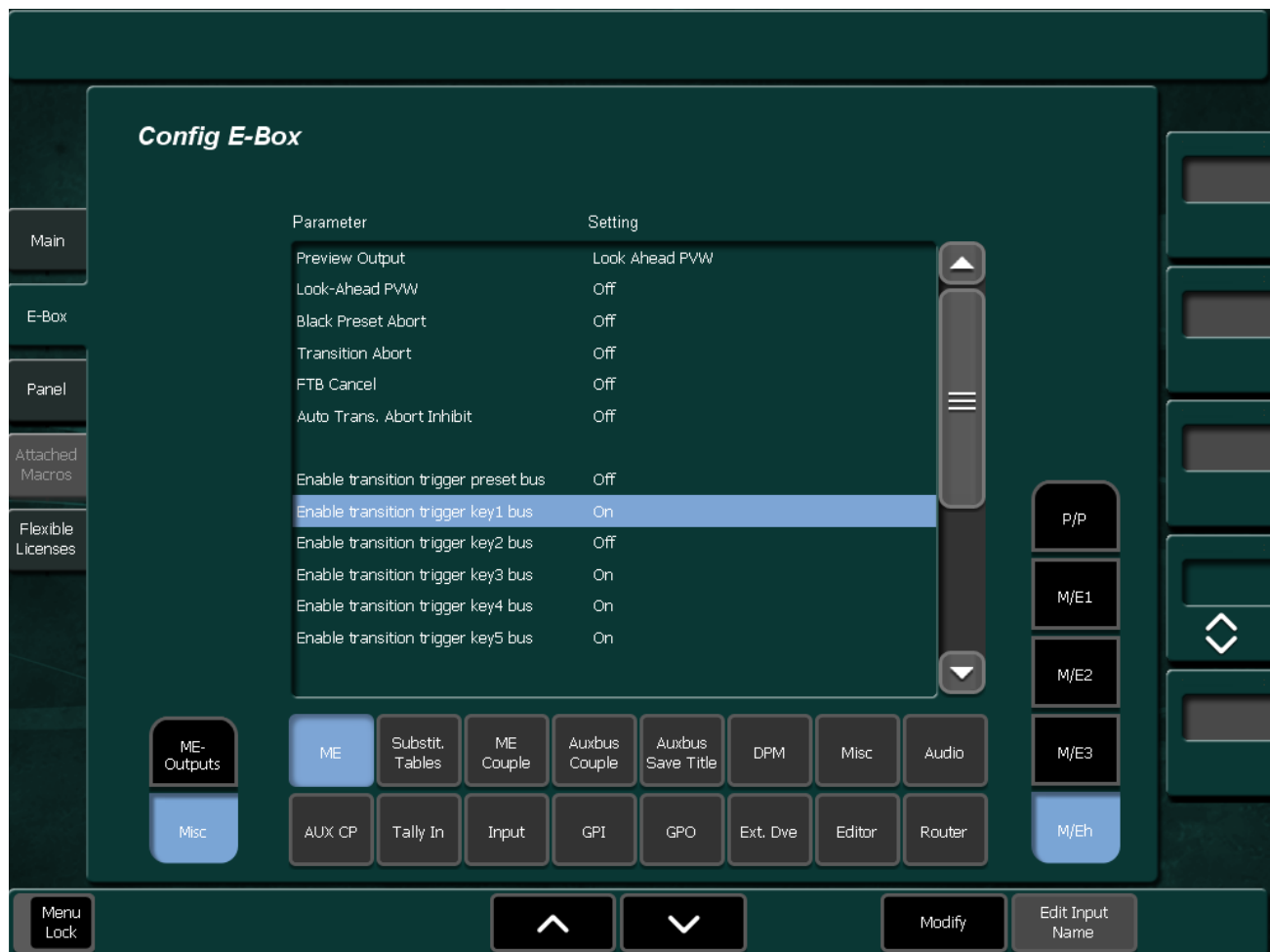
**Note** Depending on the number of used eDPM send channels, some of the available output channels in the Cleanfeed Configuration pane will be deactivated. See examples below.

Figure 278. Example



## Misc Subpage

Figure 279. Config E-Box M/E Misc



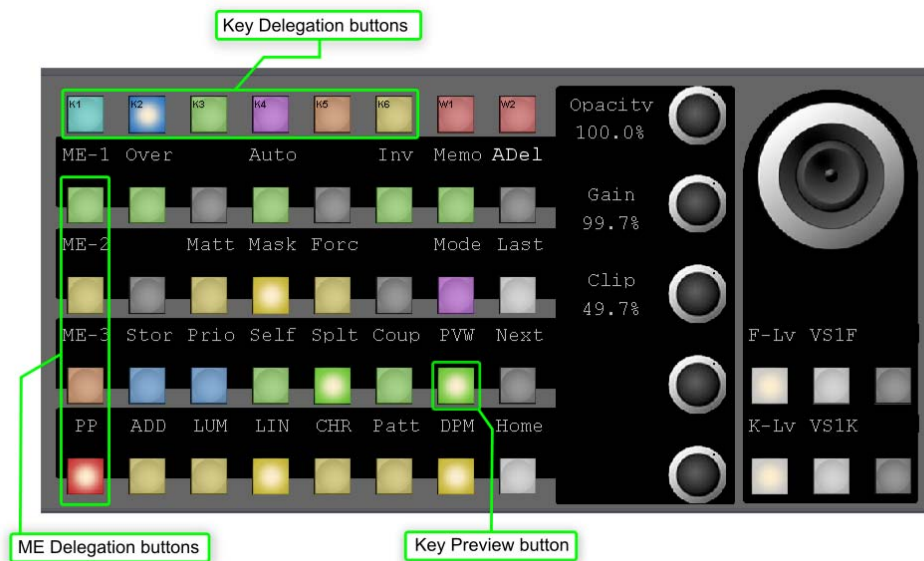
To configure the Misc parameters, select the parameter from the scroll list. Then press **Modify** to change the parameters.

- Preview Output:** Key Signal mode normally used in post production environments. If an M/E is configured for Look Ahead Preview, the end result of the upcoming transition can be viewed on a monitor connected to the Preview output of the used M/E. This lets the operator know in advance what will occur for that next transition at the Program output. The Key PVW button at the Multi Function module is used to output the key result or the black and white key signal on the Preview output, depending on the selected keyer delegation button at the Multi Function module.

### Example of Key Preview and Look Ahead PVW Mode

1. Set up a keyer on key 1 at the **Program Preset** bank.
2. Select the **PP**, using the M/E Delegation button, and select key 1 with the Key Delegation Button at the Multi Function Module.
3. If you press now once the Key Preview button (**PVW**) at Multi Function Module once, the preview output of the PP will output key 1 keyed over a background, which is selected at the BGD A bus, and the Ahead PVW is inactive. If you now press the key **PVW** button a second time, the review output will show the black and white key signal. This is quite helpful if you need to adjust a Chroma Key in order to avoid transparencies in the keying result.
4. Press the key preview button a third time, the lamp of the **PVW** button will be lit, and the Look Ahead Preview will be active again.

Figure 280. Multi Function Module



### Example Combined Key Signal Mode

1. Set up at least two keyer or even more at the PP bank. You can use Chroma Key, Luma key .....
2. Select the **PP**, using the M/E Delegation button, and select key 1 with the Key Delegation Button at the Multi Function Module.
3. Press the key button at the multifunction panel to access the key adjustment main page.

4. Hold down the key **PVW** button 2 seconds and keep the key preview button pressed, and select the keyer which you want to see at the preview output, using the key delegation button. When you hold down the key preview button for more than 2 seconds, all keyers involved in the key are indicated by the highlighted key delegation buttons.
5. Toggle the key **PVW** button until the lamp turns off, and now you will see a combined key signal from the preview output of the used M/E bank.

**Note** Please note that the default Look Ahead preview mode is not available in the Combined Key Signal mode.

- **Black Preset Abort (On/Off):**  
When another program source is selected, a currently running transition with BLK PST on is aborted, the **BLK PST** button lamp turns off, and the selected source is taken as program.
- **Transition Abort (On/Off):**  
When another program source is selected, a currently running transition is aborted, and the selected source is taken as program.
- **FTB Cancel (On/Off):**  
When another program source is selected, an active fade-to-black is instantly cancelled, so that the image with the selected source is visible on that stage's program output. This is available only in non-layered mode.
- **Auto Transition Abort Inhibit (On/Off):**  
In **On** state, an Auto Transition can not be paused by pressing the **Auto** button again.
- **Enable Transition Trigger Preset Bus:** Enable Transition Trigger Preset / Program bus.

## Transition Trigger

Transition Trigger Preset/Program Bus is used in combination with the Input Event functionality and can be configured in the **Ebox/Install/Input** Menu (Menu number 040102)

With **Input Event** you can assign an Event to each of the physical inputs. An Event can be an auto start of a Tape Machine, Video Server, a complex time lime, snap shot or DVE Effect.

If you use an auto start of Video Server, the Kayenne XL can be configured in a way where you just need to push the source button assigned to the input which is used for the Video Server.

The **Cut/Auto** button or even the Transition Bar can be used to start the Video Server and switch the source to the program output. The following example explains how to configure an auto start of a Video Server configured as Media Player 1 connected to video input 1, using the PP stage.

### Example:

#### Auto Start of a Video Server using the Cut/Auto button or Transition Bar:

1. Make sure that the used video server is connected through a serial cable connection to the mainframe, the connection is established, and the clips are also available and navigable using the Media Player Clips menu (130100). The configuration of the Video Server can be done in the **Installation/Ebox/Machine** menu (040110). For detailed information, refer to [Machine Page on page 309](#).
2. Open the **Install/Machine** menu (040102). Double click on the **Event** tab which is corresponding to the input. In this case input 1. Now you will see the main group page of the event menu. Use the following path to assign the play command for the video server to the corresponding Video Input:

#### Machine Control/Media Player 1/Motion Command/set by value/Play

3. Now open the **Config/Ebox/M/E/Misc** menu (050108). Switch **Cut Trigger PGM Bus** to on in order to enable the event assigned to the input 1. Next make sure that Input 1 is not selected at the Program Bus, and load an existing clip from the server, using the **Media Player Clips** menu (130100).

4. Finally select Input 1 at the program bus, the clip starts to play and is switched to the PGM out put of the PP stage. Depending on the type of server used, it may be possible that you see a freeze frame at the beginning of the clip. This can be prevented by setting up a preroll time. Open the **Input** menu (040102) and set the preroll time in the preroll tab for the used input to 2 or 3 frames, depending on the reaction time of the used video server. The preroll time is calculated in **Fields!** Switch to another input, load the clip again, and switch to input 1. Now you should see the playing clip without a freeze frame at the beginning. If not, increase the preroll time to your requirements. The main function of preroll is to delay the switching of the source to the program output, using the **Program**, **Cut** or **Auto** button. The Transition Bar cannot be delayed. Assigned events will be executed directly, in this case the Play command for the video server.
5. Enable trigger **Preset Bus** is used to start the video server by using the **Cut** or **Auto** button, or Transition bar at the transition module, if enabled. Input 1 needs to be preselected at the preset bus. Enable transition/cut trigger key bus is used, for example, if the video server is used as a key source, or used in combination with a DVE effect.

## Substitution Tables Page

Menu page card for generating and editing a substitution table

Figure 281. Config E-Box Subs Tables



The menu page contains 15 substitution tables. These tables can be used by coupled Aux buses or coupled M/Es to exchange the source when the coupled Aux bus follows his master. Refer also to the Aux Couple and M/E Couple menu pages described below.

- **Modify Name:** Enter a new name for the substitution table.
- **All Subst.:** Sets all substituted inputs to a selectable input, to white, or delete all.
- **Add Subst.:** Enter a new substitution pair in the selected table.
- **Remove Subst.:** Remove a substitution pair from the selected table.
- **Modify Subst.:** Sets all substituted inputs to a selectable input, to white/black, or delete all, if no substitution pair is available.



## M/E Couple Page

M/E Couple is used to support an additional transmission line output on a switcher whose main parts are identical to that of its main output, but differs in country specific video components (source and/or keyer substitution). Those source replacements can be defined with substitution tables.

EMEM recalls are used to set all master and coupled M/Es into an initial state depending on the next effect. With respect to the meaning of the effect the transition module then works correct with **CUT**, **AUTO** and the fader commands.

Figure 282. Config E-Box M/E Couple



### Coupling Rules

Each M/E can be coupled to any other M/E as long as they belong to the same application and the coupling doesn't become recursive. The coupling can be done in serial, parallel and in combinations.

Examples:

- **Serial: PP to M/E3 to M/E2**  
M/E3 is coupled to P/P.  
M/E2 is coupled to M/E3.  
M/E1 is not coupled.
- **Parallel: PP to M/E3; PP to M/E2**  
Both, M/E3 and M/E2 are coupled to PP. M/E1 is not coupled.
- **Combined: PP to M/E3; PP to M/E2**  
Both, M/E3 and M/E2 are coupled to P/P.  
**M/E2 to M/E1**  
M/E1 is coupled to M/E2.

**Note** Recursion is not possible. PP to M/E3, M/E3 to PP is not allowed.

Each M/E can be used as a Master M/E. If a coupled M/E is modified directly via a control unit, the master M/E is not affected.

**Note** When the Half M/E is coupled (for example DSK mode), the stage is not available for M/E Couple.

### Coupled Resources

After selection of the M/E Couple Mode in the **Config - E-Box** menu, the following M/E resources can be coupled:

- PGM and PST bus (optionally by one substitution table) at M/E crossbar.
- CUT, AUTO and FADER at M/E transition.

By selecting M/E Couple in the **Status** menu, the following function can be coupled in addition:

- Fill buses of the keyers. Together with the key memory, most keyer adjustments can be recalled (no wipes...)

### TiM/E-Memo Handling

M/E coupling works on command level. This means that TiM/E-Memo recalls and application load are disregarding M/E coupling. It is used to preset M/Es.

Applications:

Every application has its own, complete M/E-coupled structure. If an application is loaded or the coupled state of one application is changed, this new modification is checked and accepted or rejected (see Coupling rules).

## Aux Bus Couple Page

Menu page for coupling the AUX bus to other switcher buses (masters). If the source on the master is changed, the source on the coupled AUX bus follows.

Figure 283. Config E-Box Aux Bus Couple



To configure the Aux Bus Couple parameters, select the parameter from the scroll list. Then press **Modify** to change the parameters.

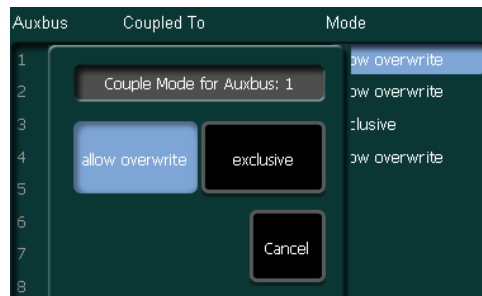
- **Coupled To:** Select the desired switcher bus
- **Mode:**
  - **Normal:** In coupled mode, additional selection of sources on the AUX bus is possible.
  - **Exclusive:** In coupled mode, additional selection of sources on the AUX bus is not possible.
- **Subst. Table:**

With the **Subs. Table** button, a substitution table can be selected. These tables can be used by coupled AUX buses or coupled M/Es to exchange the source when the coupled AUX bus follows his master.

Figure 284. Config E-Box Aux Bus Couple Auxbus Coupled to...



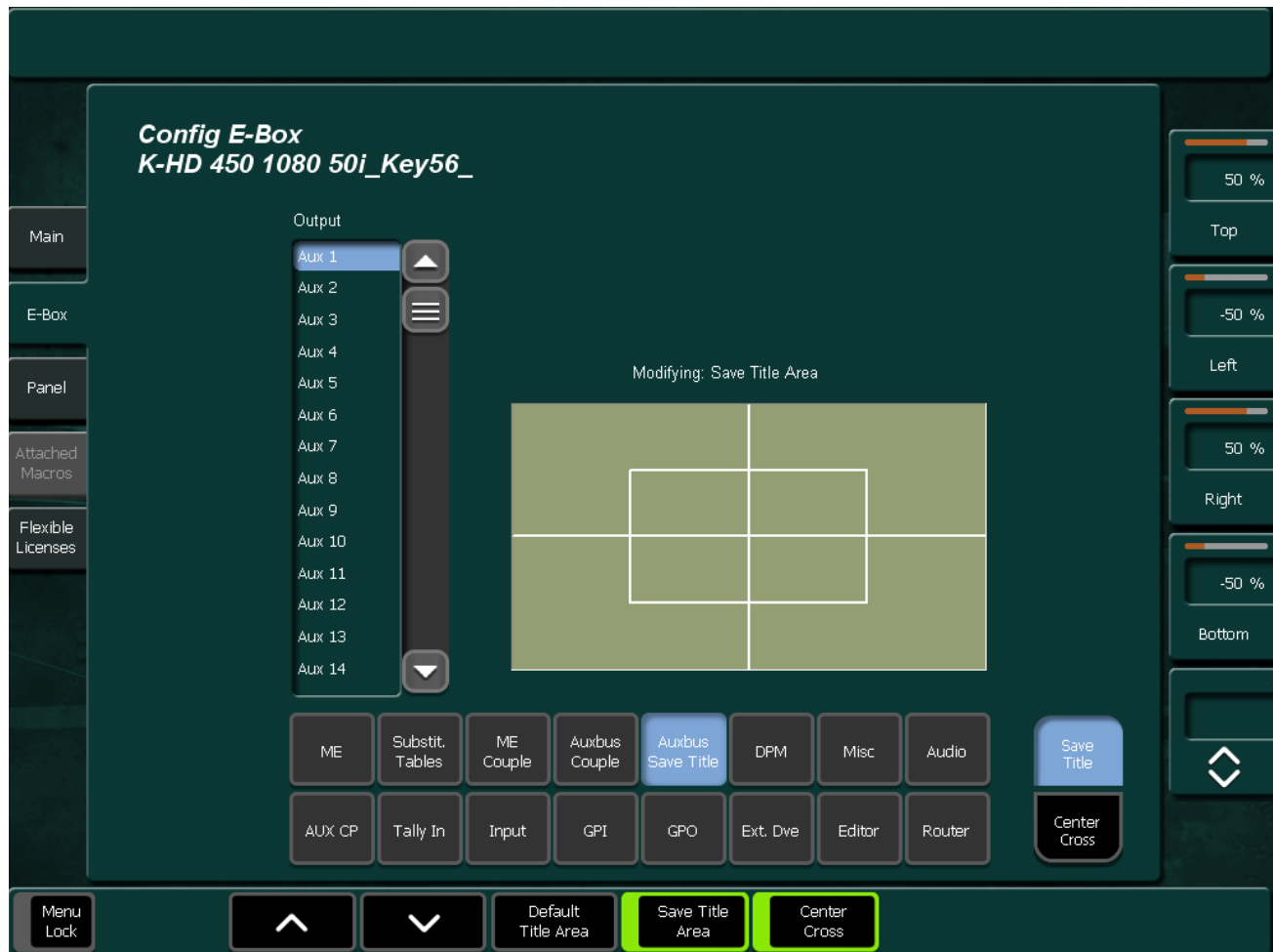
Figure 285. Config E-Box Aux Bus Couple Mode



## Aux Bus Save Title Page

Menu page for fixed title settings.

Figure 286. Config E-Box Aux Bus Save Title

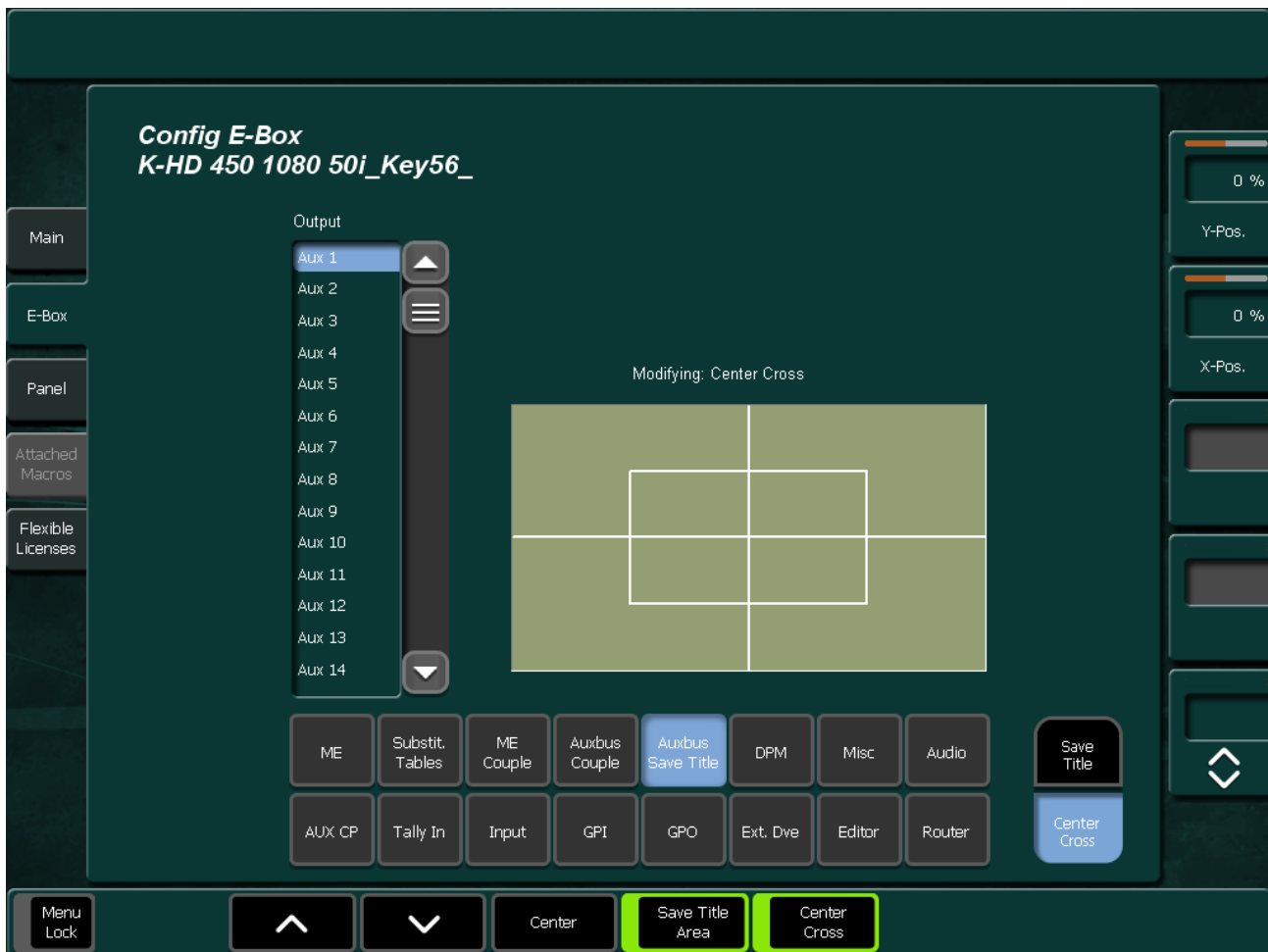


These adjusting elements enable fading-in of different auxiliary lines (Box, Center Cross) into each individual AUX bus. The fading servers as an auxiliary means to mark defined picture areas (for example, areas for logos, subtitles, 4:3 raster) in productions. The digipots on the right enable you to adjust the title box or the center cross over the complete picture area.

To configure the Aux Bus Couple parameters, select the parameter from the scroll list. Then press **Modify** to change the parameters.

- **Center:** Centers the selected auxiliary line in the picture center.
- **Show Title:** Fades in a rectangular frame.
- **Show Cross:** Fades in a center cross.
- **Save Title / Center Cross:** Delegation buttons for rectangular box and Center Cross adjustments.
- **Set Area to Save Action:** Default for **Save Action**.
- **Set Area to Save Title:** Default for **Save Title**.
- **Save default:** Saves modified adjustments of **Save Action** or **Save Title** as a default.

Figure 287. Config E-Box Aux Bus Save Title



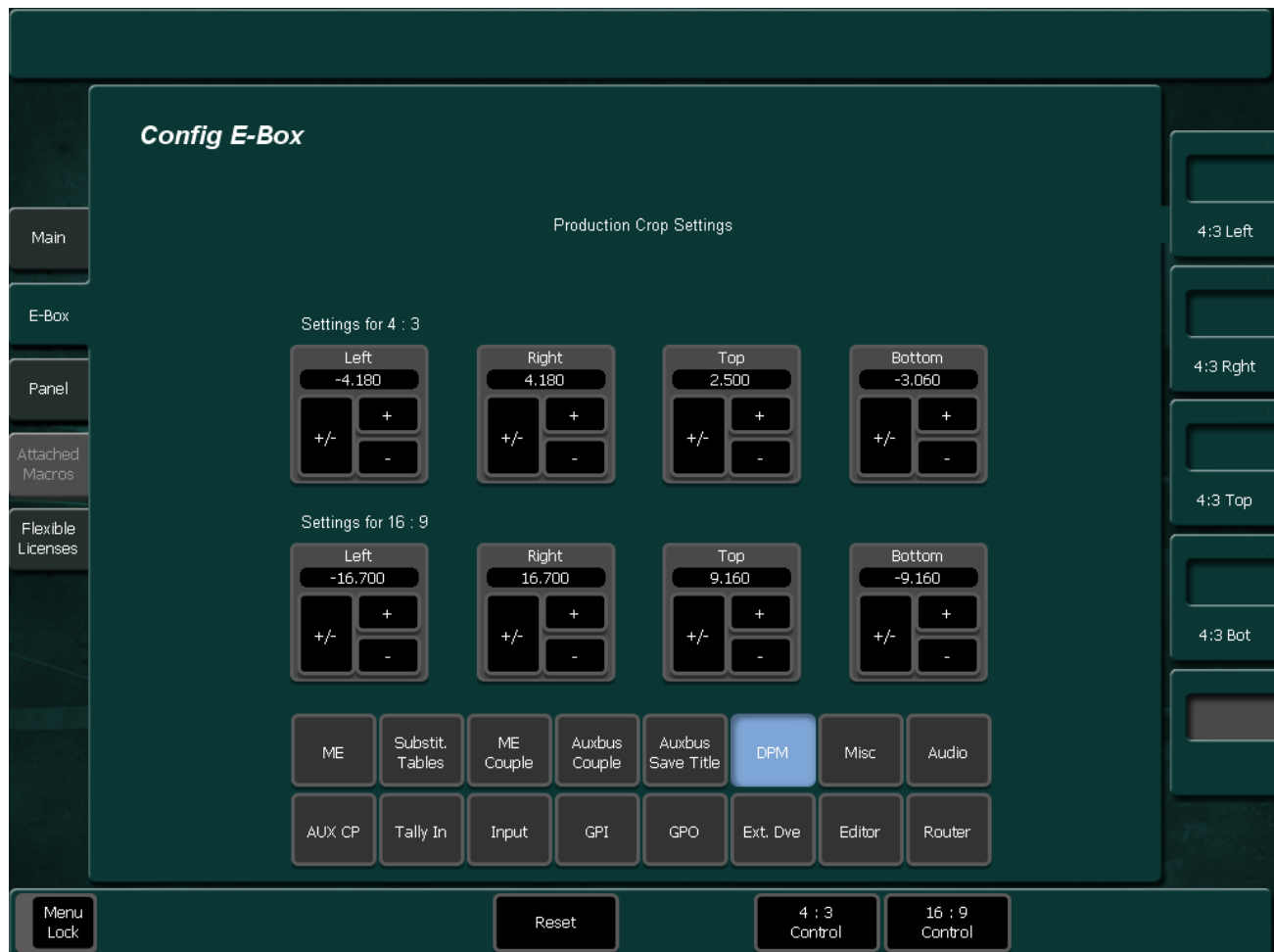
## DPM Page

Menu page for DPM production crop settings.

The production crop settings enable you to adjust an overall crop for the DPM channels. Additional cropping per channel is possible in the **DPM/Transform/Crop** menu.

To configure the Crop parameters, select the parameter pad, and adjust the values with the digipots on the right.

Figure 288. Config E-Box DPM

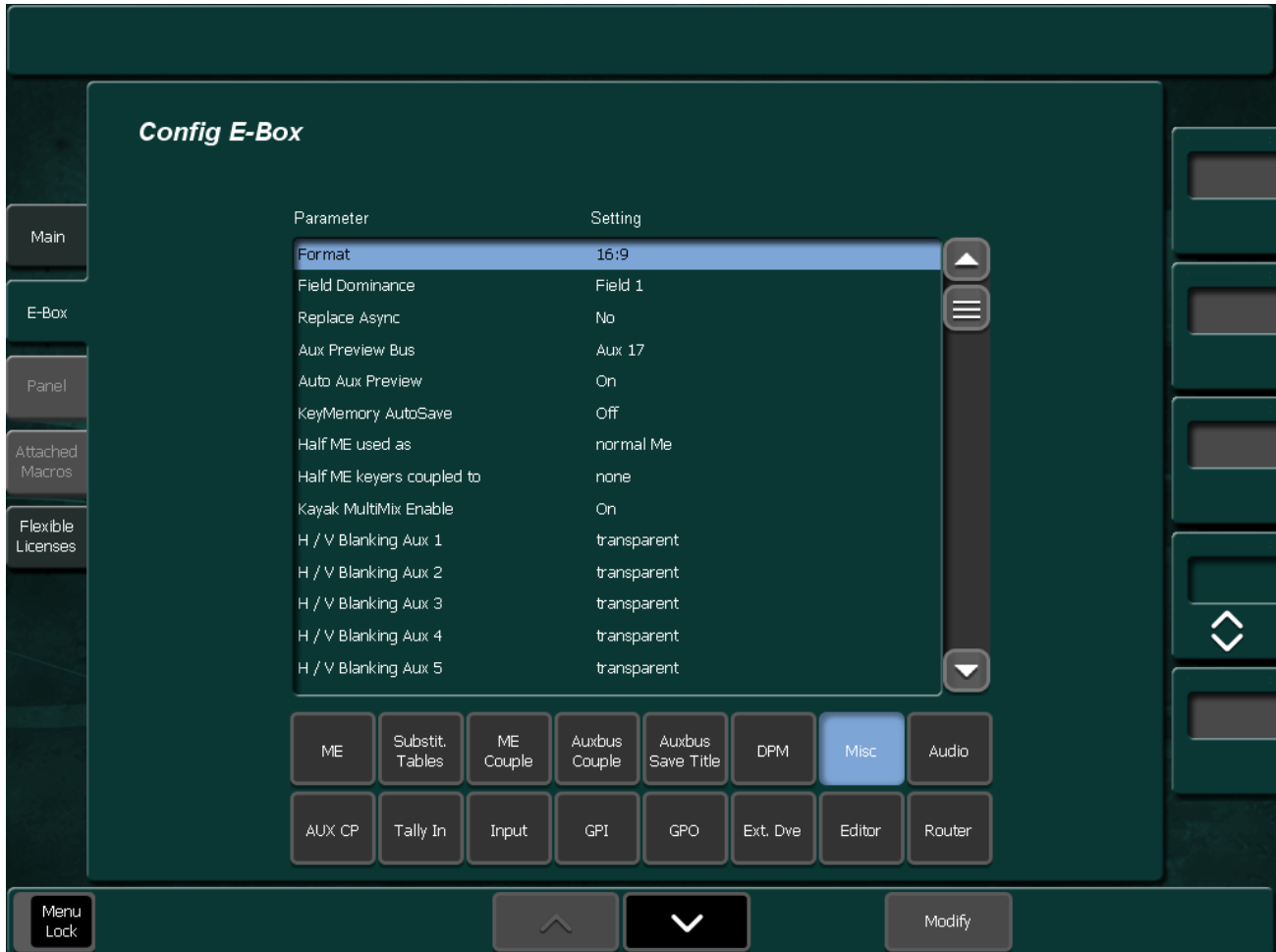


- **Reset:** Restores the default Crop values.
- **Control 4:3:** Production Crop calculated in 4:3 aspect ratio (SD mode only).
- **Control 16:9:** Production Crop calculated in 16:9 aspect ratio (SD mode only).

## Misc Page

Menu page for global settings.

Figure 289. Config E-Box Misc





To configure the Misc parameters, select the parameter from the scroll list. Then press **Modify** to change the parameters.

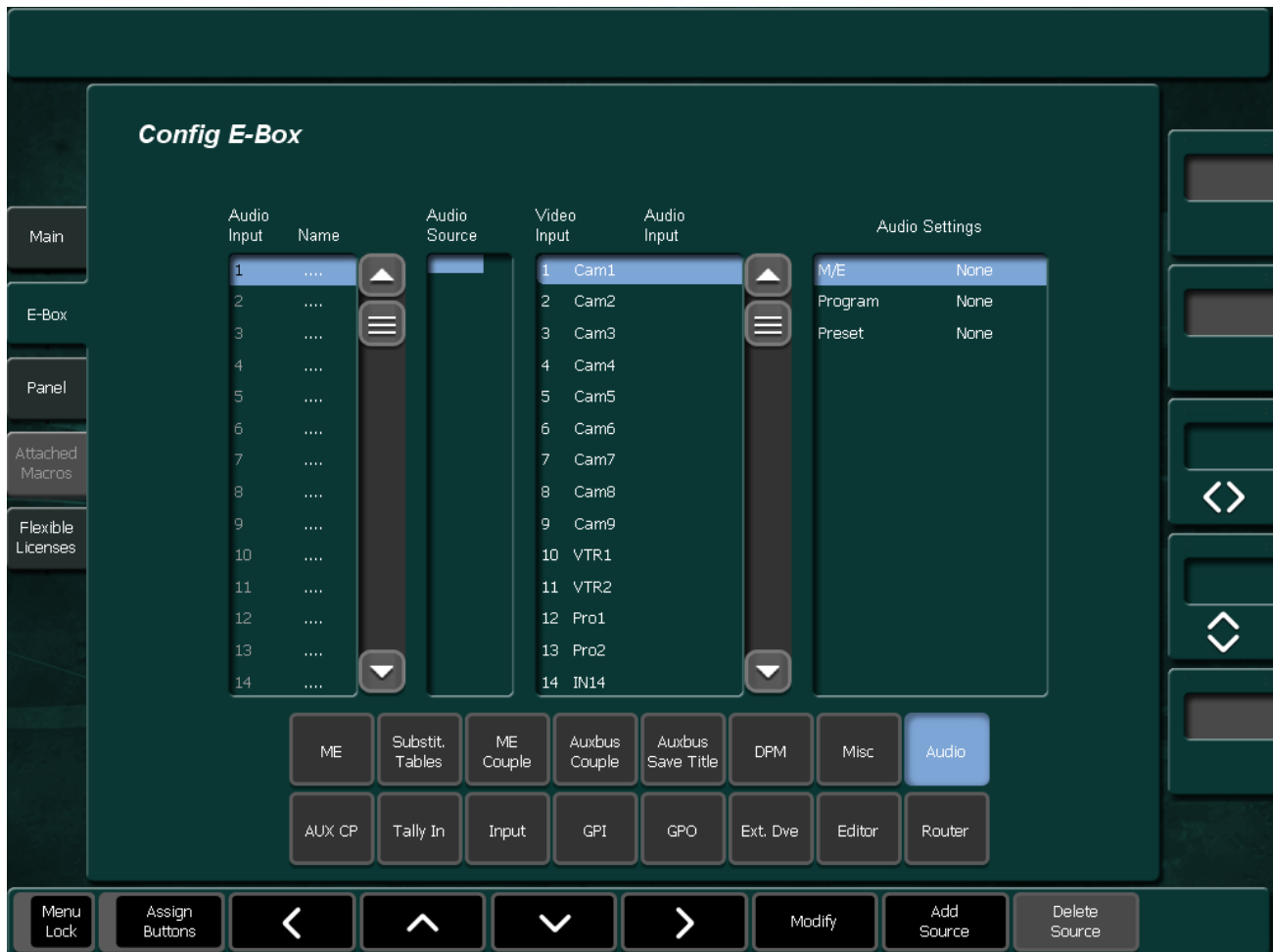
- **Format:** Select an M/E specific TV format. **4:3** or **16:9** selection is possible in the respective M/E menu.
- **Field Dominance:** The button can be used to switch between **Any Field**, **Field1** and **Field2**. The setting concerns the switching of the crosspoints on all buses, the start of auto transitions, switching with Cut, and the recalling of snapshots and timelines. In position **Any Field**, switching occurs at the beginning of the next frame. In position **Field 1/2**, switching or starting occurs before the corresponding field.
- **Replace Async:** The parameter permits the selection of different modes for the treatment of asynchronous sources in the switching levels (M/E1, M/E2, M/E3, PP, M/E-H):
  - **On:** If Background/Program are asynchronous, enabled keyers are disabled. If Background/Program are asynchronous and the fill signal of a keyer becomes asynchronous, the enabled keyer is disabled. If Background/Program or Preset are asynchronous and a transition is selected, a cut is performed at the end of the transition.
  - **Off:** Asynchronous signals are phased over H and are passed.
- **Aux Preview Bus:** Selecting the desired AUX Preview Bus None, Aux1 ... Aux48.
- **Auto Aux Preview:** Enable or disable the Auto PVW mode. In enabled condition the key PVW, mask PVW or the chroma key cursor signal of the respective mixing level is switched on the PVW bus.
- **Key Memory Auto Save:** If the KeyMemo button is switched on in a Keyers menu, the key memory is always recalled if the key sources are changed during control panel operation. These changes can occur directly by selecting another key source or also indirectly by changing the Fill source or the Split mode. For storing the key settings in the key memory two modes are available:
  - **Auto Save:** If the switch Key Memory AutoSave=On, the settings of the previous key signal are stored automatically before the settings of the next key are recalled. If the switch Key Memory AutoSave=Off, the stored settings of the new key are recalled without saving the previous settings.
  - **Manual Storing:** Key Memory AutoSave=Off. For storing the current settings into the key memory, press the button of the respective Fill source approximately 2 seconds. The storing is confirmed by a short beep in the control panel.
- **Half M/E Mode:** Selects the Half-M/E mode: Normal M/E or DSK mode
  - In **Not coupled** mode, this button can be used in any panel M/E to delegate the panel M/E to the Half M/E. Once delegated, the Half M/E can be used exactly like any other full M/E.

- In **DSK** mode, the button works only in panel M/Es that are delegated to the M/E that the Half M/E is coupled to. In this case, the panel M/E is also delegated to the Half M/E, but the background buses of the crossbar still control the full M/E, because the background buses of the Half M/E are fix set to the outputs of the coupled full M/E.
- **Half M/E Keyers coupled to:** Delegates the keyer to M/E1, M/E2, M/E3 or PP.
- **Kayak MultiMix enable:** The parameter can be used to set the Kayak MultiMix mode. If the parameter is switched to **On**, the **MultiMix** button in the **M/E Main** menu is visible, and the MultiMix mode can be used.
- **H/V Blanking:** The parameter can be used to switch over between transparent and blanked. In blanked position the horizontal and the vertical blank intervals are replaced by BLACK, and the DD35-internal sync frame is added. In transparent position the information contained in the vertical blanking interval (VITS, videotext, etc.) are kept. This function can be selected for each output and AUX buses separately.

## Audio

Menu page serves for adjustment of audio switchers via ESAM2 protocol.

Figure 290. Config E-Box Audio



It is possible to define up to 64 internal audio channels. In the left list box, they are provided with a name. To each of these internal audio channels can

be assigned as many audio channels as you like. They are displayed in the list box Audio Source.

- The buttons **Add Source** and **Delete Source** enable you to vary them. The respective internal audio channel is marked blue for this purpose. To each video input can be assigned an internal audio channel. This is indicated in the third list box.
- The listbox **Audio Settings** is used to perform basic adjustments:
  - **M/E:** The audio switcher operates only on one M/E which is specified here.
  - **Program / Preset:** Audio Program and Audio Preset can be mapped on an external Aux bus.
- The button **Assign Buttons** opens a second dialog page. This page enables assignment of the audio channels to the individual buttons of the external AUX buses for Audio Program / Audio Preset.

## Operating

The audio switcher follows only PGM (PST). Only PGM is always to be heard. The crossbar selection only is switched. If there is no audio assigned to the video, the last audio source stays.

- **Cut PGM and PST:** Sources swap related to the video.
- **Auto:** Works only correctly when the associated audio sources differ from each other. Otherwise, the equal audio sources are temporarily muted.
- **PGM/PST:** Enables you to control the two buses as EXT AUX BUSES. When switching on these and simultaneously on the corresponding video crossbar, the last button pressed takes precedence.

With the ESAM2 protocol, transition with the fader is not possible.

## Aux CP

Menu page for configuring the AUX Control Panel connected to the main-frame. The menu page contains two subpages:

- Setup
- Assign

### Setup Page

Figure 291. Config E-Box Aux CP Setup



Figure 292. Config E-Box Aux CP Delegation



To configure the AUX CP delegation parameters, select the parameter from the scroll list. Then press **Modify** to change the parameters.

- **None:** No function
- **2nd:** This button is used as 2nd button, that is, it shifts the source selection buttons.
- **3rd:** This button is used as 3rd button, that is, it shifts the source selection buttons.
- **AUX, M/E Bus, PP Bus:** These buttons delegate the AUX-CP to the crosspoint selection for the given bus.
- **Ext. AUX:** These buttons delegate the AUX-CP to crosspoint selection for the given external AUX bus.
- **RamRecorder:** These buttons delegate the AUX-CP to crosspoint selection for the RamRecorder channels.
- **EMEM:** This button delegates the AUX-CP to register recall for the given EMEM system.

At least one function other than **None**, **2nd** or **3rd** must be programmed. Otherwise the AUX CP performs no action at all.

**Note** Since the CP-3020 AUX control panel module has only two delegation buttons, **Deleg 1** and **Deleg 2** may be programmed with 2nd and 3rd. In this case, **Deleg 3** defines the function of the AUX CP. **Deleg 4..6** can be ignored.

## Assignment

Figure 293. Config E-Box Aux CP Assign



- **Insert Position:** Inserts the selected input at the current cursor position and moves the next inputs downwards to the end. At the end of the levels, the last assignment get lost.
- **Delete Position:** Deletes the selected input at the current cursor position and moves all the next inputs upwards. At the end of the levels, a None will be inserted.
- **Reset Assign:** Resets the assignment.
- **Assign:** When the AUX Control Panel is used for crosspoint selection of internal buses, the sources can be assigned freely to the source selection buttons of the AUX-CP. To do this, Assign changes the contents of the menu page. The procedure for input assignment is very similar to the input assignment for the control panel.

- **Assign None:**
  - **All None:** All buttons are assigned to no input.
  - **Default:** Sets the factory default input assign.
  - **= All:** Sets the input assign like the input assign for bus row ALL.
  - **= AUX All:** Sets the input assign like the input assign for bus row AUX ALL (control panel only).



## Tally In Page

The General Purpose Interface Output/Tally menus are used to configure the tally system. There are multiple tally calculators, three different tally calculation methods, and user assignment of tally relays. The results of the tally calculators are applied to the tally relays on the Video Processor frame, and those relays control external tally lights.

Tally is recalculated and refreshed every field.

In addition, the GPO Output contact closures are used by the Kayak HD system for simple trigger control of external devices.

### About Tally Systems

In general, a tally system identifies which sources to the switcher contribute to the final picture at a selected point in the video chain. The identification is communicated by activating relays in the video frame. The method by which the sources are determined is called the tally calculation.

The tally calculation begins at a point in the video path and then traces the path of the signals upstream to their original video (and key) sources. The state of the switcher affects tally. For example, tally on a true clean feed only includes sources that contribute to the main output, but tally on a program-mable clean feed can include sources that do not contribute to the main output.

The On Air Tally (**Red Tally**) calculations are essential for switcher operation. This tally calculation forms the basis for On Air indication (panel, camera tally lights, etc.), and other functions such as external device Auto Start, Off Air Advance, or router protections. On Air tally calculations normally start at the Pgm-Pst PGM outputs.

User tally calculations can be used for purposes other than On Air tally. These tally calculations still trace the video path upstream from the specified points in the video path, but the starting point does not necessarily have to be a program output. For example, a Look Ahead tally begins at the Pgm-Pst Look Ahead Preview (LAP). When a transition is not in progress, this virtual output is not on air.

The Output Tally (**Green Tally**) calculator indicates which sources contribute to designated outputs. For example, an M/E Iso tally is a user configured Output tally set up to begin at an M/E's PGM. The tally would indicate what contributes to the M/E's program outputs but not anything downstream of it. The tally would be the same whether or not the M/E was On Air.

The Look Ahead Tally (**Yellow Tally**) calculator indicates which sources will be on air if a main transition is performed on the selected level. One way this can be used is for a second set of tally lamps on a camera to alert the camera operator that his camera is next to be taken on air. Many control

room monitor walls also include a secondary tally indicator for Look Ahead.

However, if an M/E is placed downstream of Pgm-Pst, the On Air tally calculation can be configured to start at that M/E's program outputs. If this situation is planned, it is recommended that AUX buses be set up to provide the real program outputs for the switcher and the On Air calculation configured using those AUX buses as the tributaries.

The Tally In menu page shows the basic configuration menu for different Tally calculation methods. In this menu one or more output channels can be activated for signalling.

- **Red Tally** - On Air Tally - for source and monitor signalling
- **Green Tally** - Special On Air Tally - for isolated sources
- **Yellow Tally** - Look Ahead Tally

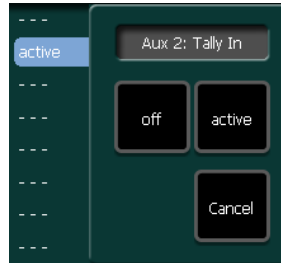
Figure 294. Config E-Box Tally



To configure the Tally In parameters, select the parameter from the scroll list. Then press **Modify** to change the parameters.

- **Tally System Overall:** active / on / off
- **Tally System 1 ... 4:** Prepared for multi-applications

Figure 295. Config E-Box Tally Active On Off



## Input Page

The Input Page consists of 3 subpages:

- General
- Machine Delegation Buses
- Colors

### General Subpage

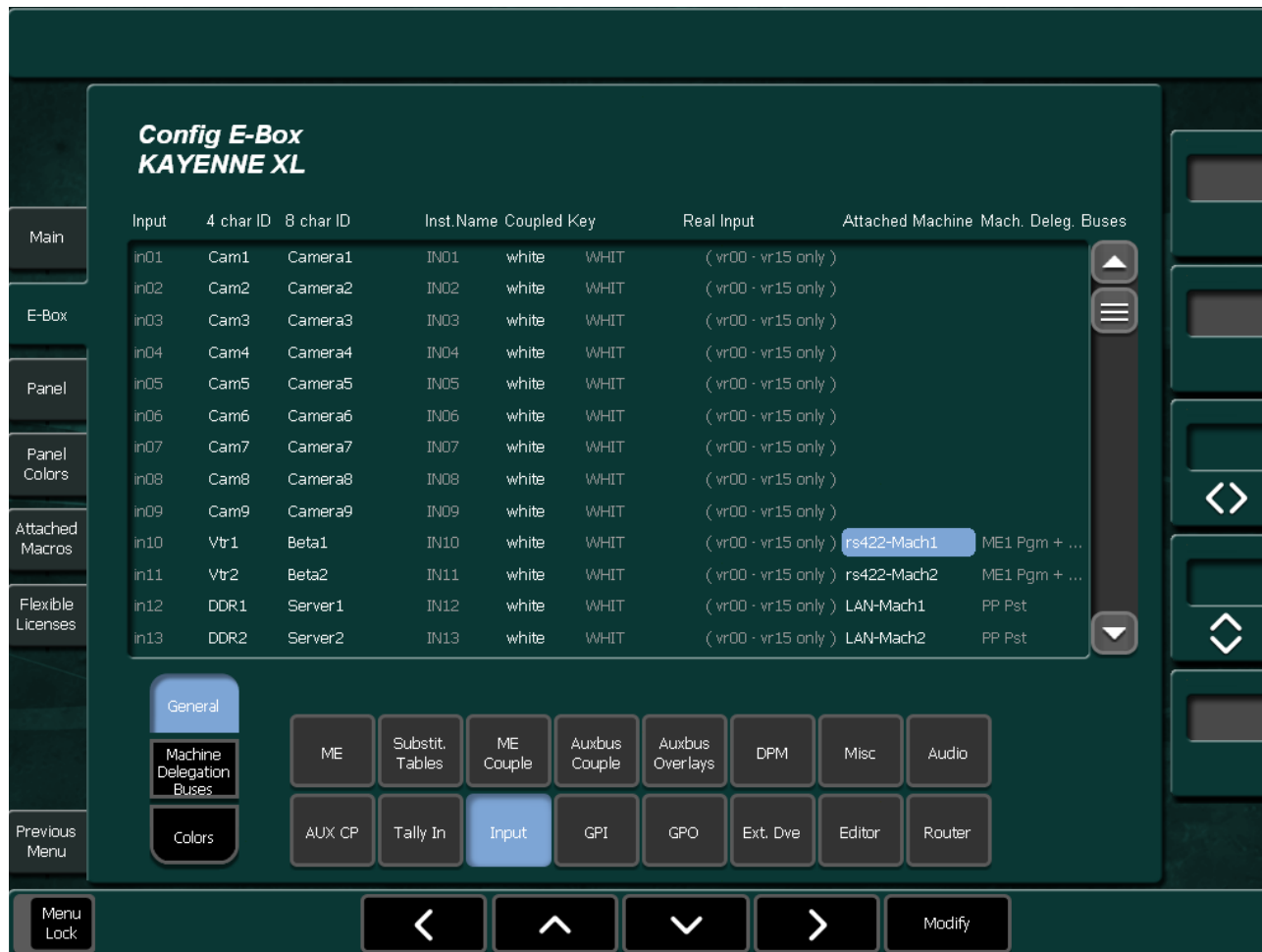
This menu page is used to name sources and couple keys for sources.

In **Install / Ebox / Input** you can specify the default input names (4 & 8 character name size). They can be individually replaced by the input names that can be entered on configuration level. The essential difference is that names changed here in this menu are stored along with the Application **Load & Save** mechanism.

If you have replaced a name for an input on configuration level and you want to go back to installation name level, you have to clear the related name(s) in this menu and resave your application.

Since typically the 4 character names are displayed in the system, there is a special rule applied to the replace mechanism. Replacing a 4 character input name in the menu replaces both 4 & 8 character names of install level.

Figure 296. Config E-Box Input - General



To configure the source names, select the parameter from the scroll list. Then press **Modify** to change the parameters.

- 4 char ID / 8 chr ID:**  
 The Name of a source is displayed on the Control panel, and is limited to four characters. The Long Name of a source appears in configuration menus, and can be eight characters long. Touching **Modify** brings up a keypad to enter that name for the selected source.
- Coupled:**  
 Touching the **Modify** button calls a subdialog. In this menu the Key to be coupled to the selected Fill source can be selected.
- Real Input:** Touching **Modify** on one of the 16 Virtual Inputs brings up a subdialog to select the real input.
- Attached Machine:**  
 You can attach machines to an input to use it for automatic delegation of the machine control sections in the control panel System bar. Touching the **Modify** button calls a subdialog where you can select your machine.

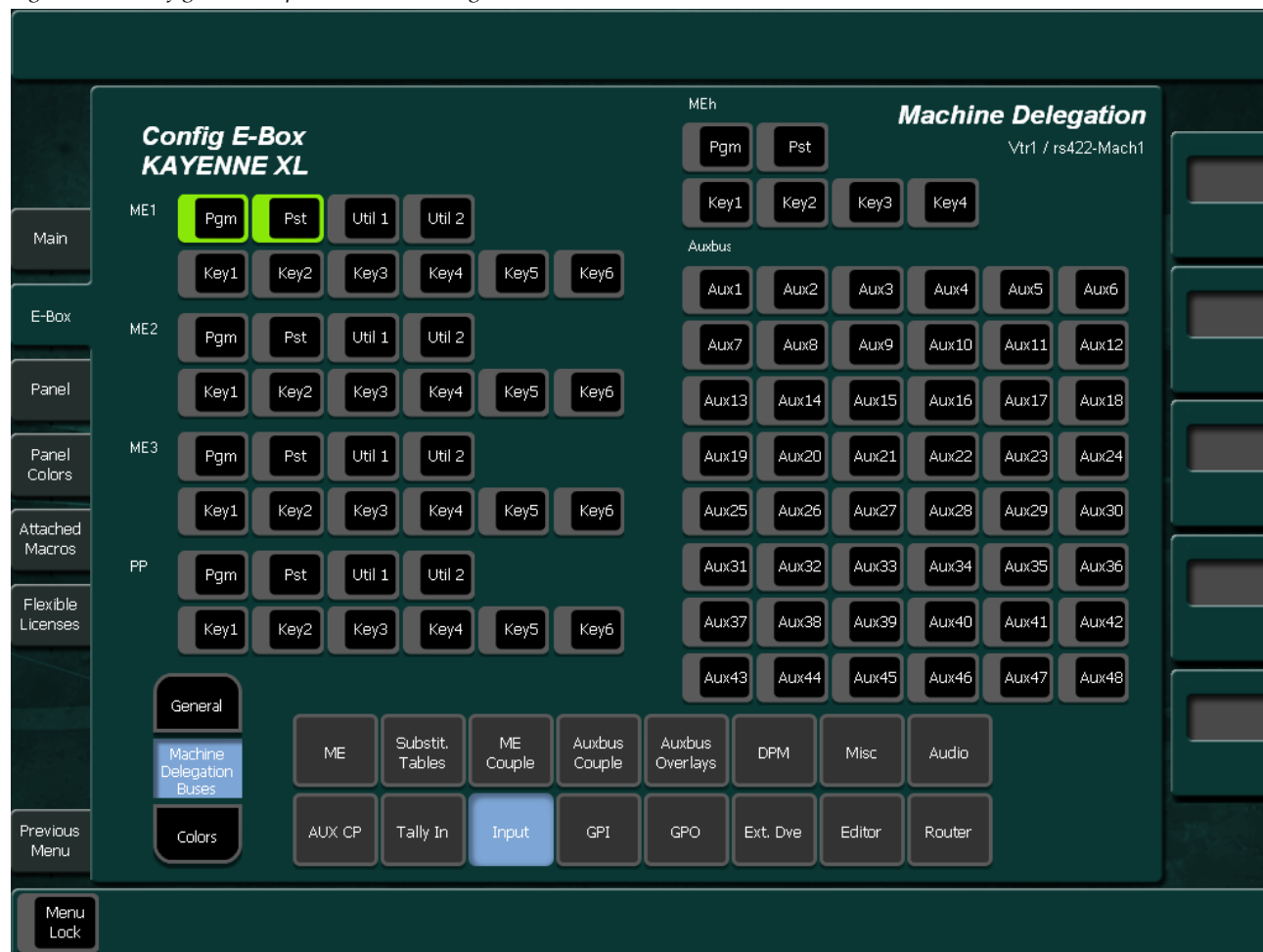
Figure 297. Config E-Box Input- Real Input

Attached Machine Input in10				
None	ME2 iDpm4	Ram3	LAN Machine7	LAN Machine21
PP iDpm1	ME2 iDpm Master	Ram4	LAN Machine8	LAN Machine22
PP iDpm2	ME3 iDpm1	Ram5	LAN Machine9	LAN Machine23
PP iDpm3	ME3 iDpm2	Ram6	LAN Machine10	LAN Machine24
PP iDpm4	ME3 iDpm3	✓rs422 Machine1	LAN Machine11	LAN Machine25
PP iDpm Master	ME3 iDpm4	rs422 Machine2	LAN Machine12	LAN Machine26
ME1 iDpm1	ME3 iDpm Master	rs422 Machine3	LAN Machine13	LAN Machine27
ME1 iDpm2	eDpm1	rs422 Machine4	LAN Machine14	LAN Machine28
ME1 iDpm3	eDpm2	LAN Machine1	LAN Machine15	LAN Machine29
ME1 iDpm4	eDpm3	LAN Machine2	LAN Machine16	LAN Machine30
ME1 iDpm Master	eDpm4	LAN Machine3	LAN Machine17	LAN Machine31
ME2 iDpm1	eDpm Master	LAN Machine4	LAN Machine18	LAN Machine32
ME2 iDpm2	Ram1	LAN Machine5	LAN Machine19	
ME2 iDpm3	Ram2	LAN Machine6	LAN Machine20	

Once a machine is attached, you can easily assign the control of this machine to a machine control section: Hold down the previous and next button in the according section and press the input of the assigned machine on any crossbar row of the control panel. Pressing the input again will remove the assignment. You can assign more than one machine to a control section. By default you will always see the last assignment. To automatically have the control section follow the assigned input machines you have to define a delegation bus (see [Machine Delegation Buses Subpage on page 371](#)).

## Machine Delegation Buses Subpage

Figure 298. Config E-Box Input - Machine Delegation



Once you have your machine attached to the according inputs (see [General Subpage on page 368](#)), you can define in this page which bus rows should delegate the control sections of the System bar.

**Note** Only machines will follow when they are assigned to the according control section.

**Example:**

The machines Ramrecorder 1 - 6 are attached to the inputs Ram recorder 1-6.

- Control section 1 has only Ram1 assigned
- Control section 2 has Ram1 and 2 assigned
- Control section 3 has Ram1-6 assigned.

When you now switch in the preset or program row of ME1 (example of graphic above)

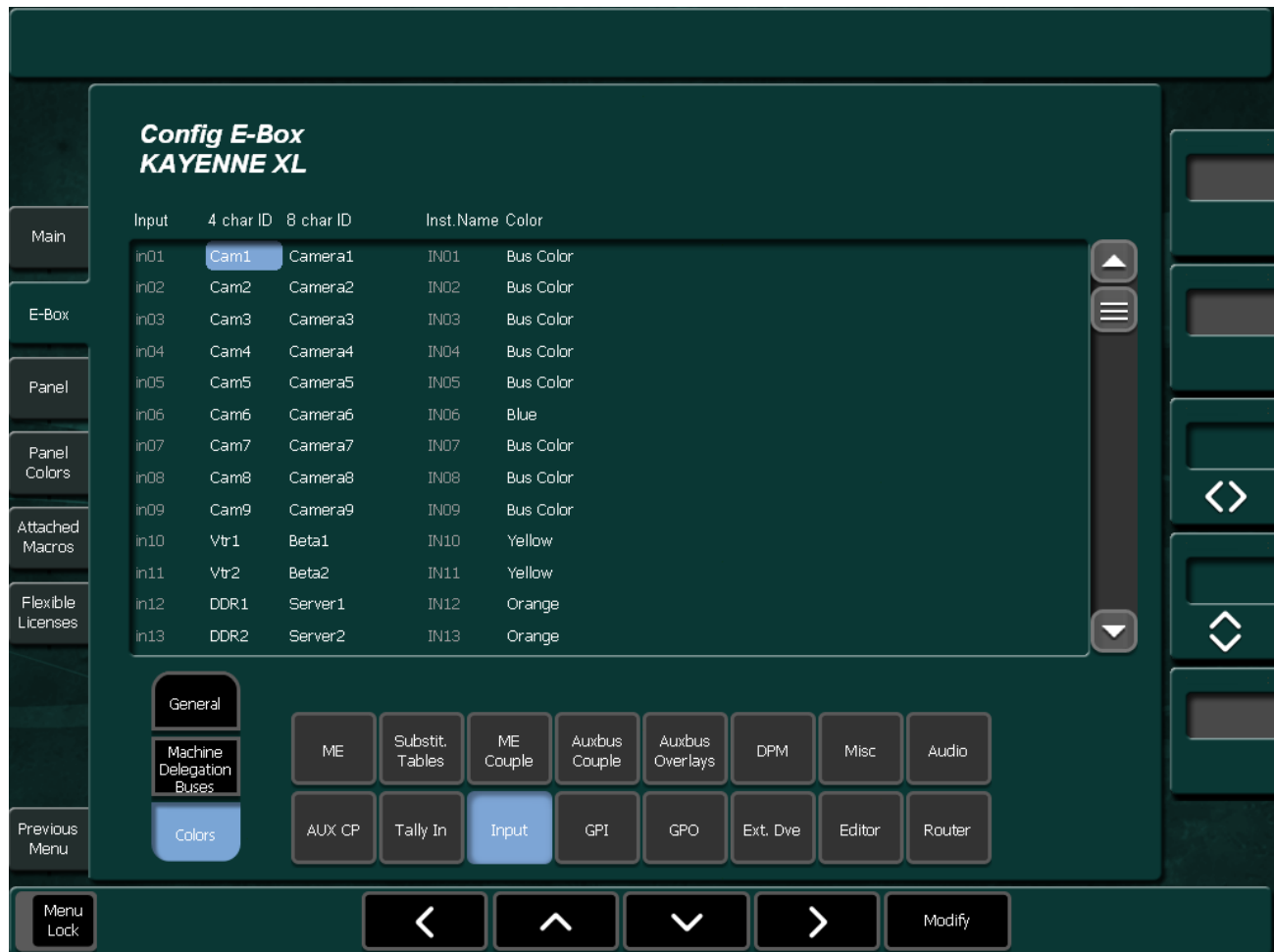
- Control section 1 will always stay on Ram1
- Control section 2 will only follow for source selections of Ram1 and 2
- Control section 3 will follow all 6 Ram recorder channels.

By this mechanism it is possible to have automated direct control of any number of machines.



## Colors Subpage

Figure 299. Config E-Box Input - Color



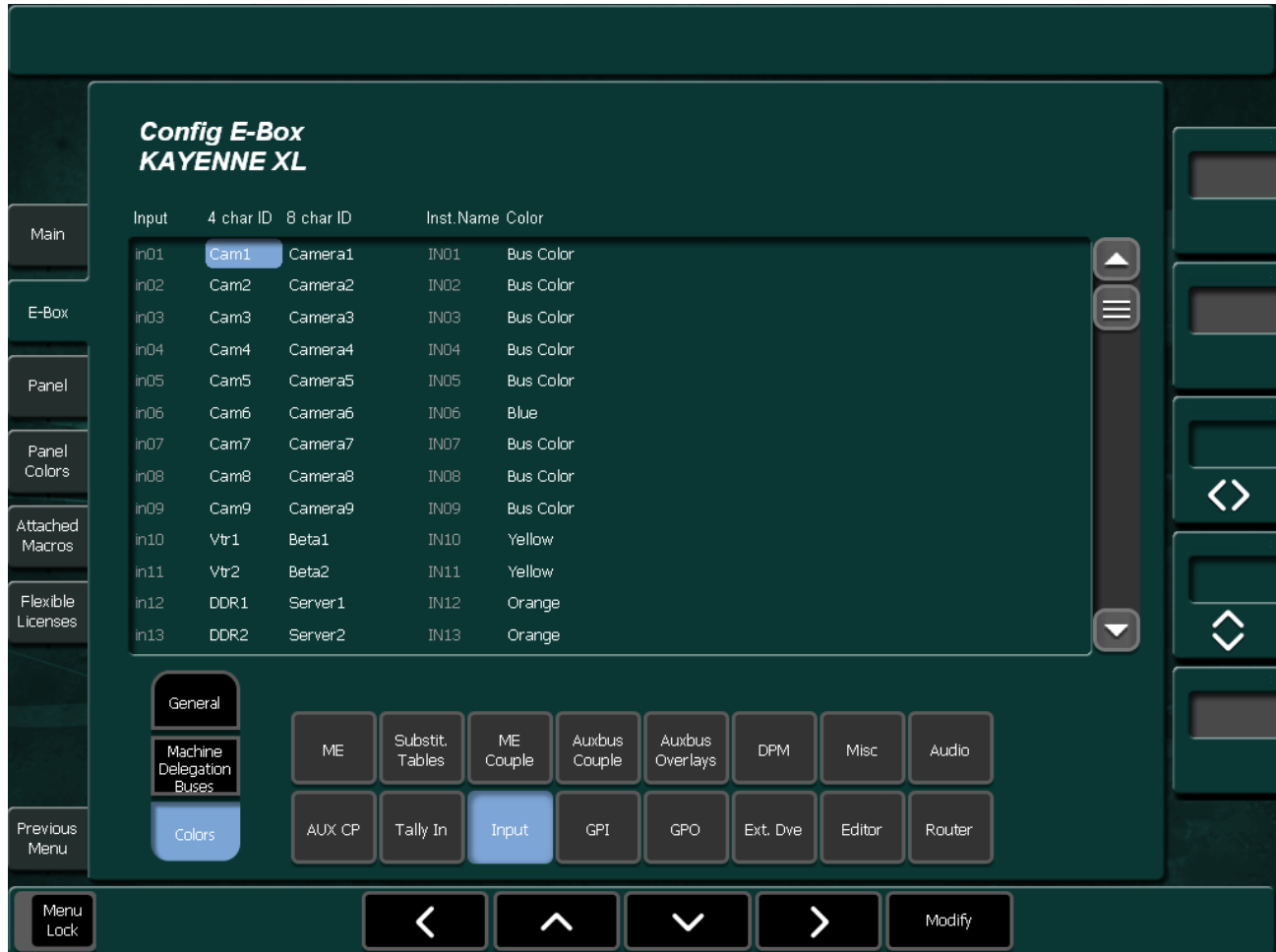
Besides of using colors for row delegations ("horizontal color coding", see [Panel Color Page on page 387](#)), you can use colors for specific inputs ("vertical color coding").

This menu allows you to highlight specific inputs of the bus rows or e.g. group all Vtrs by a certain color. If an input color is set to **Bus Color**, the color of the according row delegation is used.

## GPI Page

Menu page for mainframe GPI settings

Figure 300. Config E-Box GPI



To configure the GPI parameters, select the parameter from the scroll list. Then press **Modify** to change the parameters.

The selected function will be triggered on the edge defined in the Install menu when button **GPI Enable** is On. However, there are some exceptions where the GPI works as a "static" input. That is actions take place after a change in the GPI state, but the value depends on the GPI's state after the change. Also **GPI Enable** does not need to be **On** for these functions.

## GPI Functions

- **None:** GPI has no function.
- **Command:** User-defined command code. See note below.
- **Misc:** Switch over the Video Standard or Video Format. This is redundant function because the switcher can auto detect the video standard from the signal at the reference input.
  - Video Format (4x3, 16x9)
  - Inactive = 4x3
  - Active = 16x9
  - Video Standard (625/50, 525/60)
  - Inactive = 625/50
  - Active = 525/60
- **Auto transition:** Starting Auto Transition, selected in the pop-up list
- **Recall Snapshot:** Starting Snapshot, selected in the pop-up list
- **M/E1:** Starting function, selected in the pop-up list
- **M/E2:** Starting function, selected in the pop-up list
- **M/E3:** Starting function, selected in the pop-up list
- **PP:** Starting function, selected in the pop-up list#
- **Stores:** Starting Video Store or MPR Store, selected in the pop-up list

**Note** In Command mode, user-defined commands are selected and are transmitted to the switcher at a received trigger event. Selecting **Command** enables you to directly enter the command code. For this purpose, refer to the DD35 command set, which can be obtained from the manufacturer. The other selections are defined in the text files GPICMDMF.TXT (mainframe) and GPICMDCP.TXT (panel). These files are contained in the directory `c:/programme/dd35/bin`.

**Note** When entering commands, a special syntax has to be considered. It is possible to add predefined parameters to a command. The available commands are listed in the files mentioned above. For editing, it is best to copy and match existing entries. In any case, the DD35/XtenDD command set is required.

Figure 301. Config E-Box GPI Function

GPI 2 Function			
None	AUX 7	=>	AUX 28 =>
Command	AUX 8	=>	AUX 29 =>
Tally In	AUX 9	=>	AUX 30 =>
Misc =>	AUX 10	=>	AUX 31 =>
Autotransition =>	AUX 11	=>	AUX 32 =>
<input checked="" type="checkbox"/> Recall Register =>	AUX 12	=>	AUX 33 =>
M/E h =>	AUX 13	=>	AUX 34 =>

## GPO Page

The Menu page serves to configure up to 128 channels (32 channels per M/E). The physical properties of each GPO/Tally channel can be adjusted in the Install GPO menu.

Figure 302. Config E-Box GPO



To configure the GPO parameters, select the parameter from the scroll list. Then press **Modify** to change the parameters.

Assign a GPO name, select a source, and select the Tally mode for each GPO channel.

- **Name:** Assign a name.
- **Output Tally:**
  - Select a Tally mode (**Red, Green, Yellow**).
  - Select a Source from the list.

Figure 303. Config E-Box GPO select Tally color



Figure 304. Config E-Box GPO select Tally source

Select Source				
None	Input 21	Input 42	Aux 15	Mon Aux 12
Input 01	Input 22	Input 43	Aux 16	Mon Aux 13
Input 02	Input 23	Input 44	Aux 17	Mon Aux 14
Input 03	Input 24	Input 45	Aux 18	Mon Aux 15
Input 04	Input 25	Input 46	Aux 19	Mon Aux 16
Input 05	Input 26	Input 47	Aux 20	Mon Aux 17
Input 06	Input 27	Input 48	Aux 21	Mon Aux 18

## Ext. DVE Page

The menu page serves to control up to two external DVEs and the internal DPM processor as well.

For DVE control, the AUX buses supplying the video and key signals have to be directly indicated in the GVG200 protocol. In order to keep an assignment variable, this menu page is available enabling an AUX bus mapping. Thus, not only the permanently entered AUX buses can be used but also all the other AUX buses.

Each time the DVE Key and Fill source are assigned to AUX buses (that is the normal way working with the DVE), the DVE Fill source is changed at the AUX bus selection. The coupled key source is set on the corresponding DVE Key bus. This coupling can be activated or deactivated with the parameter **Key Bus Coupled On/Off**.

Figure 305. Config E-Box extern DVE



## Editor Page

The Kayenne XL Package can be controlled by up to four editing systems via the RS422 interface of the switcher mainframe. Control is made by means of the different protocol types which can be supported by the switcher.

Basic editor control of the Kayak HD system is supported. Capabilities include: Source selection, Key selection, Wipe selection, Preview, Timeline control (Jog/Go to Time, Run, Rewind), Transition Mode, Rate, and Triggers, All Stop, EMEM.

The menu page enable you to re-direct external editing system commands to different system outputs. Select the desired editor 1 to 4, select the desired parameter, and then touch **Modify** and select an alternative target setting for the editor command.

The menu page serves to configure up to four editors.

Figure 306. Config E-Box Editor



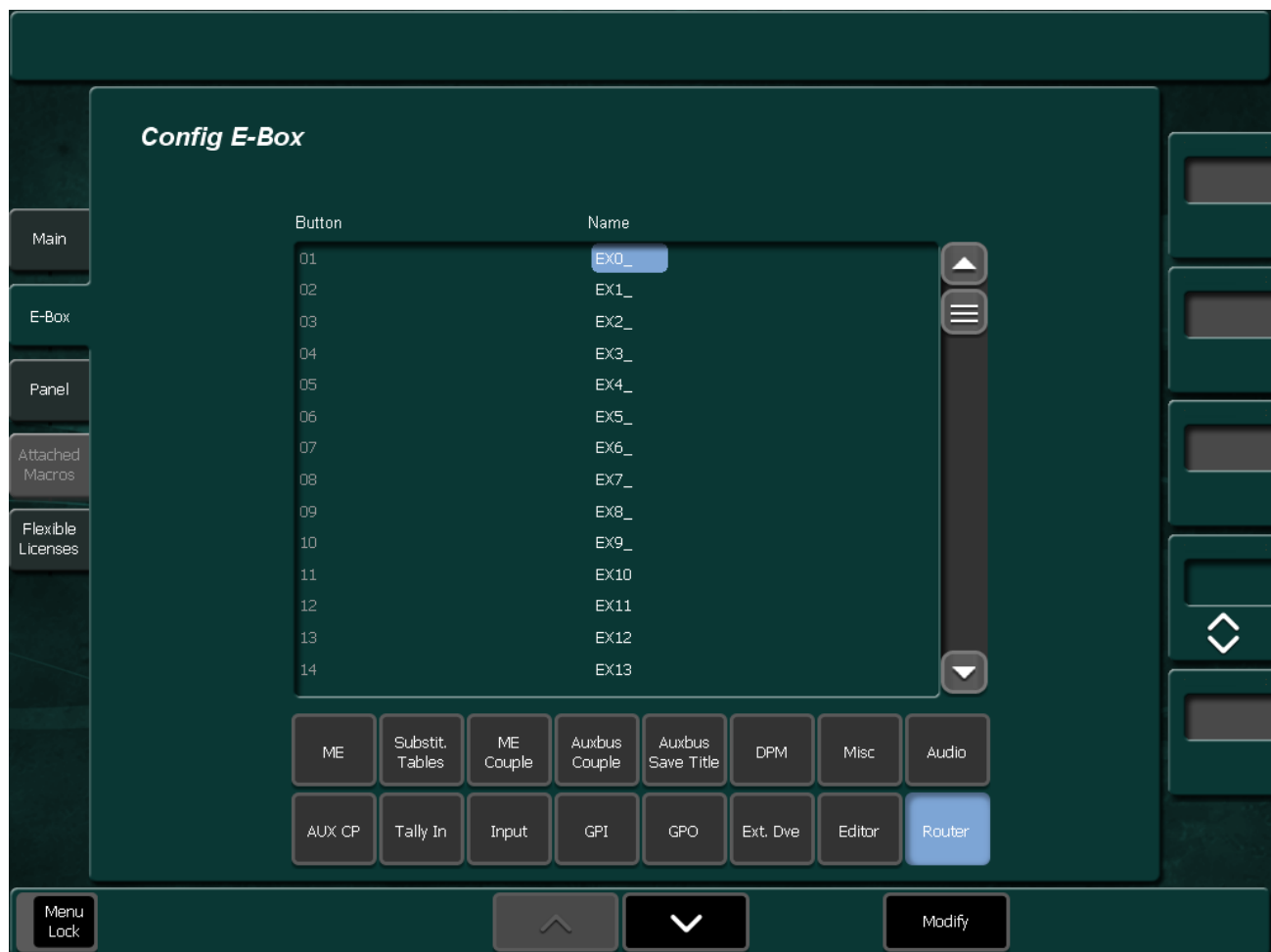


## Router Page

The menu page can be used to enter source names at the External AUX Bus if the router control protocol excludes the name transfer, for example ASCII protocol. The 4-digit names occur at the external AUX bus source and they are fixed for each external AUX bus.

Router control protocols with a name transfer do not need the setting here. These protocols are able to grab the name from the external control unit, for example Prosan.

Figure 307. Config E-Box Router



To enter the source names, select the parameter from the scroll list. Then press **Modify** to change the parameters. A keyboard appears to enter a four digit source name.

## Config Panel Submenu

### Macro Page

Figure 308. Config Panel Macro



The system holds up to 1000 macros which can be renamed.

Note: Since the Macro Editor is not yet available for the current release you can use another way to view the contents of the macros: Go to EMEM Edit and use Insert / Make. Select the macro to view for inserting in the timeline. Switch the Display Mode to Text or to Mixed to show the macro contents in text form.

Since each Crossbar module and the Auxbus module can be delegated to macro operation it can be useful to change the default start number for the macros per row. Make sure that you have selected the appropriate crossbar button type (15 /25 /35 Button Crossbar)

## Assign Page

Menu page for Input Assignment. The menu is selectable only when a control panel is attached.

Figure 309. Config Panel Assign



- Box Bus Rows:**  
 Pre-selects the panel's bus rows for which the Input Assignment should be changed. Selectable are: ALL (= all bus rows on the panel) P/P-Bgnd + Fill P/P-Key AUX All AUX 1 ... AUX 48.
- Box Input:**  
 Shows a sorted list of all assignable inputs (Number, 4 character name, 8 character name).

- **Box Btn Assigned:**  
Shows a list of all assignable crosspoint buttons.
  - Make sure the correct crossbar type is selected for your assignment (15 / 25 / 35 Button Crossbar).
  - **1st, 2nd, 3rd, 4th** indicate the shift level for the assignment. To assign an input to a button select the input in the Input Box, select the button number in the right box and press **Assign**. Both the input box and the right box cursor will advance by one position, allowing easy assignment of subsequent inputs to subsequent buttons. The Kayenne XL control panels allows to assign shiftlevel functions (**2nd, 3rd**, etc.) and the row delegation function (RDel) to any available source button. When your Shiftlevel Couple Mode (see [Panel Subpage on page 390](#)) is set to Pgm/Pst Only you will need to assign also inputs for the shiftlevel buttons. Select the according buttons, select the input and press **Assign Shift Couple**.
- **Reset 15/25/35 Button Cross Bar:**  
Reset to the default assignment.
- **Assign None:**  
Select a button position and press this button to create an inactive button.
- **Delete:** Deletes the current assignment for this button. All assignment to the right of the button will shift one position to the left. The shifting will stop when one of the following assignments is encountered:  
Reentries like ME1, ME2, shiftlevel buttons like 2nd, 3rd, the row delegation button RDel
- **Insert:** Like Assign but shifts the current button assignment and the ones to the right one position up. The shifting will stop when one of the following assignments is encountered:  
Reentries like ME1, ME2, shiftlevel buttons like 2nd, 3rd, the row delegation button RDel.
- **Assign:** Assigns the selected input of the Input Box to the selected button.
- **Assign Shift Couple:** Assigns an input to a shiftlevel assignment. This is used in Shiftlevel Couple Mode "Pgm/Pst Only" (see [Panel Subpage on page 390](#)).

## Brightness Page

This subdelegation allows adjustment of the brightness of the Text LED displays, the source name OLED displays and the high tally and low tally intensity of the buttons.

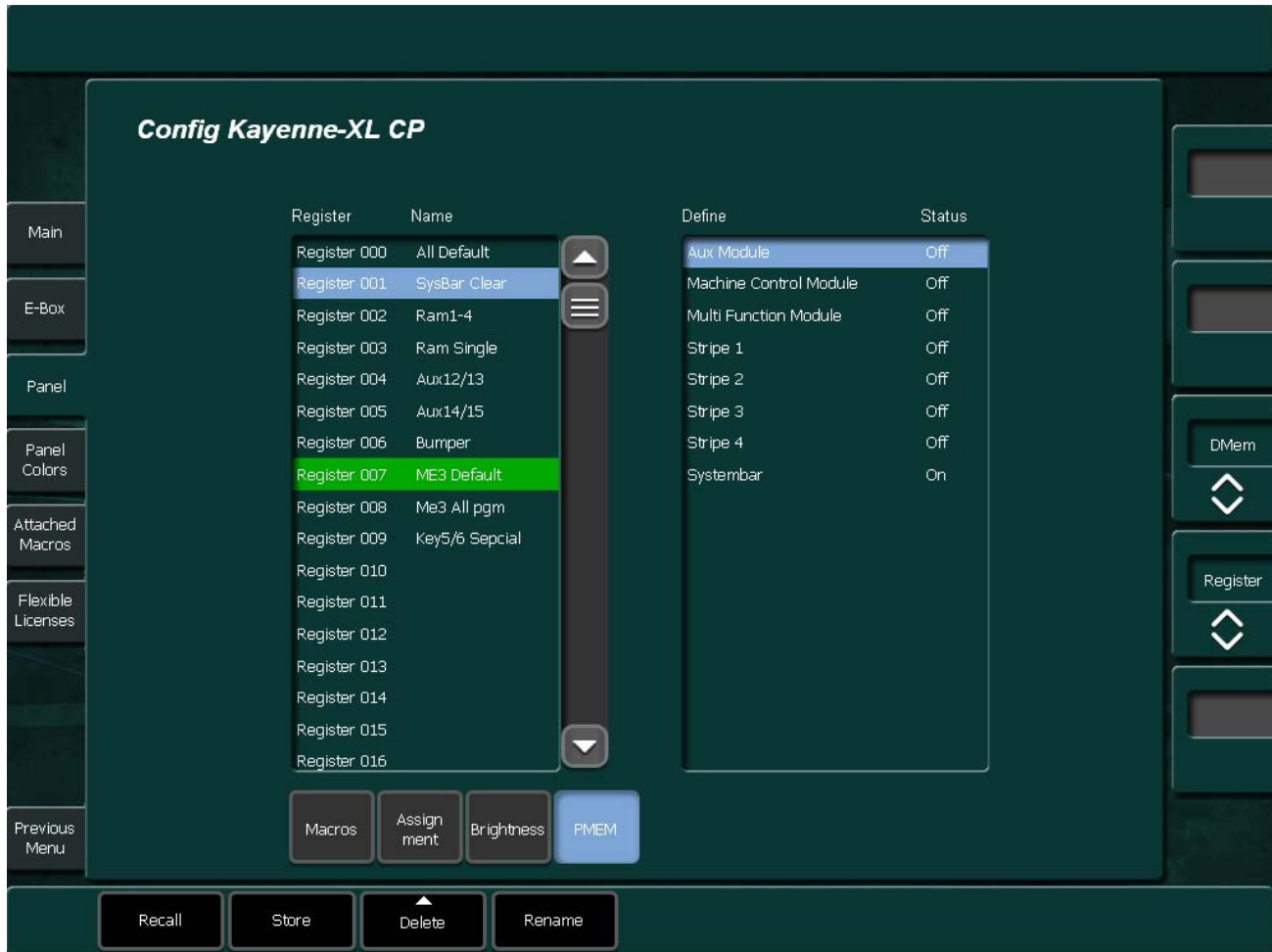
Figure 310. Config Panel Brightness



## PMEM Page

The system holds up to 100 Panel Memories (PMEM) which can be renamed.

Figure 311. Config Panel PMEM



You can **Store**, **Recall**, and **Delete** PMEMs. The last recalled one is indicated as green selection. Double clicking a macro recalls immediately.

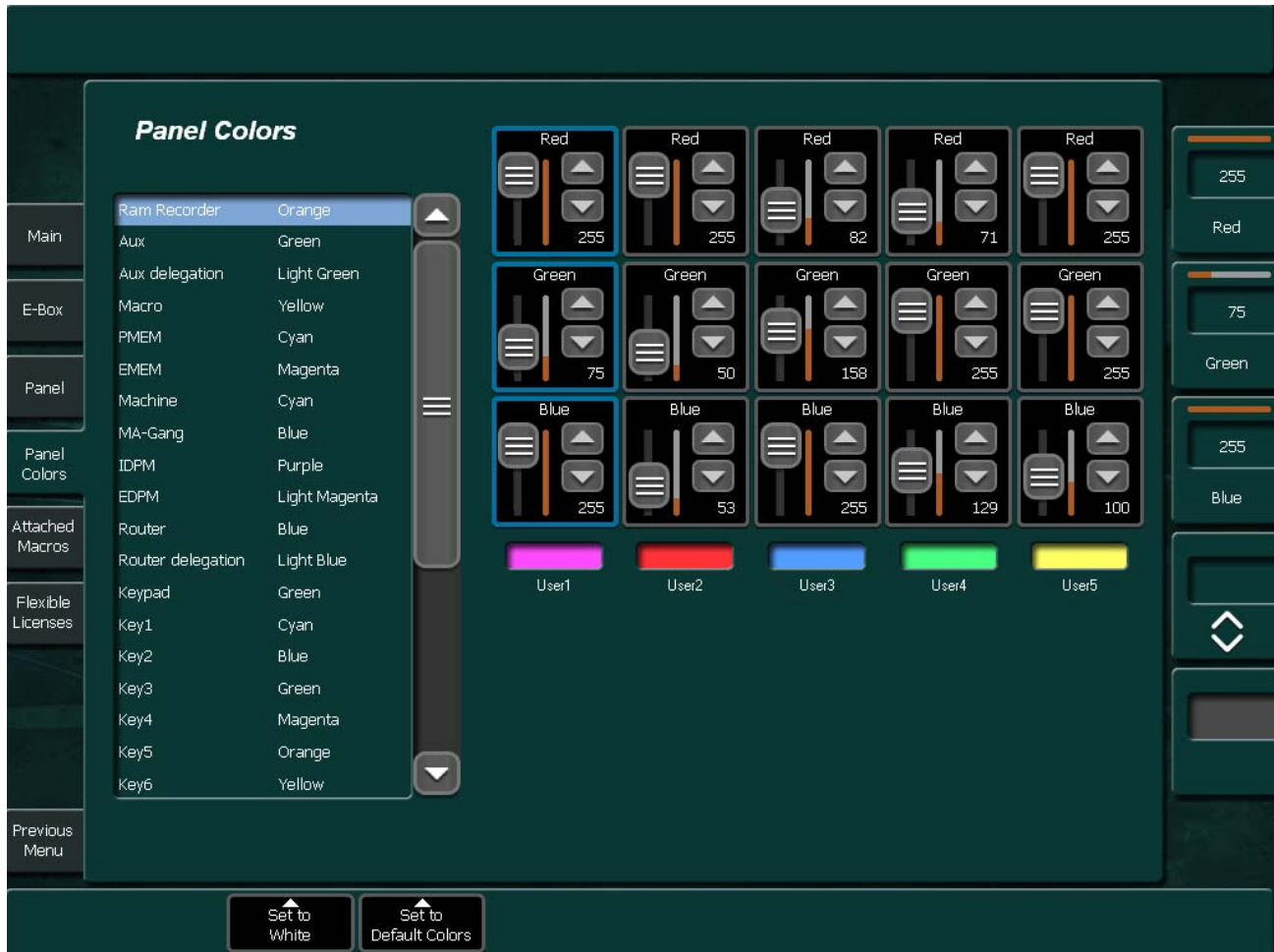
To create PMEMs which recall only parts of the control panel, the not desired modules have to be deselected by double clicking the according part in the right listbox.

In the example above the macro at cursor position Register 001 only affects the System bar.

## Panel Color Page

This page allows the user to change the default colors for row delegations and other control groups. Besides of the predefined colors the user has a choice of 5 user definable colors. All color assignments are part of a stored application.

Figure 312. Config Pane Colors



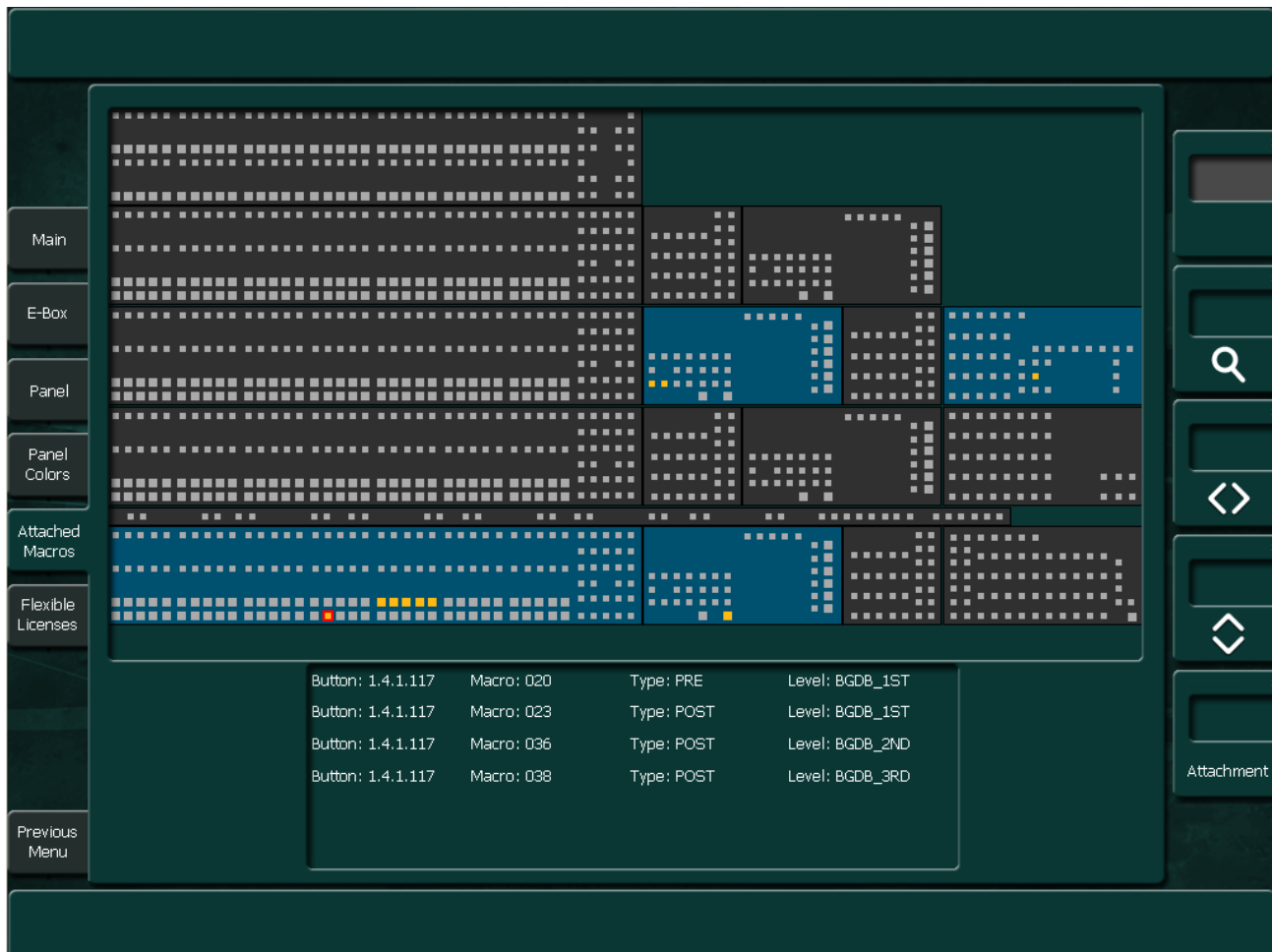
**Note** Next to this color assignments which create "horizontal color coding", because most groups are bus row delegations, there is a second possibility to use "vertical color coding", that means to assign colors to specific inputs. "Vertical color coding" overwrites "Horizontal color coding". For Input Color Coding please see [Colors Subpage on page 373](#).

- **Set to White:** Sets all buttons to White. Only the Multifunction Module keeps the colors for better grouping of buttons. On air tally is used for crossbar buses.
- **Set to Default Color:** All buses are set to their default color.

## Attached Macros Page

The macro attachment viewer shows you all macro attachments to all buttons on all levels.

Figure 313. Config Panel Attached Macros



You can zoom and shift the display by the according digipots.

When at least one macro is attached to a module the module turns blue.

The individual attachments are indicated in yellow. The listbox in the bottom shows the attachments for the selected button (red border).

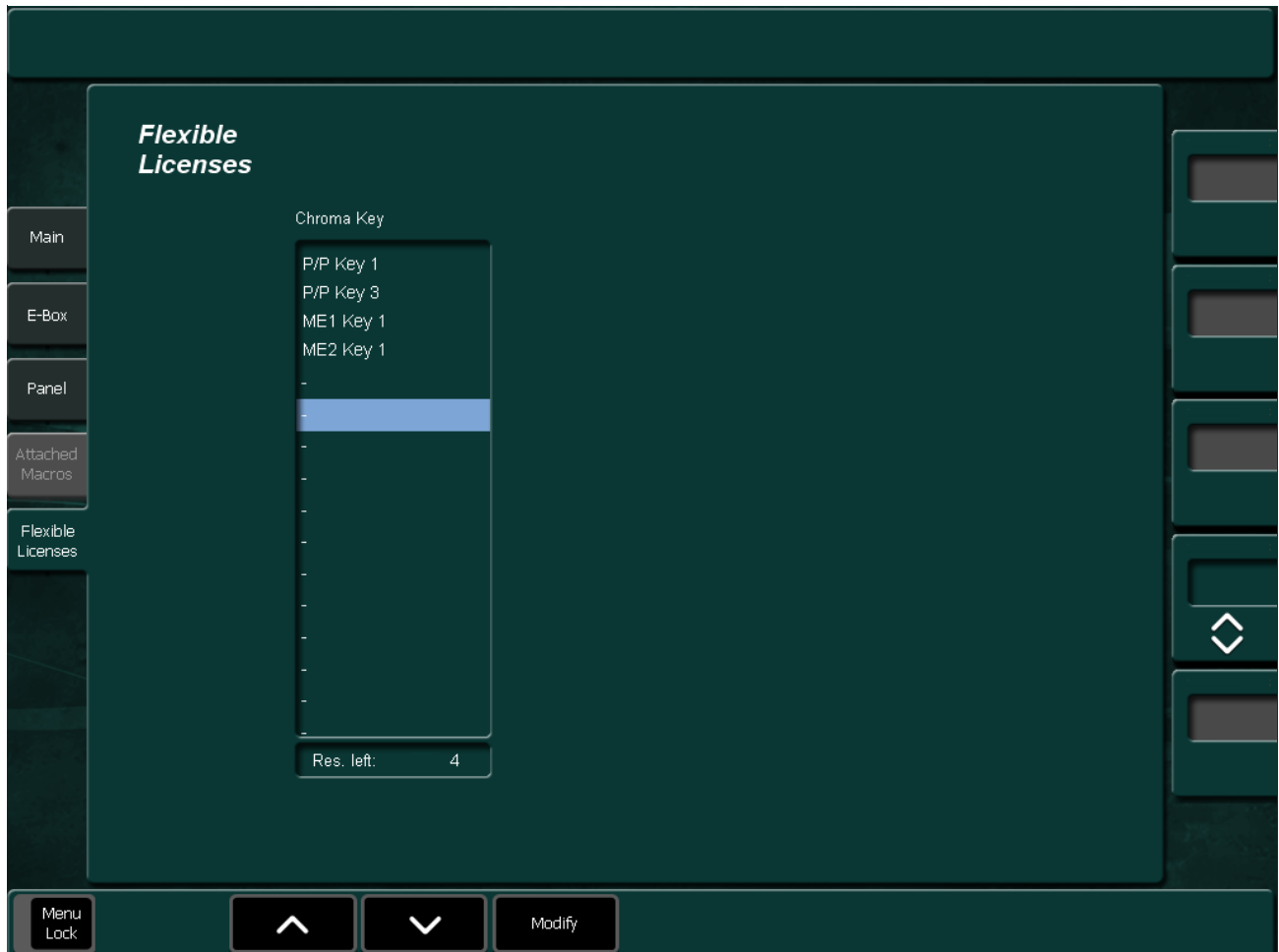
- **Button:** Unique identifier of the button in the control panel
- **Macro:** Number of the attached Macro.
- **Type:** Can be Pre-attachment, Post-attachment, Replace-attachment.
- **Level:** Logical delegation level.



## Flexible Licenses Submenu

Each chroma keyer can be flexibly assigned to any desired keyer in any M/E if the flexible license key Chroma key is available.

Figure 314. Config Panel Flexible Licence



# Personality Menu

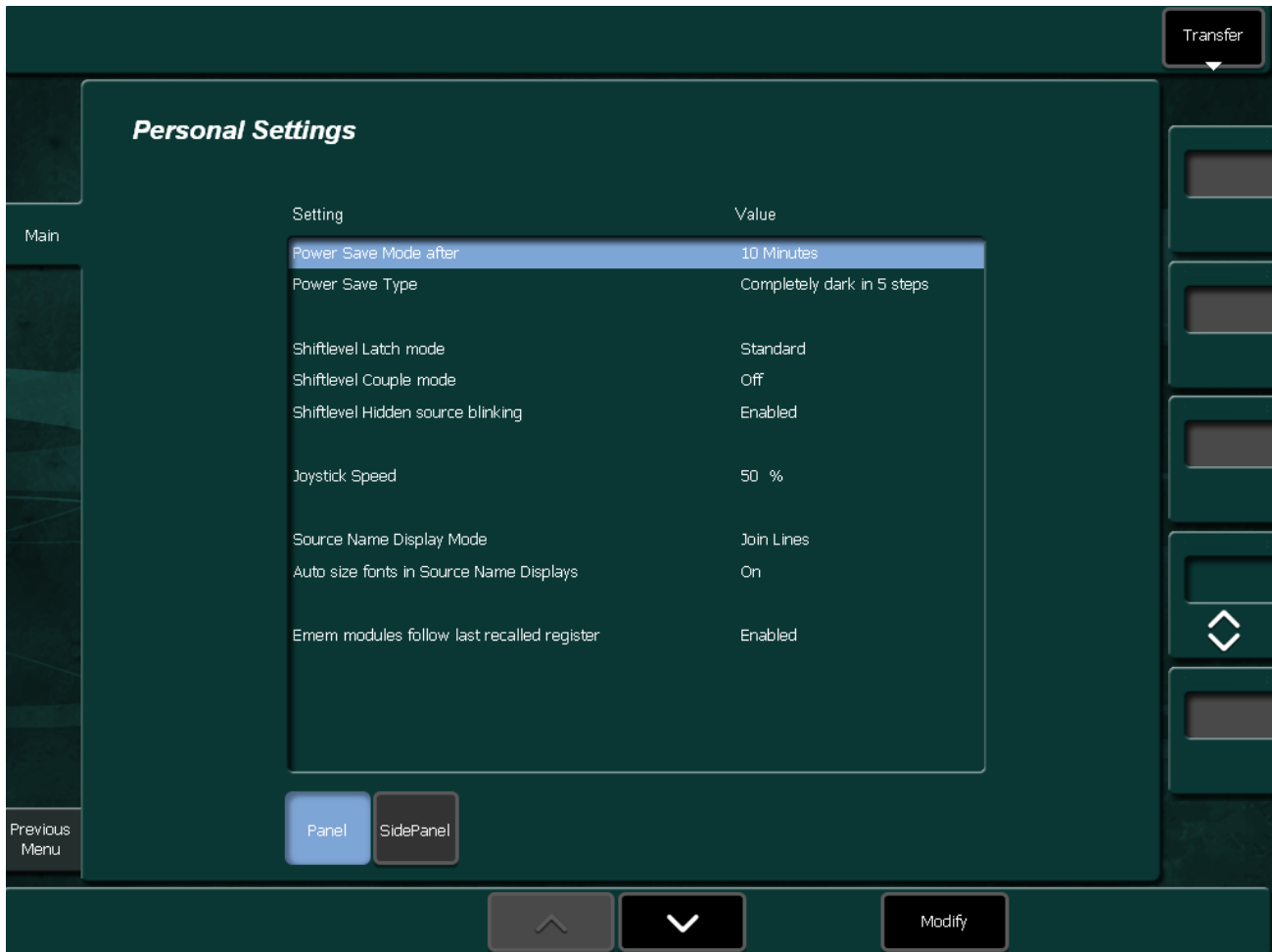
## Personality Main Submenu

The Personality menu permits personality settings for the panel and sidepanel (PC and display).

With the **Transfer** button, the settings can be saved (Export) or loaded (Import).

## Panel Subpage

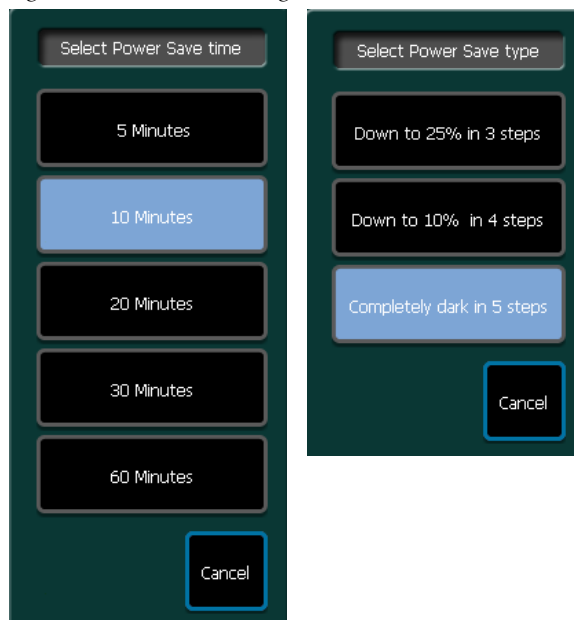
Figure 315. Personal Settings Panel



To configure your personal settings of the **Panel** Page, select the parameter. Then press **Modify** to change the parameters.

- Power Save:**  
 The Power Save mode is used to reduce the power consumption while the Kayenne XL panel is not used on Air. OLED and LED displays, and the multi color buttons are dimmed in up to five steps, depending on the **Power Save Type**. Any button press at the Kayenne XL control panel will stop the power save mode and switch on the OLED and LED displays and the multi color buttons. When the panel is completely dark, the first button press will not accomplish the default behavior of the pressed button. Is the **Power Save Mode** stopped, the Kayenne XL panel will be behave as usual. A full **Power Save Mode** (complete dark) is indicated by a blue running light at the Transition module. Another positive effect of the **Power Save Mode** is an elongation of the OLED display lifetime.
- Power Save Time:** Wait time for activating the Power Save Mode.

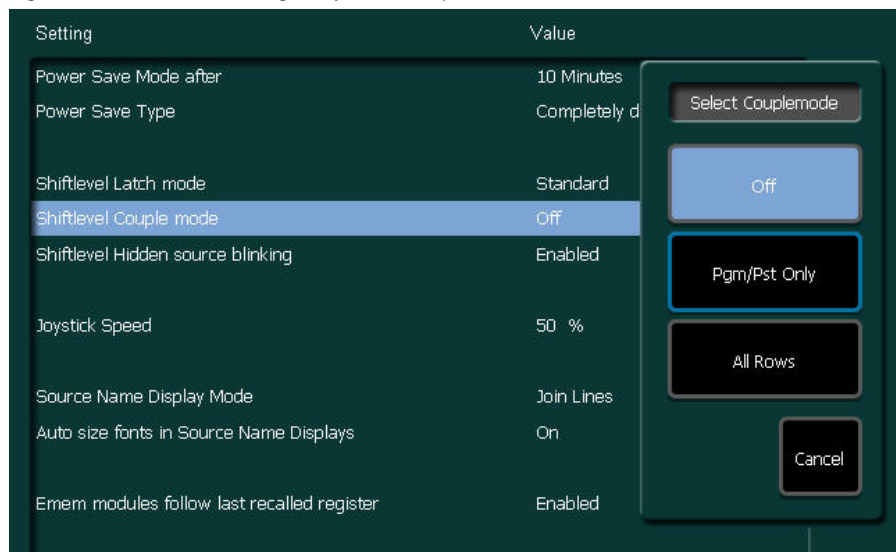
Figure 316. Personal Settings Side Panel Power Save Time and Type



- Power Save Type:**  
 Low will dim the OLED displays and multi color buttons in two and High in four steps after the power save mode is activated.

- **Shiftlevel Latch Mode:**
  - **Standard:**  
Shift selections stay latched and only sources on the selected bus row are displayed.
  - **Manual latch mode:**  
Pressing a shift button temporarily delegates the row to the new shift level (SNDs are updated to match). A source can be selected at this new shift level. When the buttons are released, the row delegation (and SNDs) revert to the previous shift level.
  - **Auto-latch mode:**  
Taking a source at a certain shift level automatically causes delegation of the source row (and SNDS) to the new shift level and tallies the shift buttons for the new shift level. This means the bus stays delegated to the shift level.
- **Shiftlevel Hidden Source Blinking:**  
The selected source flashes to indicate it is selected on a currently non-delegated bus.
- **Shiftlevel Couple Mode:**  
This mode allows you to have the Program and Preset bus always shifted in parallel. This is especially important when you have attached macros to one of these rows. Since the macros are attached to the logical delegation level each Auto transition or Cut would flipflop the shift levels of the Pgm and Pst bus. As a side effect this mode frees up to more crossbar buttons for source switching, because the 2nd and 3rd shift level is switched by the two smaller hard labeled buttons right to the source select buttons. Two modes are available:

Figure 317. Personal Settings Shiftlevel Couple Mode



- **Pgm/Pst Only** applies the mode only to the program and preset bus. In this mode you have to assign additional sources to the 2nd and 3rd assignments, see [Assign Page on page 383](#).
- All **Rows** applies the mode also to the key buses

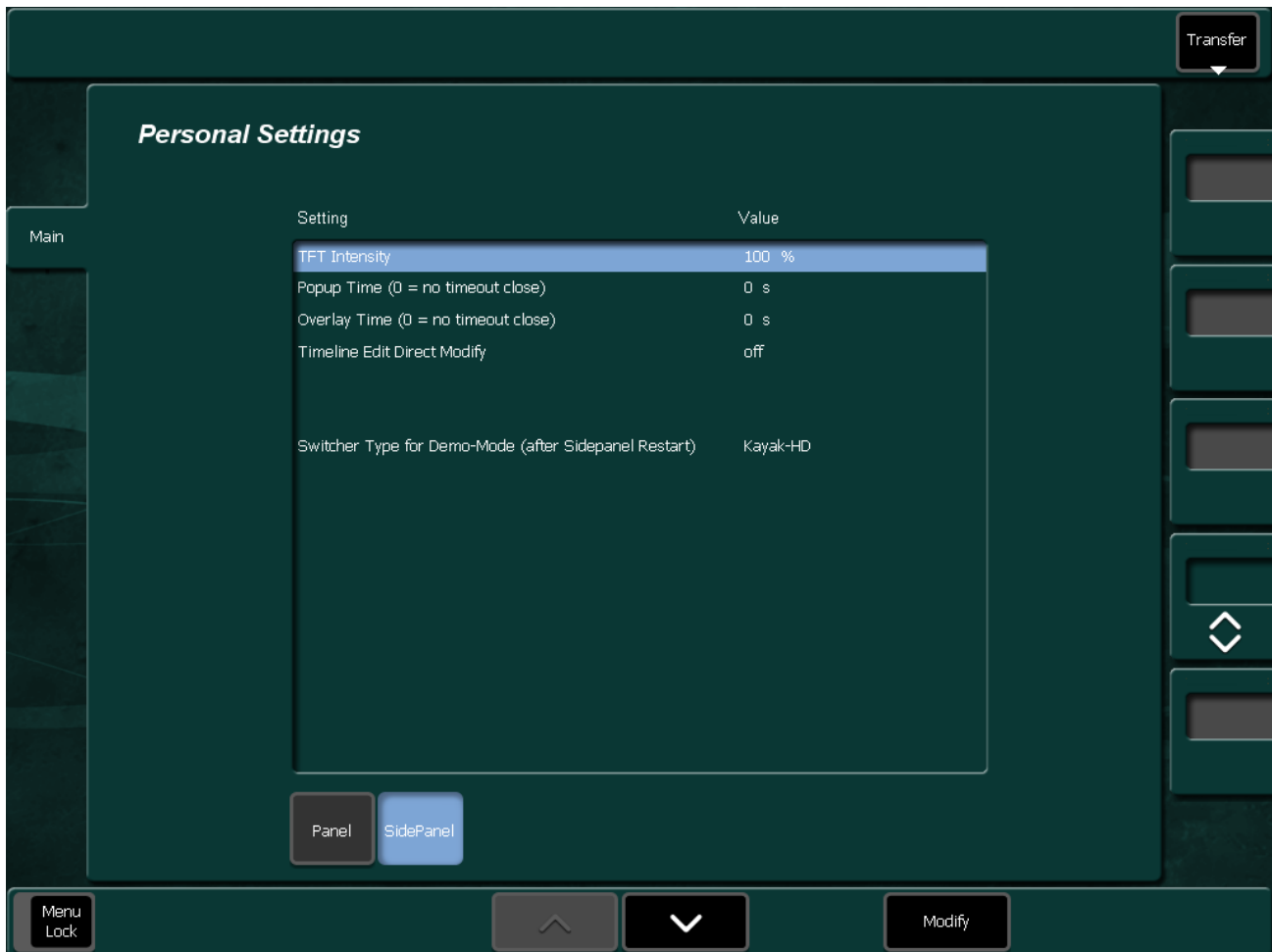
**Note** Other delegations to the key rows like Macro, eDPM, etc. will keep their individual 2nd / 3rd buttons as usual.

**Note** As precondition, the sidepanel has to be attached to a Kayenne XL control panel!

- **Shiftlevel Hidden Source Blinking:**  
The selected source flashes to indicate it is selected on a currently non-delegated level.
- **Joystick Speed:** Adjusts the selectivity of the Joystick.
- **Source Name Display Mode**
  - **Separate Lines:** For the program and preset row always to individual lines are displayed.
  - **Join Lines:** If the sources for the program and preset row are identical, only one name is displayed
  - **Join (Show Hidden Source):** Like Join Lines, but the display will also show two lines in case a source on a non-delegated level is selected.
- **Auto size Fonts in Source Name Displays**  
When On, the font will automatically adapt its size to fit all characters in the available space (in limits).
- **EMEM Modules follow last recalled register**
  - **On:** The display will show the last recalled register (EMEM, Macro, iDPM, eDPM).
  - **Off:** The display stays on the last manual selection, indicating with an asterisk behind the register name when the display shows the last recalled one. This mode allows presetting multiple Local EMEM Modules to different banks for independent direct access.

## Sidepanel Subpage

Figure 318. Personal Settings Side Panel



To configure your personal settings for the, select the **Sidepanel** parameter. Then press **Modify** to change the parameters.

- **TFT Intensity:** Adjustment for the TFT intensity of the Menu Panel.
- **Popup Time:** Time out for pop menus.
- **Overlay Time:** Time out for overlay menus.
- **Timeline Edit Direct Modify:** Default off.  
If **On** is selected, the operation steps to modify timeline elements with several modifiers is simplified.
- **Switcher Type for Demo Mode:** Switcher Type selection if the Menu Panel is used in the demo mode.

# M/E Menu

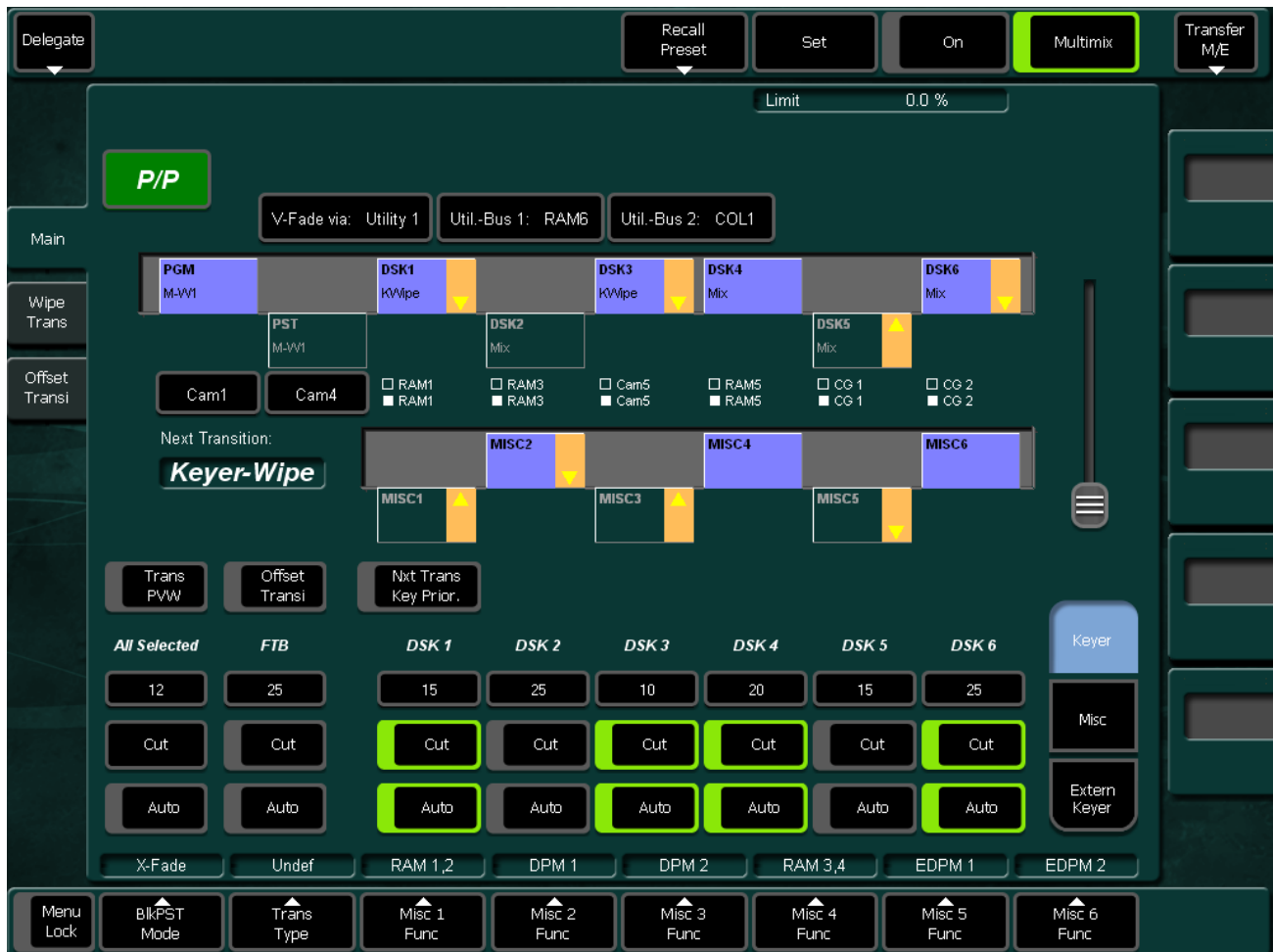
## M/E Main Submenu

M/E Main Submenu consists of 3 subpages:

- Keyer
- Misc
- Extern Keyer

## Subpage Keyer

Figure 319. M/E Main Keyer



## Recall Preset

Recall the single M/E Preset

- **All stop** Press the associated button to stop or reset the following functions:
  - Stops all ongoing auto transitions.
  - Sets FTB to inactive (100%).
  - Sets transition type to MIX.
  - Moves BGND transition to start position.
  - Removes all keyers.
  - Set Next Transition BGND.
  - Resets Next Transition for all other components.

This command does not

- Influence matrix crosspoints.
- Stop TiM/E timeline play or TiM/E snapshot dissolve.
- Factory Preset

Recall the factory preset

- Operation Preset.

Recall the user-defined operation preset. See below to store the user-defined operation preset.

## Limit Set

The **Limit set** and **Limit on** buttons serve to create reproducible partial transitions. This mode is possible with all types of transitions. Limit set permits storing the desired value set with the fader.

## Limit On

Limit on enables the mode. Any transition with Cut or Auto and any manual transition with the fader is only executed up to the value previously defined with Limit set. If the transition is made with the fader, the yellow arrow to the left of the fader does not change the direction when the fader is moved to its end position, thus indicating that the transition is not completed.

If Limit on is switched off at the point defined by Limit set, a jerk free transition to the next contribution can be made with the fader. The remaining transition length is then stretched to the full fader path.



## MultiMix Mode

If the MultiMix mode is enabled in the Sidepanel's **Config - E-Box** menu, the **MultiMix** will be activated.

The MultiMix mode is EMEMable, i.e. the settings are stored with the EMEM parameters.

The buttons **Limit Set** and **On** are active also when MultiMix is enabled.

**Note**      Limit **On** works only if a "Limit" has been set in advance.

## BkPSTMode

The **BkPST Mode** button permits selection of different modes of fading.

## Trans Type

The **Trans Type** button permits selection of different types of transitions:

To select a transition type, activate the button and then select a transition type with the overlay button **Undef, Mix, Add, Wipe1, Wipe2** or **DVE**.

The selected transition type is displayed in the button header area.

**Note**      You can only change the transition type when the transition is finished, i.e. when an automatic transition has been completed or the fader is in end position.

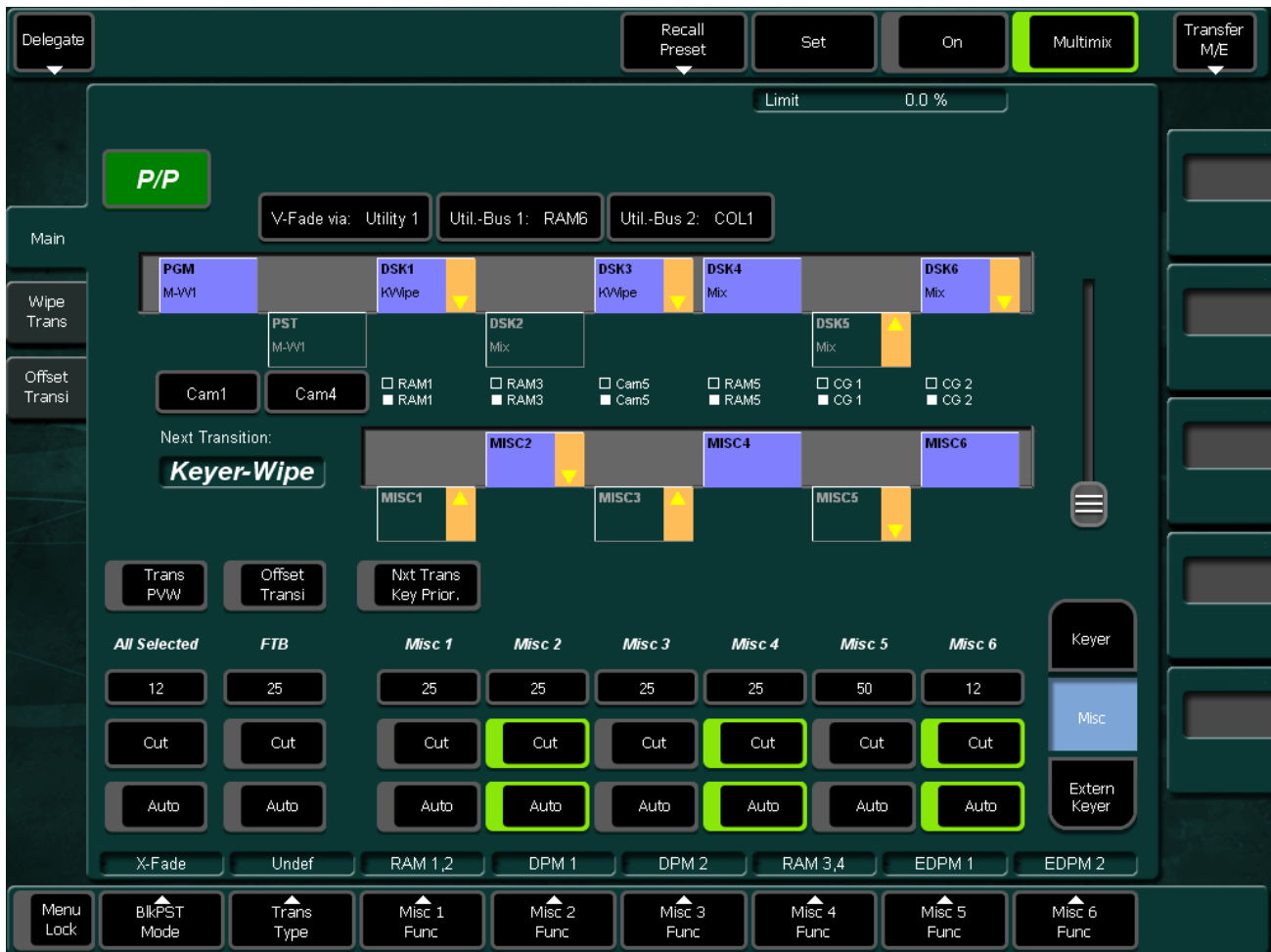
## Misc Transition (Misc Func 1 - 6)

One Misc component can run the RamRecorder channels DPM's in parallel, using the Auto Transition Button or the Lever Arm.

When the selected effect contains other channels than the selected one, all channels of this effect will be controlled.

## Subpage Misc

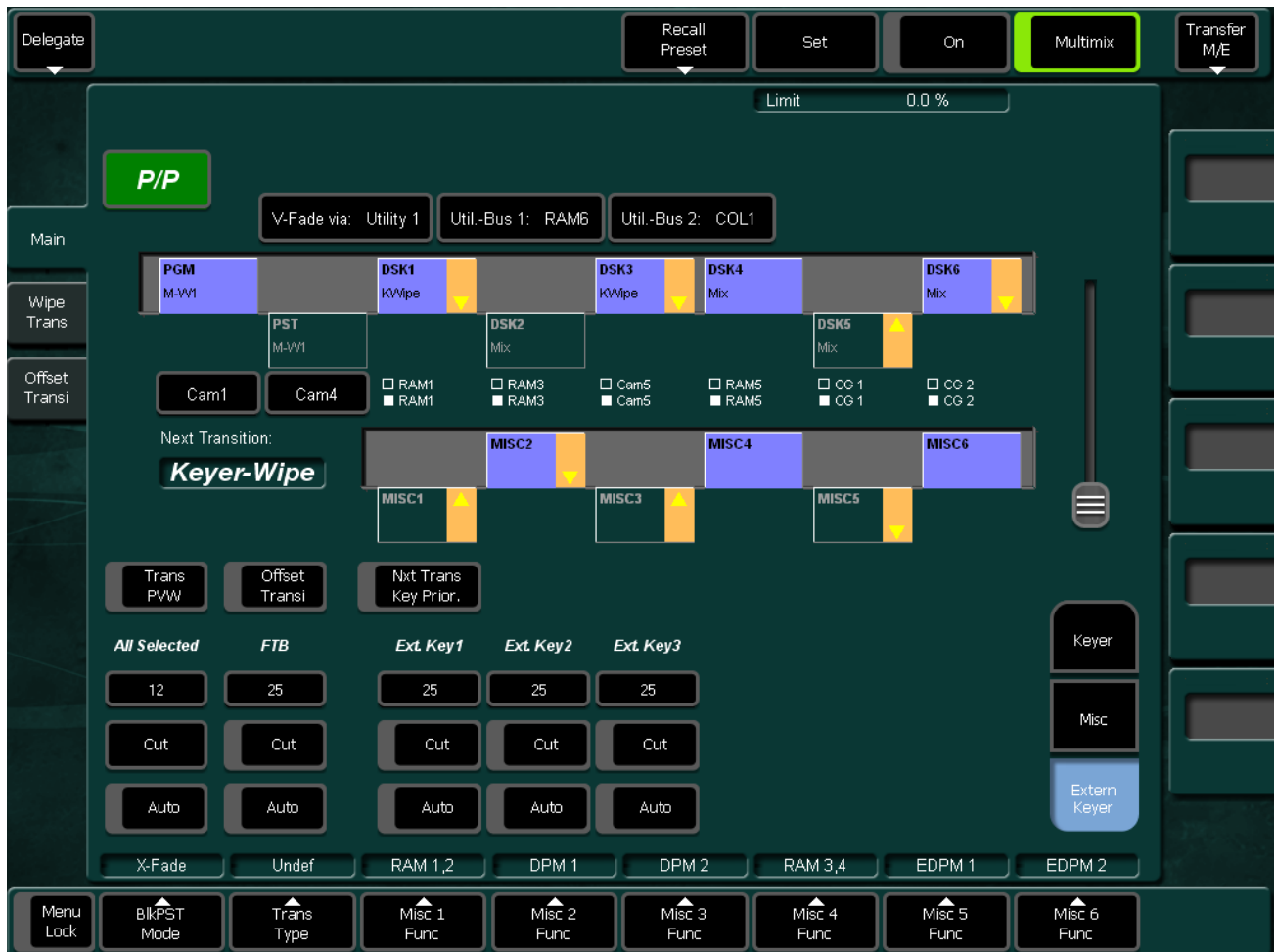
Figure 320. M/E Main Misc



The M/E Main Misc Menu is used to run the Misc components, using the Menu Panel.

## Subpage Extern Keyer

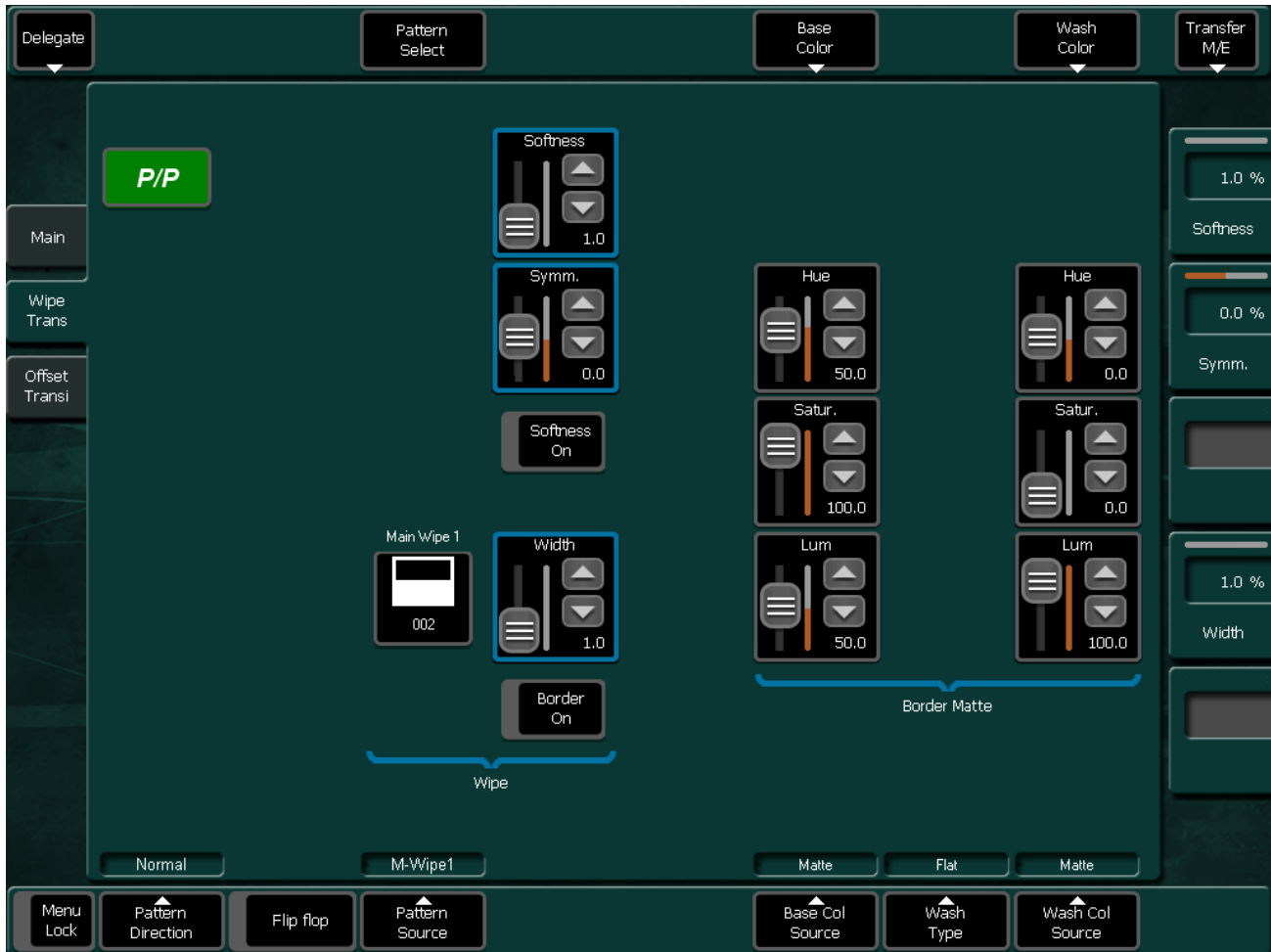
Figure 321. M/E Main Extern



M/E Main Extern Keyer can be used to perform Cut or Auto transitions on External Keyer, if available.

## M/E Wipe Trans Submenu

Figure 322. M/E Wipe Trans



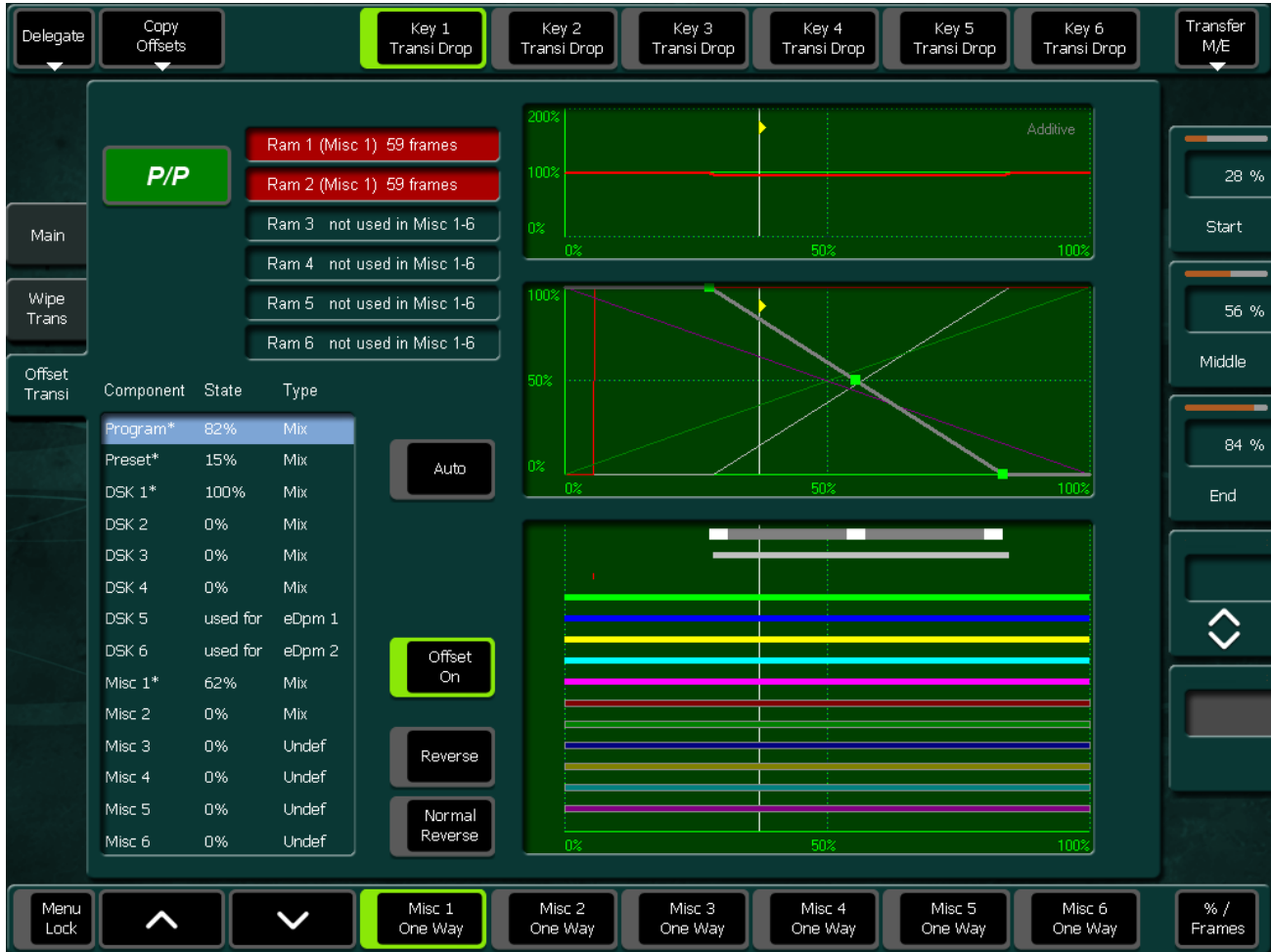
- **Pattern Select:**  
Pattern select is a direct link to the Pattern select menu.
- **Base Color:**  
The **Base Color** button serves to select a pre-defined color and delegates the digipots to the **Base Color Control Box**.
- **Wash Color:** The **Wash Color** button serves to select a pre-defined color and delegates the digipots to the **Base Color Control Box**.
- **Pattern Direction:**  
Pattern Source preselects the pattern source for a Background Wipe transition enabled by the **Wipe** button at the Transition Panel. Available Pattern Sources are Main Wipe 1/2 and Utility Bus 1/2.

- **Flip Flop:**  
If **Flip Flop** is enabled, the Wipe Transition will be alternated between Normal or Reverse direction, using **Auto** button or lever arm at the Transition Panel.
- **Pattern Source:**  
Pattern Source preselects the pattern source for a Background Wipe transition enabled by the **Wipe** button at the Transition Panel. Available Pattern Sources are Main Wipe 1/2 and Utility Bus 1/2.
- **Base Col Source:**  
Base Color Source is used to fill the border of the used Pattern with a Color Matte or any incoming video source or internal device such as RamRecorder using the Utility Bus.
- **Wash Type:**  
Selecting **Wash Type** serves to select Main Wipe 1/2 or Utility Bus 1/2 to compose a color wash between the Base Color Source and Wash Color Source.
- **Wash Col Source:** Wash Col Source is used to fill the border of the used Pattern with a Color Matte or any incoming video source or internal device such as RamRecorder using the Utility Bus. Wash Color Source can be used to compose a Color Wash between the Base Color and the Wash Color depending on the used Wash Type.

## Offset Transi Submenu

**Note** The Offset Transi mode can be part of an EMEM. The settings are stored with the EMEM parameters.

Figure 323. Offset Transi



- **Copy Offsets:**  
If offset transition is switched off, a second parameter set of offset transitions appears. You can modify this set when offset transition is switched off. You can also make it the active one by using the **Copy Offset** button.
- **Transi Drop (Key 1 - 6):**  
Transi Drop will switch off the keyer used in an Offset Transition at the end position of an Offset Transition effect.
- **Arrow buttons:**  
Selects an item in the component table.
- **One Way (Misc 1-6):**  
One Way will position the Offset Transition back to the Starting point after the Offset Transition was performed. If the RamRecorder is used, the RamRecorder will also be repositioned to the starting point.
- **% / Frames:**  
Toggles the adjusting units between percentage (%) and Frames.
- **Transition Graphs:**  
The **Offset Transi** menu contains three graphs showing transition details:
  - **Upper graph:** Signal level curve of background transition (Program and Preset).
  - **Middle graph:** Interactive level curve of each transition component.
  - **Lower graph:** Interactive timeline bar of each transition component.
  - Double-click the timeline bar in order to change the values **Start**, **Middle**, and **End**. The values can be adjusted with the digipots also.
- **Reverse/Normal - Reverse:**  
The **Normal Reverse** button determines the transition pattern direction. If this button is activated, the transition direction is changed each time the fader is its final position or when the transition is completed. If you wish to change the preset transition direction, press the **Reverse** button.
- **Component Table:**  
The interactive table shows the transition components. In the **Visible** column, you can select whether the non-selected components are visible in the graphs or not (yes=visible). Double-click to show or hide the component curve/bar.  
  
In column **Type** the selected **Transition Type** of the component is shown. A selected (blue bar) component is visible in the graphs and can be adjusted independent of whether it is switched, visible, or neither.

- **Used RamRecorder Channels:** If RamRecorder is selected as the function for Misc 1 and 2, then the Main menu's Misc 1 and 2 function as the transition component and the channels are colored and highlighted. In addition the lengths of the clip will be shown in frames.
- **Offset On:**  
Activates the **Offset Transition** settings for use during the next MultiMix transition. Offset Transition can be activated in the M/E Main menu also.



# Key Menu

## Key Main Submenu

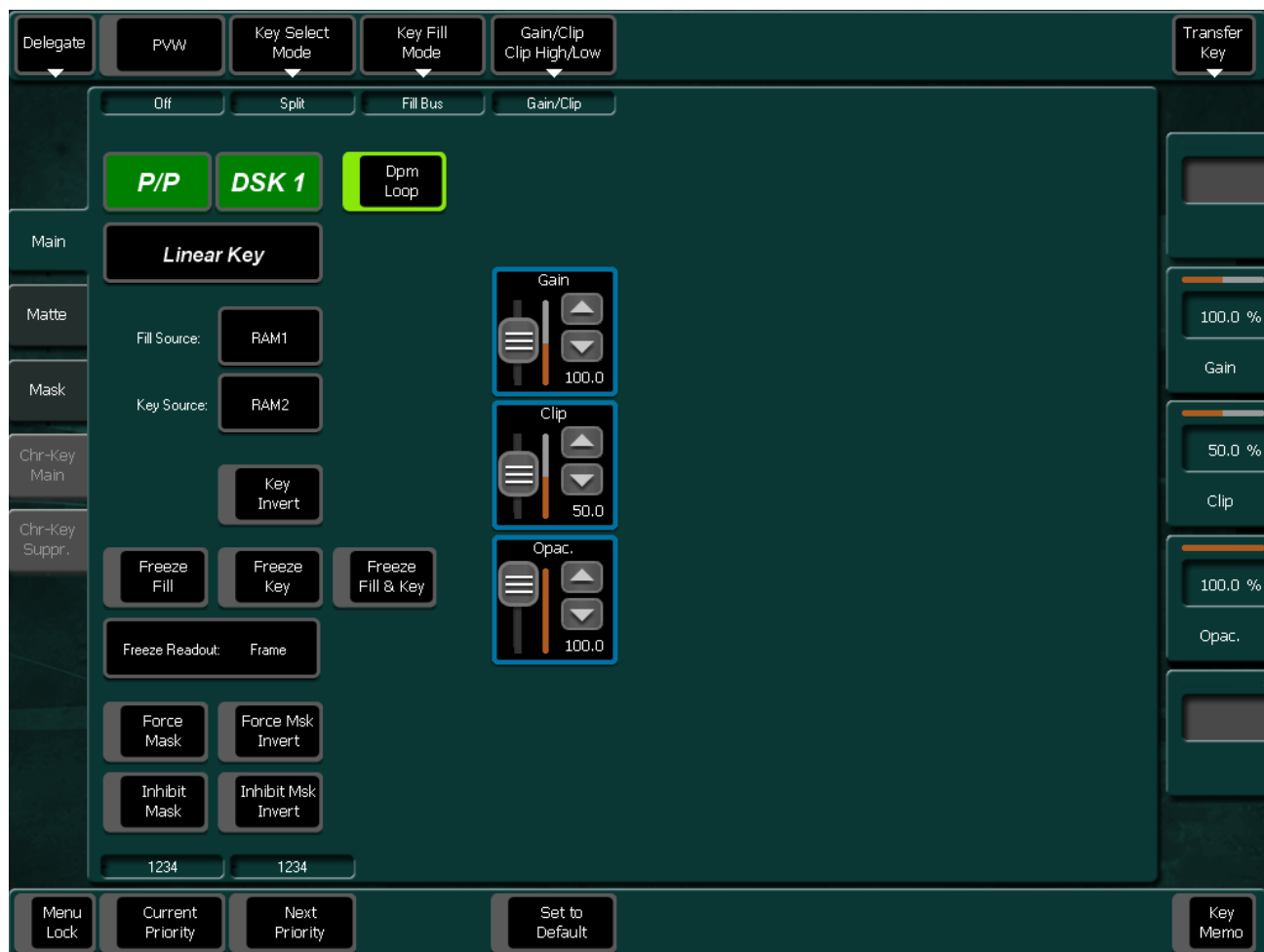
The Keyer menu controls are organized into several subcategories, each with different menu selection based on the type of key. These menus are accessed by touching the **Keyer** button in the Home menu. Keyer selections such as key type, **Key Invert**, **Matte Fill**, can be made for any keyer from the Main panel using the Keyers subpanel. These controls are on the Main panel for immediate access.

However, key adjustment for detail, such as clip and gain, and mask controls, are accessible from the corresponding Keyer menu. The Keyer subpanels and the corresponding menus will reflect and track the changes made by either set of controls.

The Keyer menu controls are organized into several subcategories, each with different menu selection based on the type of key. These menus are accessed by selecting the appropriate keyer via the **Delegation** popup button, then the category is chosen from the **Mode**, **Priority** or **Mask** and **Mattes** buttons at the bottom of the menu.

**Note** Utility Bus 2 is only available on Kayak HD systems.

Figure 324. Key Main



The Keyer menus enable you to control the key generators for each of the full-function M/Es. The Keyer menus, like the Wipe menus, have a delegation area at upper left, which in this case contains the key generator selector.

The Mode menu enables you to select the type of key for any of the six keyers in each M/E or P/P. Touching the **Mode** subcategory button brings up the Keyer Mode menu. Touch the keyer data pad you wish to select, then select the **Mode** from one of the selections described below. Key modes are selectable from the following choices:

- Fixed Linear or Luminance
- Adj. Linear or Luminance Linear
- Luma Key or Additive Key
- Chroma Key
- Preset Pattern

Luminance Key is used for key sources with an unshaped fill signal.

Linear Key is just a shortcut for a special setting of the Luminance Key with Gain 100% and Clip 50%.

Additive Key is used for key sources with a shaped fill signal.

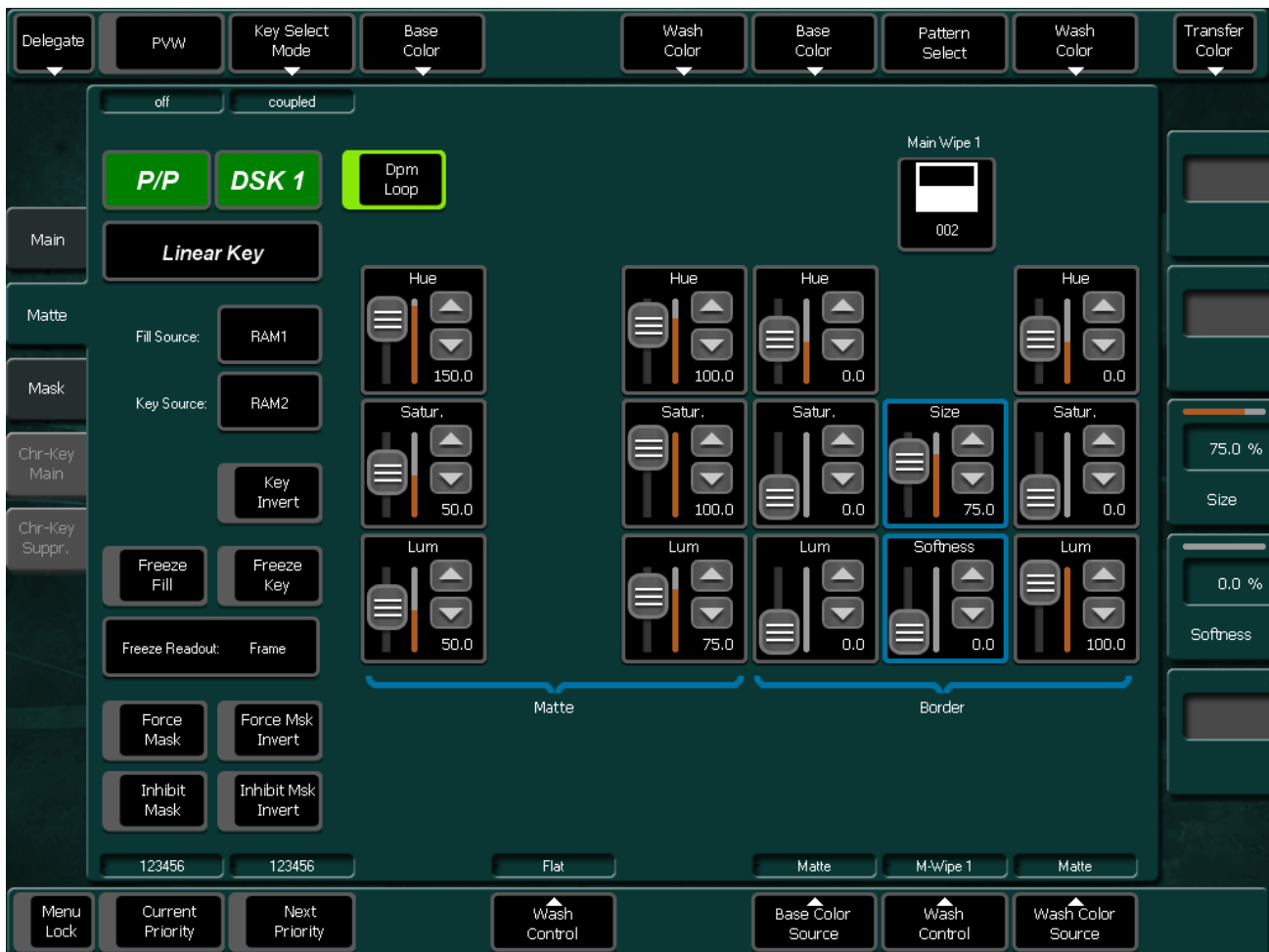
For an overview of key types and adjustments, refer to the section [Keying on page 43](#).

Refer also the [Keyer Control](#) section of the Multi Function Control Panel.

## Key Matte Submenu

The Matte menus give you control over matte color, type, and appearance. There are no local matte controls on the Main panel; all matte adjustments are made in the menus. The popup delegation button in the top left of the menu enable you to select the mattes of the different keys. Soft knobs are provided on the right side of the menu for adjustment of matte parameters.

Figure 325. Key Matte



The source signal can be selected with the popup **Wash Source**.

## Keyer Freeze Menu

The **Freeze** pane contains a **Freeze Fill** and a **Freeze Key** button, which are similar to the keys on the panel, and **Freeze Fill+Key**, which is similar to pressing both. Pressing the **Freeze Fill+Key** guarantees that the signals are frozen in the same field.

The Display pane offers the choice of which area should be either Field 1 or Field 2, or both.

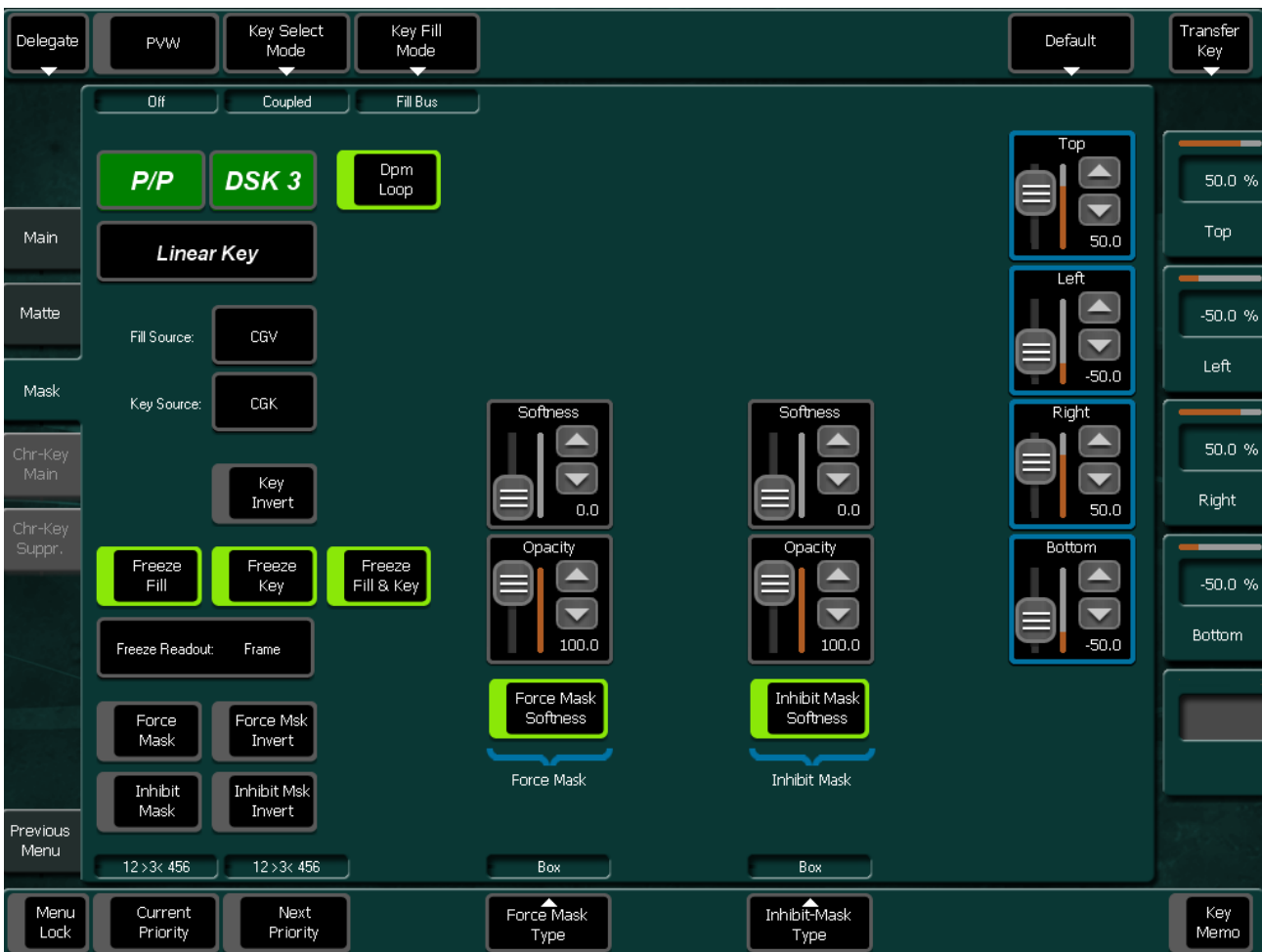
Refer also the [Keyer Control](#) section of the Multi Function Control Panel.

## Key Mask Submenu

Touching the **Mask** subcategory button takes you to the Keyer Mask Point of Use menu. The **Mask** menu enable selection and control of the keyer mask(s). Key masking defines areas that are protected from keying (Inhibit) or always key (Force). The shape of the mask can originate from a wipe pattern generator or from a selected mask signal (typically a key fill signal delivered via the Utility bus).

The keyer delegation (**Key1 – Key6**) is made at the top left of the screen. Once a keyer has been delegated, choose the type of mask (**Force** or **Inhibit**, or both) from the data pad in the lower right corner. The example shown here is for a Wipe Force Mask on Key 1.

Figure 326. Key Mask



**Note** In v692, the **Mask Preview** button has been removed.

## Mask Sources

For either type of selected mask (Force or Inhibit) five different mask sources are available and will appear as popup selection when you press the **Mask Source** button.

Only one mask source can be selected at a time.

The **Inh.-M Type** button (Mask Types) selects the source of the inhibit mask. Default Box mask is selected, M-Wipe and K-Wipe are the other selections.

**Note** The Transition Type K-Wipe is related to this source.

**Note** Utility Bus 2 is only available with Kayak HD.

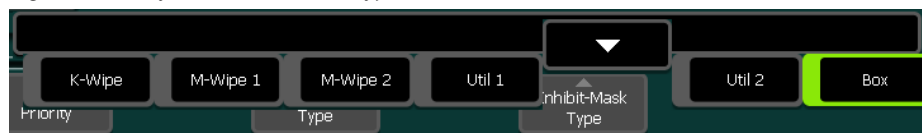
### Box

When **Box** is selected as the mask source, you can adjust softness and opacity. The four edges of the box can be set separately.

Figure 327. Key Mask Force Mask Type Selection



Figure 328. Key Mask Inhib Mask Type Selection



Refer also the [Keyer Control](#) section of the Multi Function Control Panel.

## Chr Key Main Submenu

When a chroma key is selected, the menu will display a summary of all chroma key parameter values at the same time. The parameter groups should be adjusted in the following order:

1. Prim Suppress
2. Key Control
3. Sec Suppress
4. Other

After the first two parameter groups have been adjusted, a reasonable key should be visible. Subsequent adjustment steps may improve the basic key in subtle ways.

See the section on [Chroma Key Main Page on page 188](#) for more information on setting up a chroma key.



Figure 329. Chroma Key Main

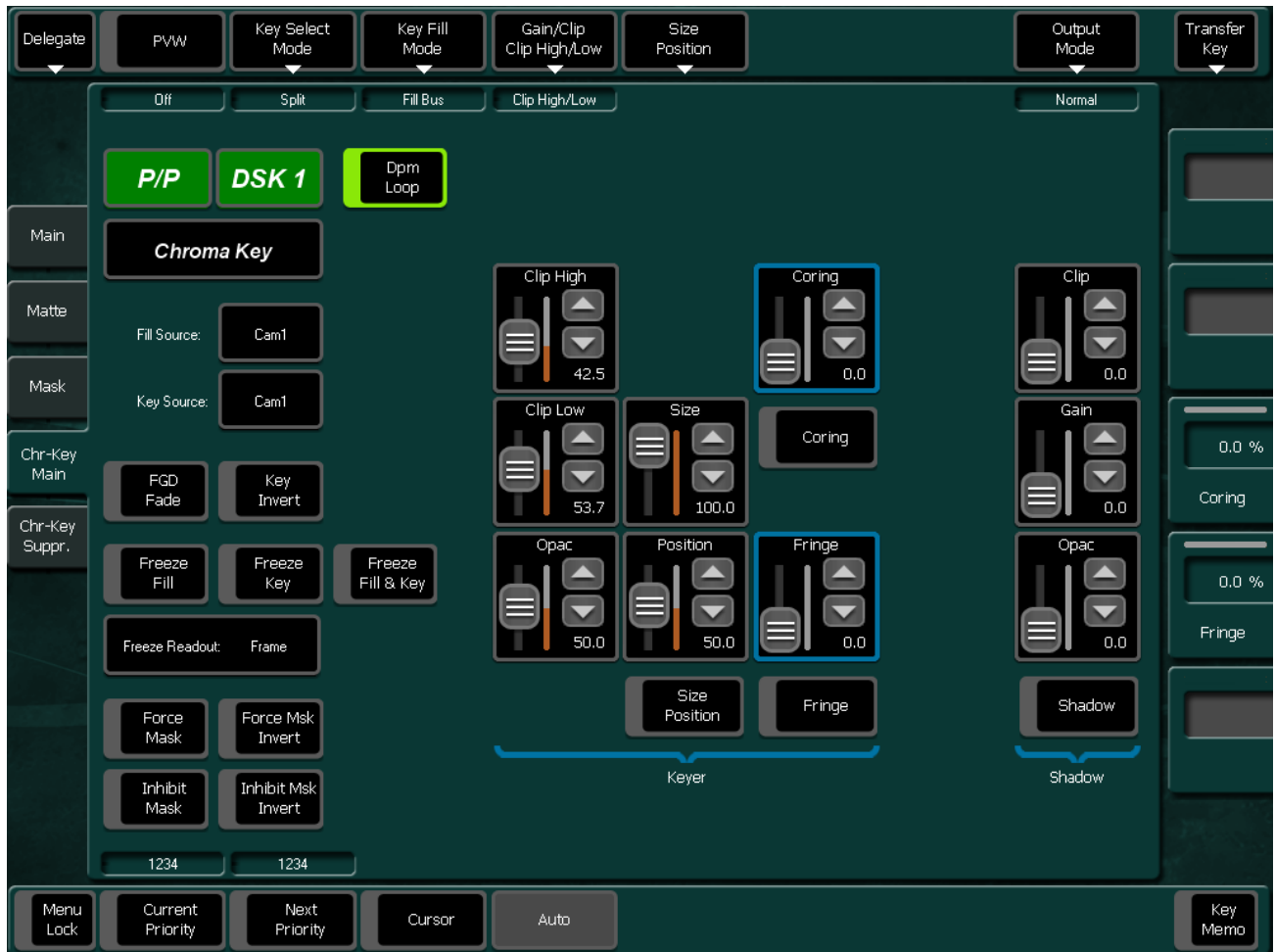
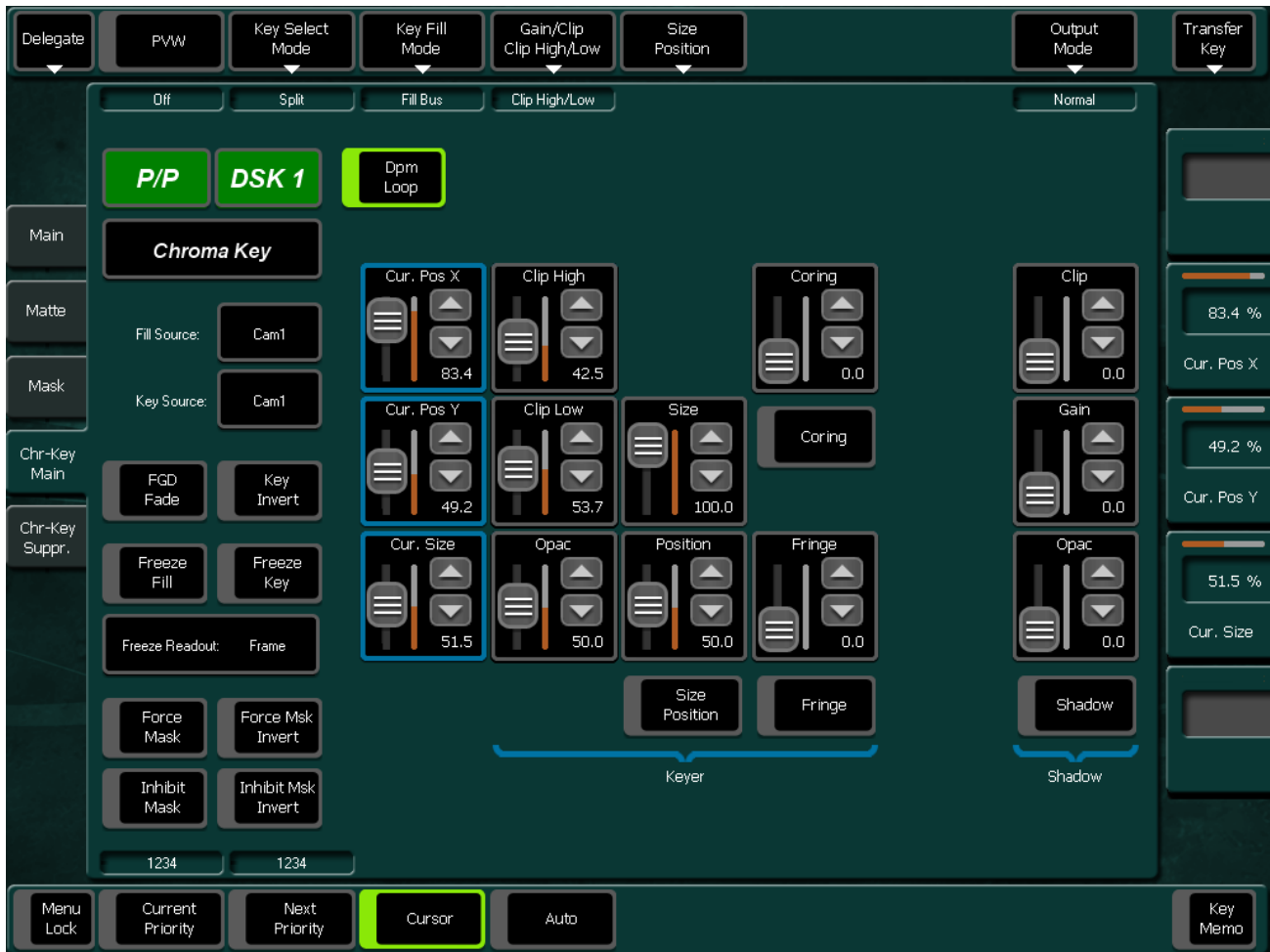


Figure 330. Chroma Key Main Cursor



# Chr Key Suppression Submenu

Figure 331. Chroma Key Suppression

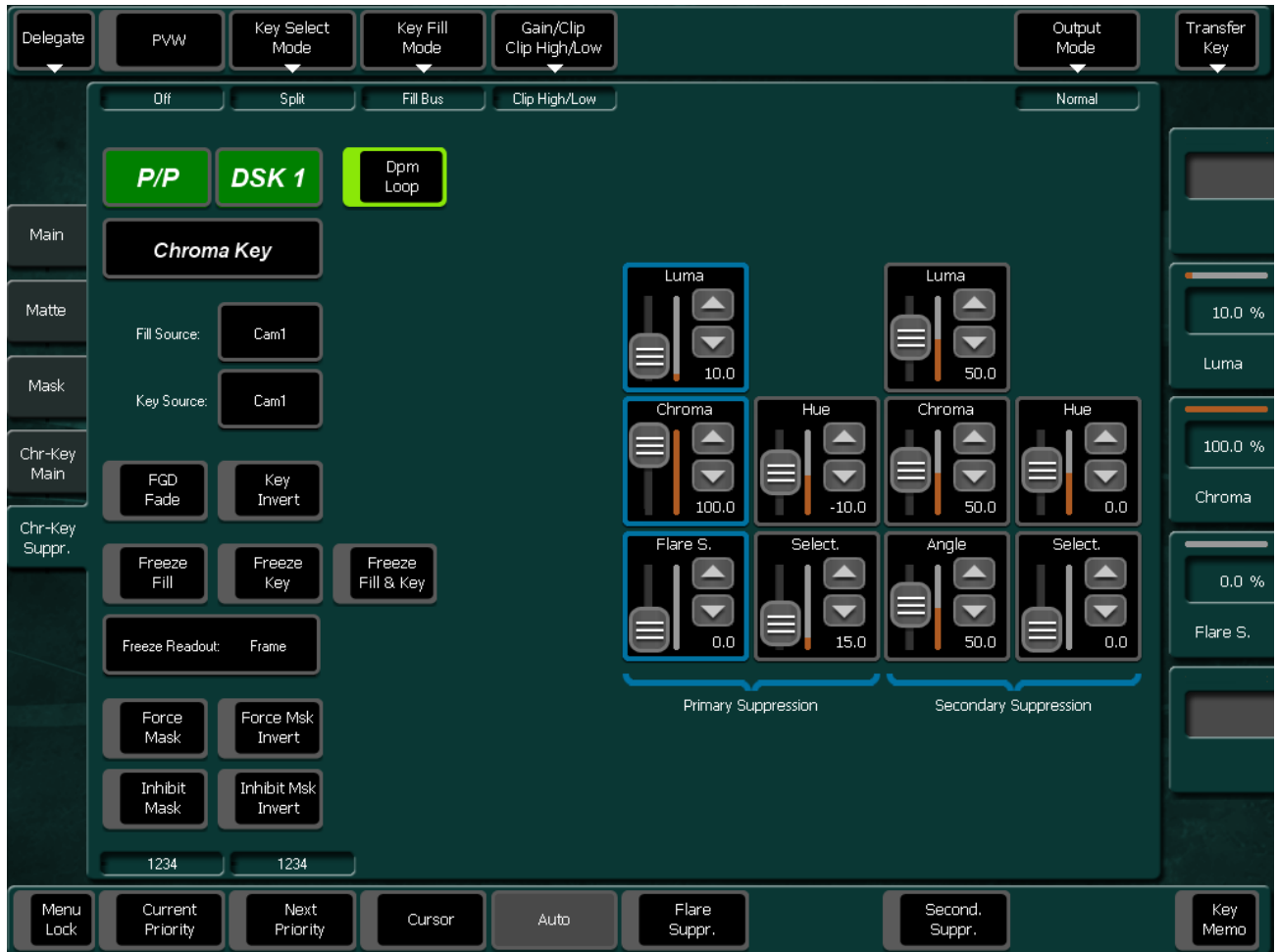
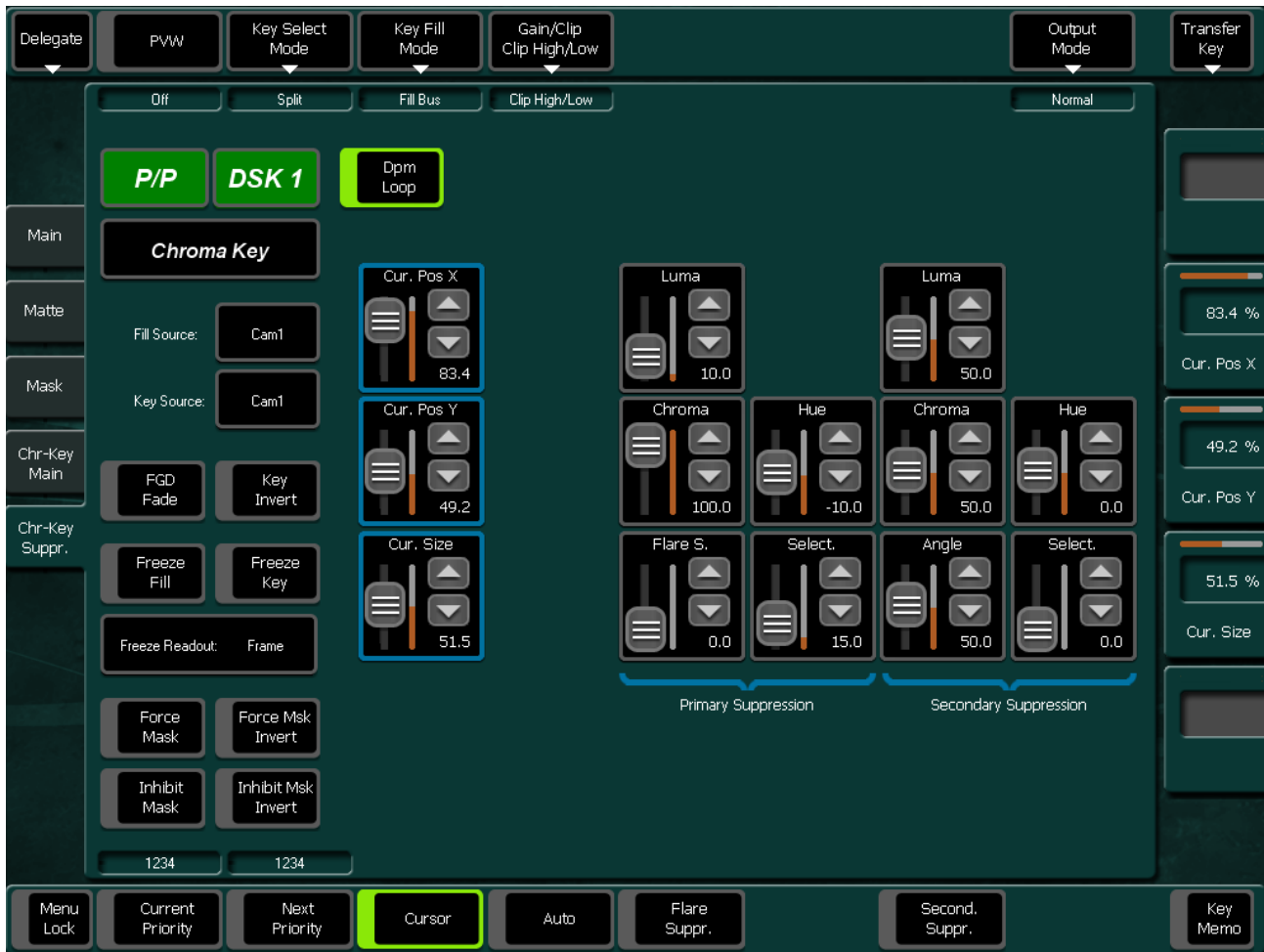


Figure 332. Chroma Key Suppression Cursor



## Keyer Wipe

A Keyer Wipe mask source enable selection of a wipe pattern from the dedicated pattern generator for the keyer. Touch the **Patt. Sel/Adj** button in the menu to bring up the wipe pattern selections available. Select a pattern from the display. The selected pattern will appear in the **Patt. Sel/Adj** data pad window. Select the other datapads in the wipe menu to adjust pattern modifiers. These include pattern positioner, rotate, H and V multiply, and aspect controls, similar to the wipe controls. Modifiers are controlled by the soft knobs on the right of the screen.

### Complex Wipe 1 and 2

A mask can be generated from a complex wipe source. There are two complex wipe generators available, **Complex Wipe 1** and **2**. The pattern for the complex wipe is chosen in the same manner as the keyer wipe mask. The complex mask wipe can also be modified for position, rotation, H and V multiplication and aspect. In addition, wipes can be mixed and modulated.

Keyer and complex wipe masks must share the wipe generators with other functions with wipe capability in the switcher. This resource sharing must be considered when delegating one of the wipe generators to a mask.

**CAUTION** All controls in the Wipe1 Generator or the Wipe2 Generator affect the selected wipe pattern generator.

### Utility Bus

The **Utility Bus** mask sources originate from the utility bus in the chosen M/E. Typically these are used to bring in garbage masks from a RamRecorder (Still Store) or some external device.

### Mask On Button

The Mask may be turned on or off by selecting the **Mask On** button.

### Mask Invert Button

The **Mask Invert** button inverts the sense of the delegated mask. When off, areas formerly masked will be visible, and previously visible areas will be masked. Masks are normally active in the center of the pattern. An inverted mask is active outside the pattern.

## Preset Pattern

A preset pattern uses a wipe pattern generator, rather than an incoming key cut signal to define the hole cut in the background. When **Preset Pattern** is chosen as the keyer mode, the menu will appear. When the **Pattern** data pad is touched, the Wipe menu (see *Wipe Menus*) will come up to enable pattern selection.

The Preset Pattern may be matte-filled by touching the **Matte Fill** data pad.

The matte controls can be accessed by touching the **Mattes** button. Opacity and size of the preset pattern can also be adjusted with the digipots.

## Keyer Priority Misc Menu

Touching the **Priority Misc** subcategory button takes you to the Priority menu. The Priority menu is used to change the stacking order of the keys.

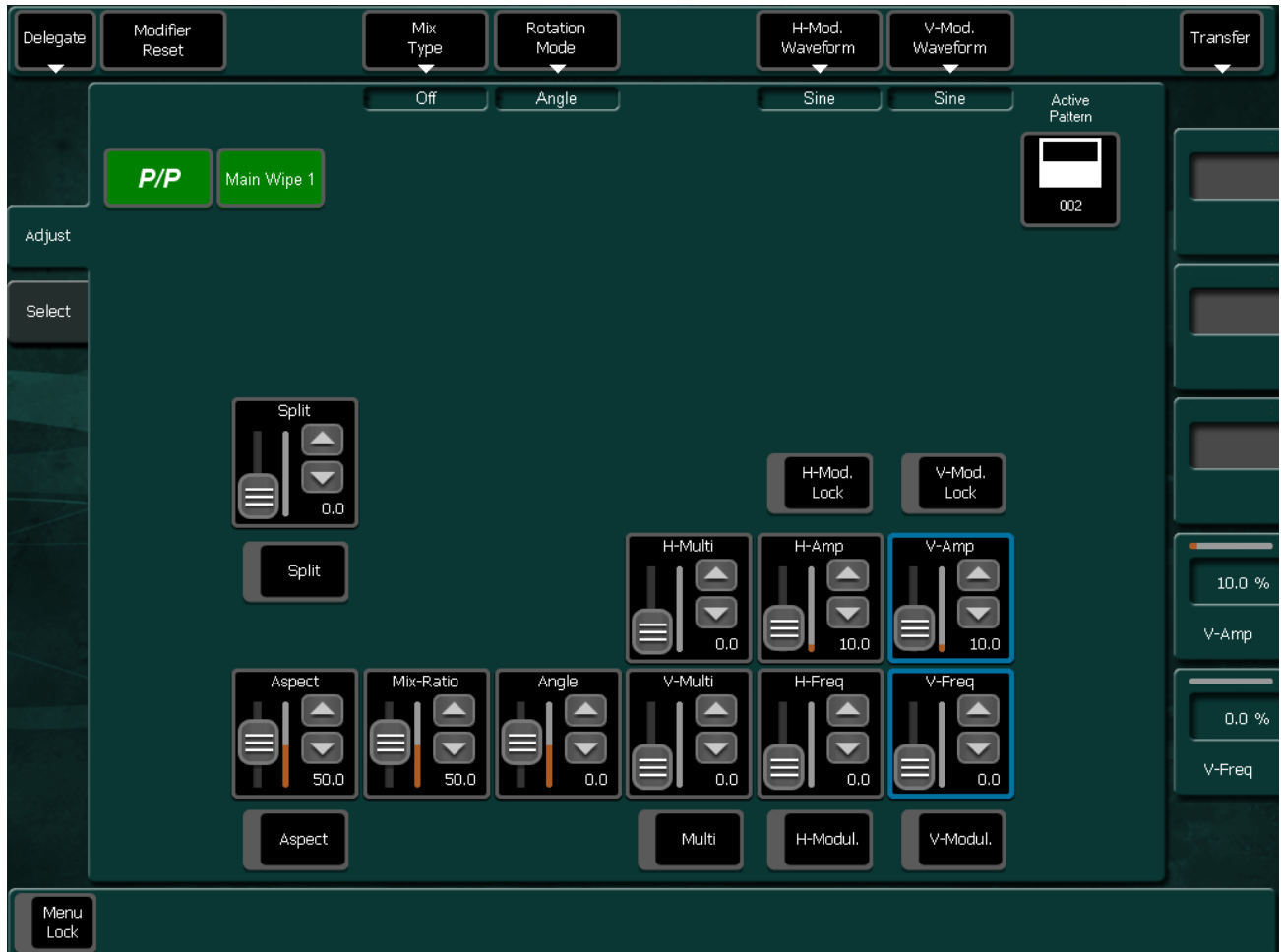
The parameter control area on the right has two columns, labeled **Current** and **Next**. The stacking order of the selected item in a column is controlled with the **Top**, **Move Up**, **Move Down**, and **Bottom** touch buttons. Changing the top to bottom order in the **Current** column will cause an immediate change in that keyers stacking order. The order in the **Next** column controls the order the keys will have after the next key priority transition. After the key priority transition, the **Current** and **Next** stacks will swap.

The **Key Prior** and **Key Over** buttons in the Keyer subpanel on the panel provide an alternate method for setting key priority. Refer to the sections on [Transition Elements](#) on page 105.

Refer also the [Keyer Control](#) section of the Multi Function Control Panel.

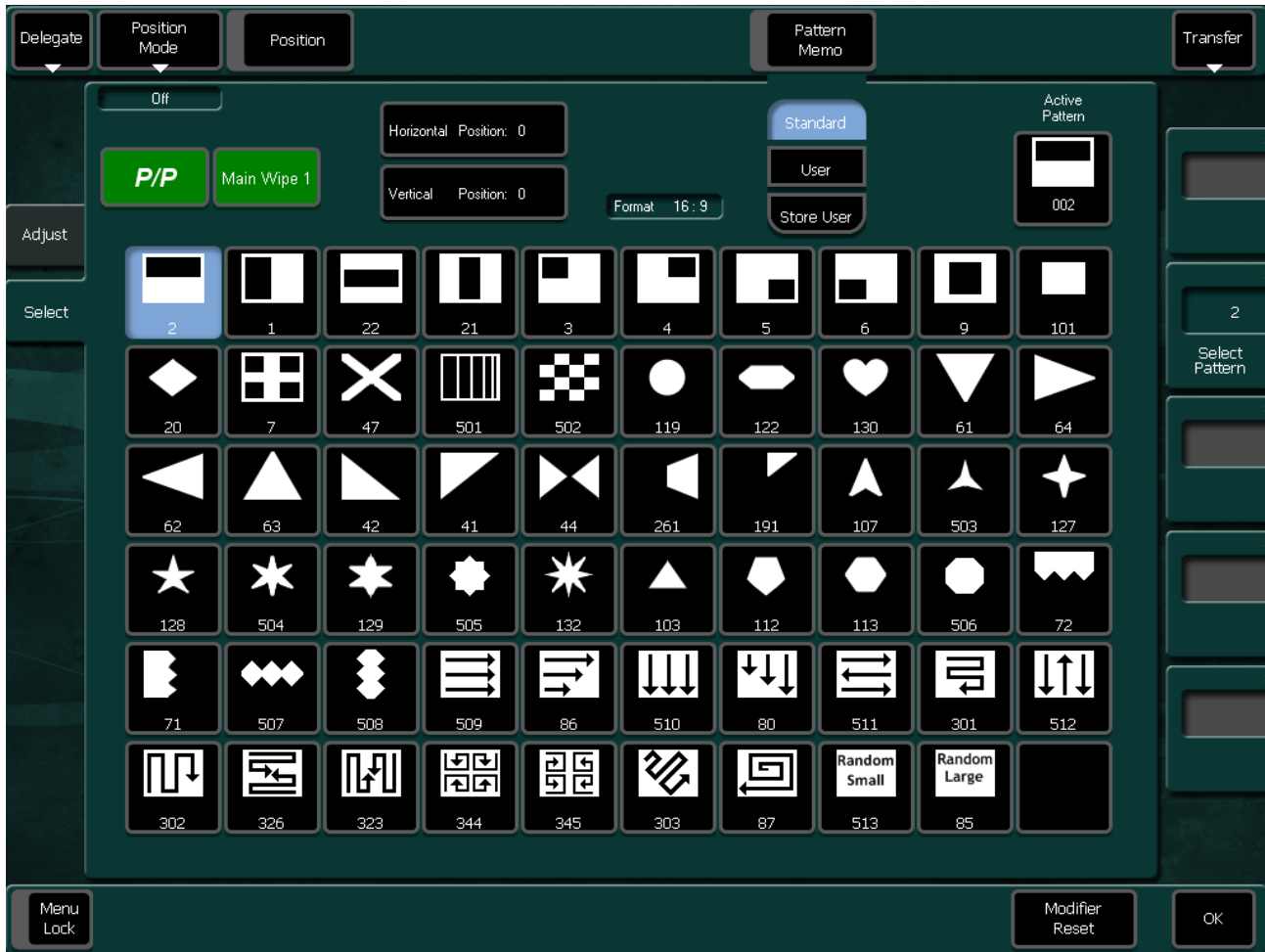
## Wipe Adjust Submenu

Figure 333. Wipe Adjust



## Wipe Select Submenu

Figure 334. Wipe Select



Refer also the [Wipe and Blue Selection](#) section of the Multi Function Control Panel.



# Color BGD Menu

## Color BGD 1 - 3 Submenu

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

When **Bgnd Mattes** is selected, the menu displays two panes for control of Color BGD 1, Color BGD 2, Color BGD 3, and Test patterns, including base and wash colors, wash direction and offset, and wash edge texture attributes. Each touch pad activates the soft knobs to control those parameters.

Figure 335. Color Background 1



The popup delegation button in the top left of the menu enable you to delegate the menu to Color BGD 1, Color BGD 2, Color BGD 3, and Test Signal patterns.

Figure 336. Color Background 1 Preset



Touch the Color Output pad, then select the desired color output: Flat single color matte with button **Flat Matte 1** or **Flat Matte 2**. A dual color matte can be selected with button **Wash**. All subsequent matte controls are located on the central pane of the menu.

Figure 337. Color Background 1 Wash Reset



## Test Signal Submenu

The Test Signal menu enable the selection of different video test patterns. The chosen test pattern will be displayed when the Test source is selected.

Figure 338. Test Signal

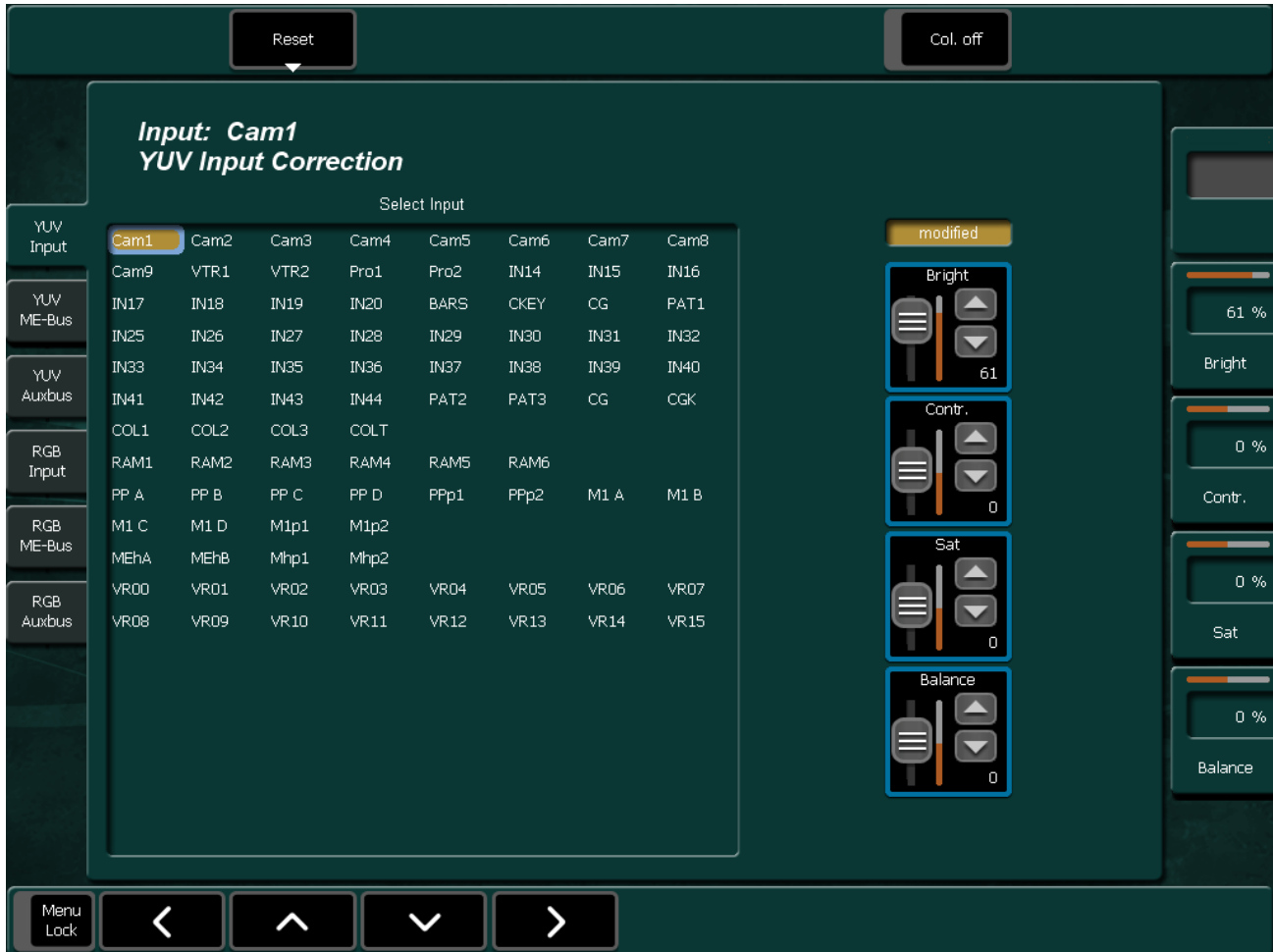


# Color Correction Menu

## YUV Input Submenu

The YUV Correction menu serves to adjust brightness, contrast, saturation and color balance.

Figure 339. Color Correction Input



The correction can be made in the following buses:

- Bus (PGM, PST, Key1 ... Key6)

**Note** If Bus Correction for PGM bus and/or PST bus is selected, the two settings are exchanged at the end of a fading.

- Input (all input signals)
- AUX (all AUX buses)

**Note** Bus correction has priority over input correction.

### Color Off

Switch the color on/off, separately for each bus.

Figure 340. Color Correction Input Reset



### Reset Bus

Reset the values for a single bus of the selected M/E to their default value

## YUV M/E Bus Submenu

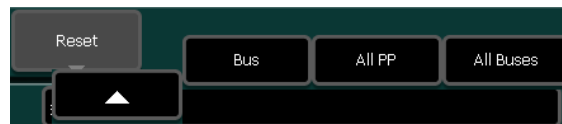
Figure 341. Bus Correction



### Reset M/E

Reset the values for all buses of the selected M/E to their default values.

Figure 342. Bus Correction Reset



## YUV Aux-Bus Submenu

Figure 343. Auxbus Correction

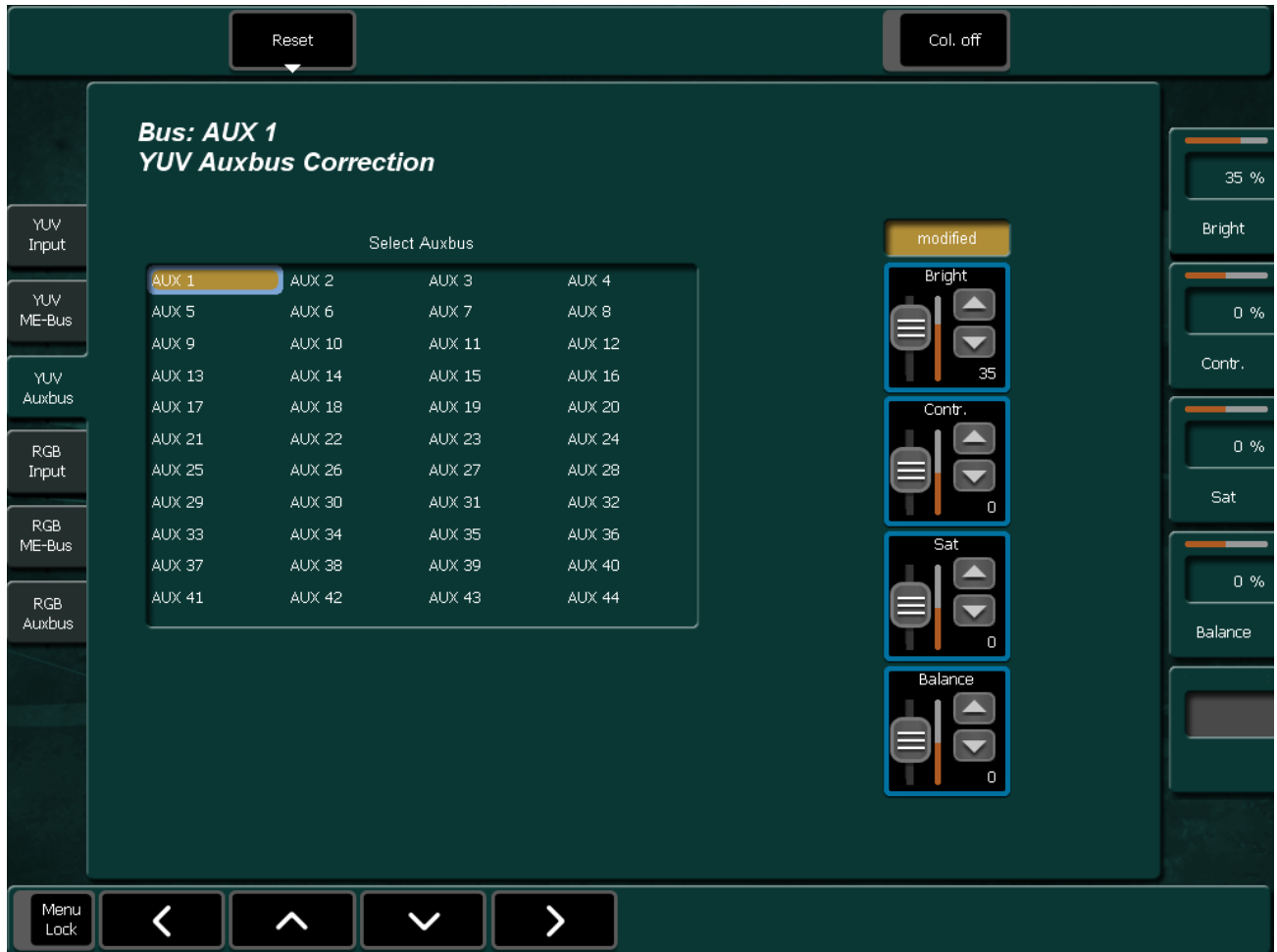
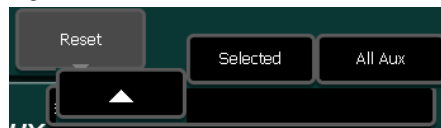


Figure 344. Auxbus Correction Reset



## RGB Input Submenu

RGB Input Color Correction is a software enabled feature that converts the video signal on a particular video bus from color difference format to RGB (red, green, blue) color component format, applies separate offset, gain, and gamma to each RGB component, then converts from RGB back to color difference (Y, Cb, Cr) format. The color correction is applied on an input by input basis. The parameters are applied on the basis of a source and bus intersection and stored as part of source memory. A different input on the same bus or a same input on a different bus, may have different color correction.

The Color Corrector menu is used to adjust RGB color on a selected bus and input.

Corrected inputs and parameters will be displayed in a yellow style.

Figure 345. RGB Input Correction





The Adjustment Mode pad has two buttons, the first two, **Gain/Lift** and **White/Black**, determine the mode for the knobs and the text boxes in the Color Corrector Transfer Function pane **Red/Green/Blue**

Figure 346. RGB Input Correction Adjust Mode



- **Gain/Lift:** Adjust offset to Black level.
- **White/Black:** Adjust Black and White by percentage.

When one of the **Red**, **Green**, or **Blue** color component's button is selected, the knobs for **Gain**, **Lift**, and **Gamma** are delegated for the specific component. For example, if Green had been selected, the knobs would control the green channel's values, and similarly for Red and Blue.

The **Changes on red also apply to** pane has two on/off buttons. The title and the button labels are dependent on the selection of the color component in the Color Corrector Transfer Function pane **Red/Green/Blue**. If the user selects Blue as the color to be adjusted, the two buttons are **Red** and **Green**. When these buttons are active, the adjustments applied to the originally selected color component is also applied to the one(s) selected in the pane. For example, if the user chooses to adjust Blue and selects Red in the **Changes on Blue also apply to** pane, then any adjustments to Blue's Gamma value will be applied to Red's Gamma value.

**Note** Changing from **Blue** to either **Green** or **Red** in the Color Corrector Transfer Function pane will cancel the attachment.

Figure 347. RGB Input Correction Reset



When the **Reset** button is touched, the following modes can be selected:

- Reset **Red/ Green/ Blue**
- Reset **Input**
- Reset **All Inputs**

## RGB Bus Submenu

Refer to [RGB Input Submenu on page 428](#) for further operating details.

Figure 348. RGB M/E Bus



Figure 349. RGB M/E Bus Adjust Mode



Figure 350. RGB M/E Bus Reset



## RGB Aux Submenu

Refer to [RGB Input Submenu on page 428](#) for further operating details.

Figure 351. RGB Auxbus Correction

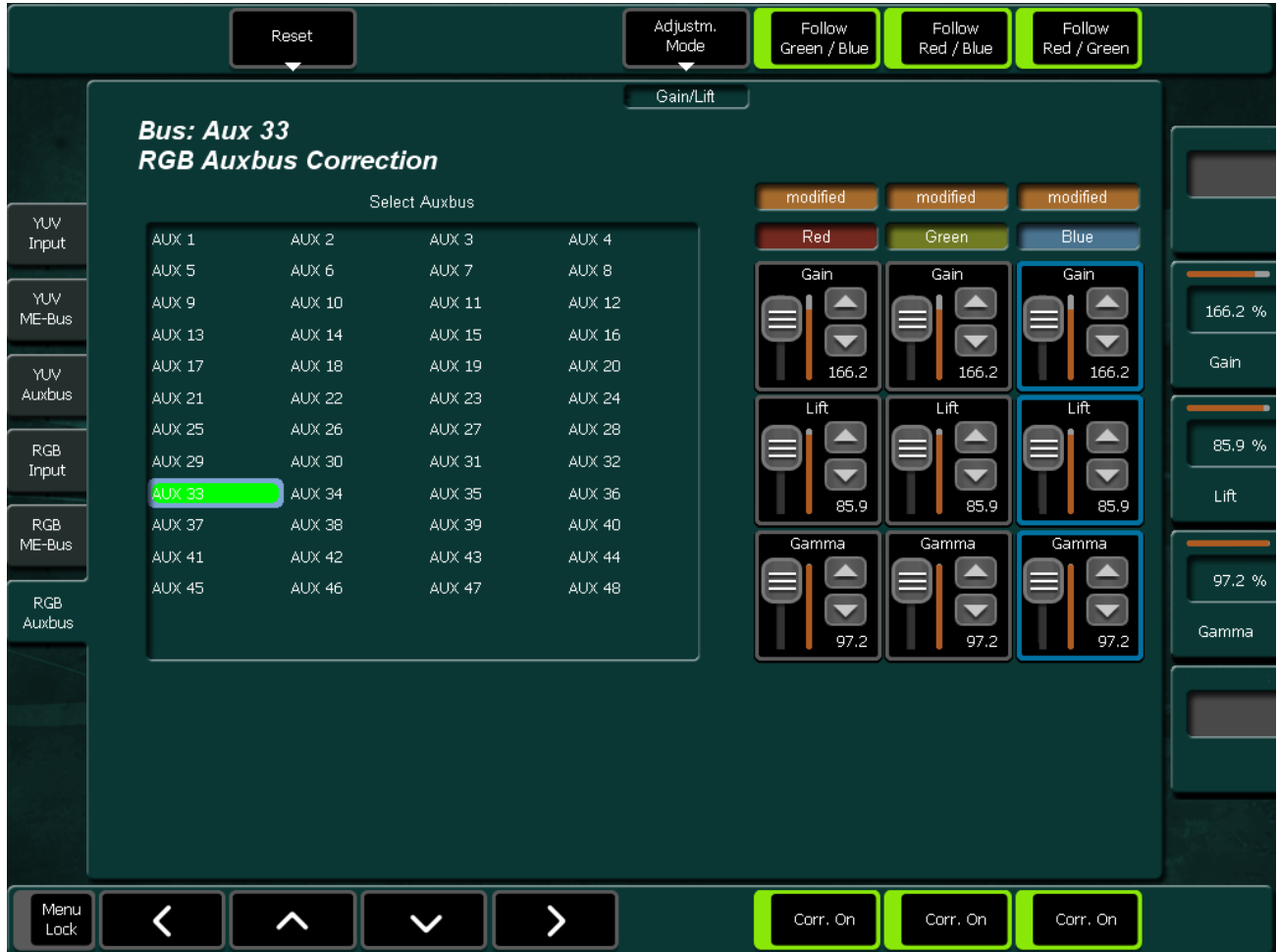


Figure 352. RGB Auxbus Correction Adjust Mode



Figure 353. RGB Auxbus Correction Reset



# Remote Menu

Figure 354. Remote Enables



## In Enable

- **AUX-CP:** Enables AUX Control Panels.
- **VTR Emulation:** Enables the VTR control.
- **Editor Control:** Enables Editor control.
- **GP-In:** Enables GPI inputs.

## Out Enable

- **P-BUS:** Enables Editor control.
- **GP Out:** Enables GPI outputs.

## Remote GPI Out Submenu

Figure 355. Remote GPI-Out



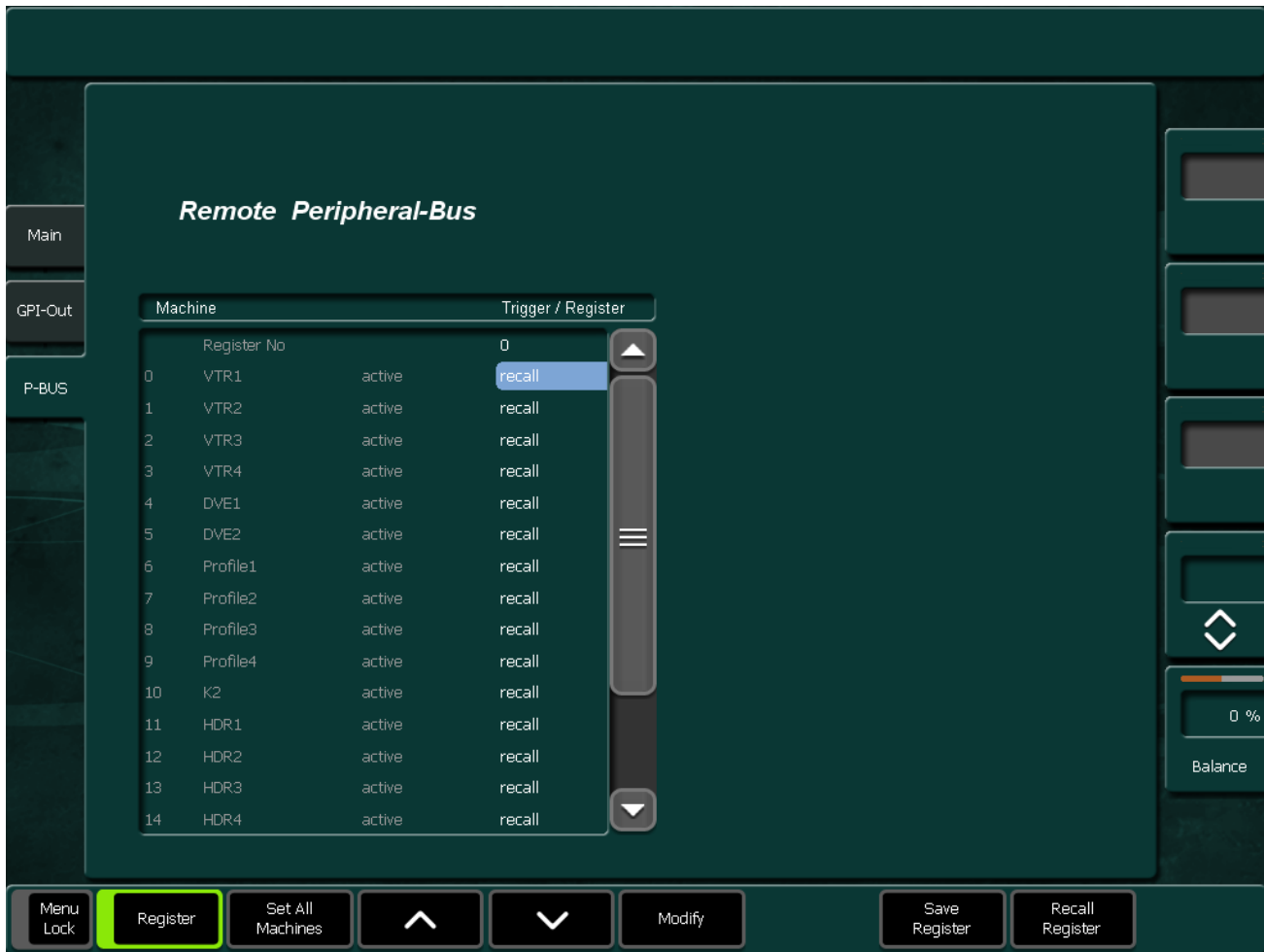
### Remote I/O Enable buttons

The Remote button group has to be used to enable the following functions:

- Enables AUX control panels.
- Enables the VTR control.
- Enables Editor control.
- Enables GPI inputs channels.
- Enables GPO output channels.

## Remote P-Bus Submenu

Figure 356. Remote Pheripheral Bus



# Media Player Menu

## MP Status Submenu

The Media Player menu serves to control external VTRs or other Media Servers.

The Kayak offers a set of protocols that enable the user to connect and control virtually all video servers, disk recorders, and VTRs on the market.

The protocols to select from are:

- BVW75 (industry standard VTR protocol)
- Mediapool
- Odetics
- VDCP (aka Louth), there are specialized versions for the Profile™ server family.
- Pbus

With these protocols the Kayak can control:

- VTRs (BetaCam, DVCPPro, etc.)
- Video Servers
- Disk Recorders
- Other media players

The list of servers that have at least one of the protocols implemented includes:

- Thomson Grass Valley: Profile, Profile XP, M-Series
- Thomson: Nextore
- Philips: Mediapool™
- Leitch (ASC): VR300, VR400
- DVS: ProntoVision
- Sea Change
- Pinnacle: MediaStream (HP), Thunder
- Pluto

Disk recorders that have at least one of the protocols implemented include:

- Accom: Attache, WSD
- Abekas: A66, Diskus
- Edifis: Brick, Sting
- Fast Forward Video: Omega deck

Several of the DDRs and servers listed offer more than one protocol, in many cases Odetics and VDCP. The set of implemented functions may differ. Please refer to the equipment manufacturer's documentation to find out which of those protocols is most suitable for your application.

Figure 357. Media Player MP Status



The Media Player menu offers control for up to 36 devices. There are 6 Pages with 6 control positions each.

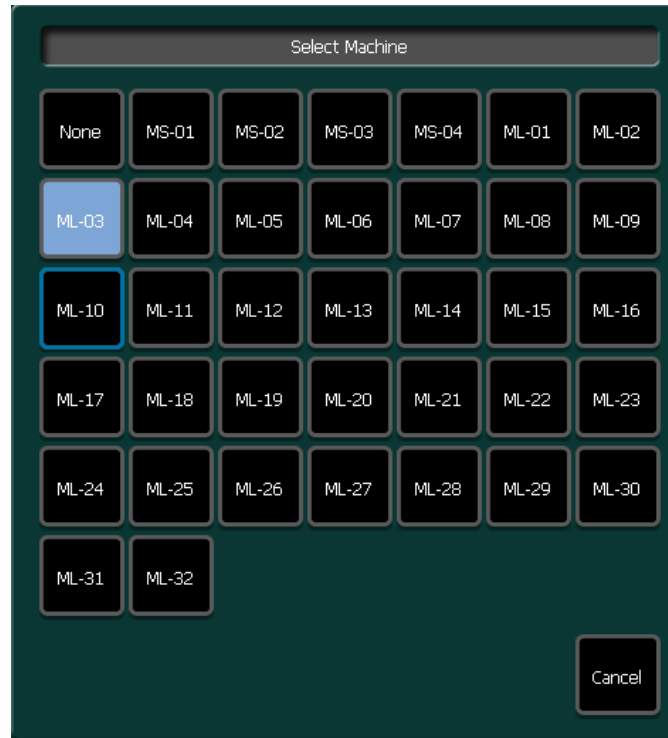
Figure 358. Single Media Player



- To assign a device to a desired control position, hold down the Delegation button (example shows LAN01) for 2 seconds and select a machine from the popup dialog.



Figure 359. Select Machine Popup



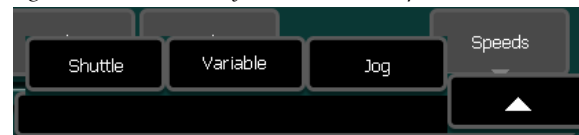
- The **Gang** button groups devices for common control.
- The control display shows status information of the machine like loaded clip, tape motion state, current timecode, Mark In, Mark Out, Loop, Auto Cue and a thumbnail of the currently loaded clip (if the used protocol supports thumbnails).
- The following tape motion commands are available:
  - **Play Reverse**
  - **Still**
  - **Play**
  - **Rewind**
  - **Stop**
  - **Fast Forward**

Figure 360. Media Player MP Status - GoTo



- **Go To Time Code** allows a numeric timecode entry for positioning the device.
- **Go To Mark In** positions the device to the Mark In point
- **Go To Mark Out** positions the device to the Mark Out point

Figure 361. Media Player MP Status - Speeds



- The Speeds submenu delegates a digipot to control the specified motion command (Shuttle, Variable or Jog). This delegation is active as long as the machine has the corresponding tape motion state.

Figure 362. Media Player MP Status - Mark



- The **Mark** submenu offers different ways to modify Mark In and Mark Out positions:
  - **Set Mark In / Out:** Allows numeric entry for Mark In and Mark Out.
  - **Grab Mark In / Out:** Grab the current timecode for the Mark In or Mark Out.
  - **Clear Mark In / Out:** Deletes Mark In or Mark Out and sets it to an invalid state.
  - **Read Mark In / Out:** Reads the Mark In or Mark Out from the loaded Clips metadata (if available).
- **Auto Cue:** When enabled, a clip is automatically cued to its IN mark after it is loaded by a snapshot or timeline recall.

- **Loop:** Enable or disable Loop Mode for AMP controlled devices.

**Note** On serially controlled machines (using the AMP protocol), the current IN and OUT marks are ignored for the loop. In other words, a clip is always played from SOM (start of material) to EOM (end of material) or vice versa. This also applies to LAN controlled machines when the "Mark Control" feature is disabled. If "Mark Control" is enabled (see "MCTI" section for details), the IN and OUT marks are taken into account for the loop.

- **Mark Control:** This feature is only available for machines which are controlled over LAN.  
When Mark Control is enabled, the IN and OUT marks stored within the metadata of a clip are controlled directly. In other words, metadata of a clip can be changed. In combination with the loop mode, a clip can be played in loop between its IN and OUT marks. This kind of loop is completely controlled by the external machine and therefore 'absolute accurate'.

For more Details about IN/OUT Mark Handling see section [Some More Details About IN/OUT Mark Handling on page 158](#) (Device Control Module).

Refer also the [Media Players \(MPs\)](#) section of the Multi Function Control Panel.

## MP Clips Submenu

The **Clips Play** menu enables the user to load clips from different directories from a connected server.

Figure 363. Media Player MP Clips



The list on the left side shows all available directories. The clips of the selected directory (marked yellow) are shown on the right side, either as a text list or as thumbnails. To load another directory, select it by clicking or with the digipot and press the **Load Directory** button.

- The **View** button offers different modes to present the clips: **Text List, Large Thumbnails, Medium Thumbnails, Small Thumbnails.**
- To load another clip, select it by clicking or with the digipot and press the **Load Clip** button.
- To select another machine for clip handling press the **Select Machine** button

# RamRecorder Menu

The RamRecorder is a solid state video server with 6 input/output channels. This means that all stills and clips are stored within a common data pool and may be accessed by all 6 output channels.

Refer also the [Media Players \(MPs\)](#) section of the Multi Function Control Panel.

## Basics

### Memory Size versus Storage Time

The maximum storage time depends upon the selected TV standard, selected audio channels, and on the equipped memory board (4GB or 8GB).

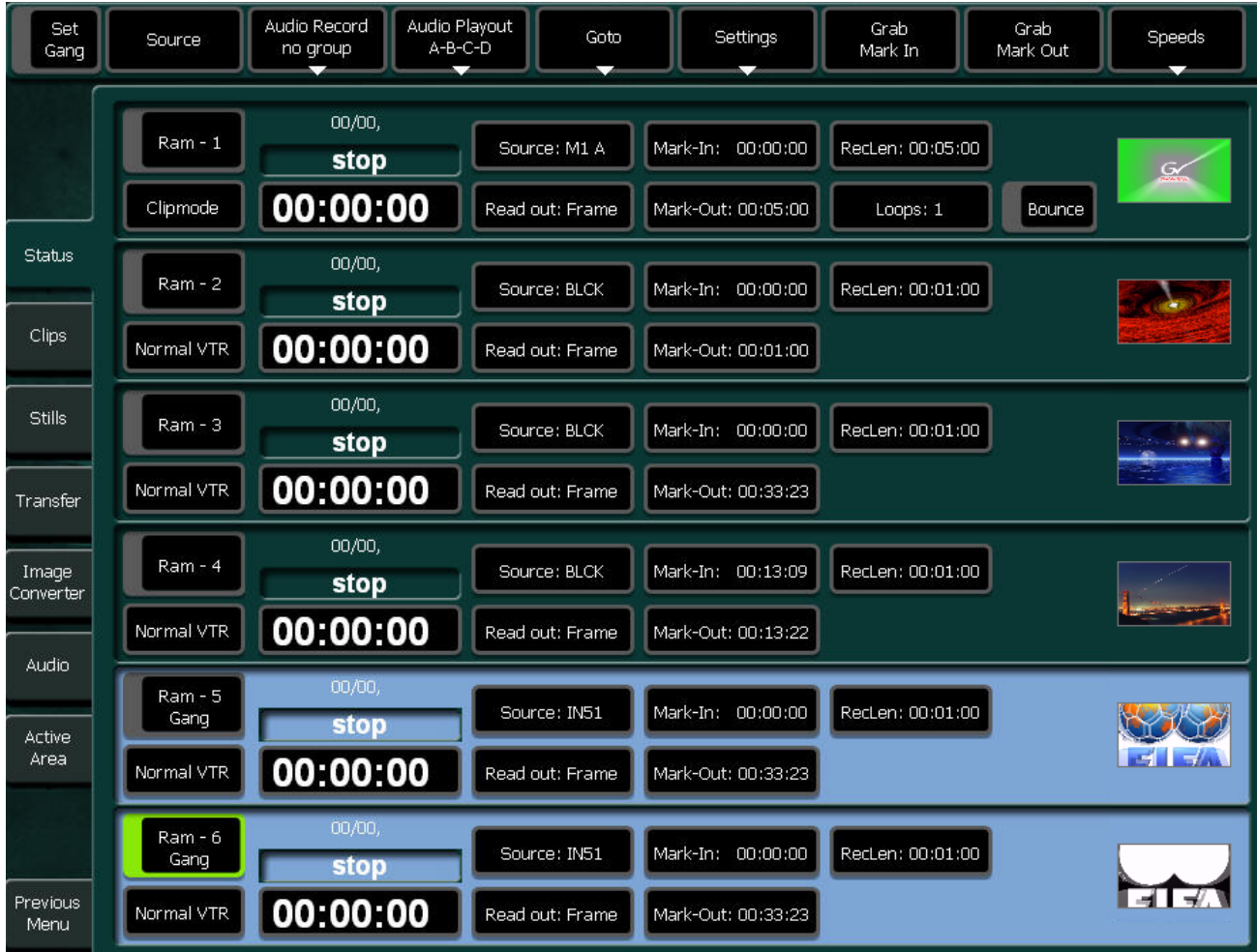
For the whole switcher the total amount of storage is approximately:

- HD = over 23 seconds per video (over 57 seconds video with KlipCache memory expansion option). The storage time for HD video with embedded audio will be reduced depending on the number of selected audio groups. With four audio groups selected the clip size increases 5%
- SD = approximately 2 min. 15 sec per video (5 min. 30 seconds video with KlipCache). The storage time for SD video with embedded audio will be reduced depending on the number of selected audio groups. With four audio groups selected the clip size increases 20%

## RR Status Submenu

The **Status** menu shows the status of six RamRecorders channels. The menu enables you to configure the RamRecorder channels and to fully operate them by using the related controls. To ease the use of operational controls their appearance is coupled to the channels configuration.

Figure 364. RamRecorder Status Menu

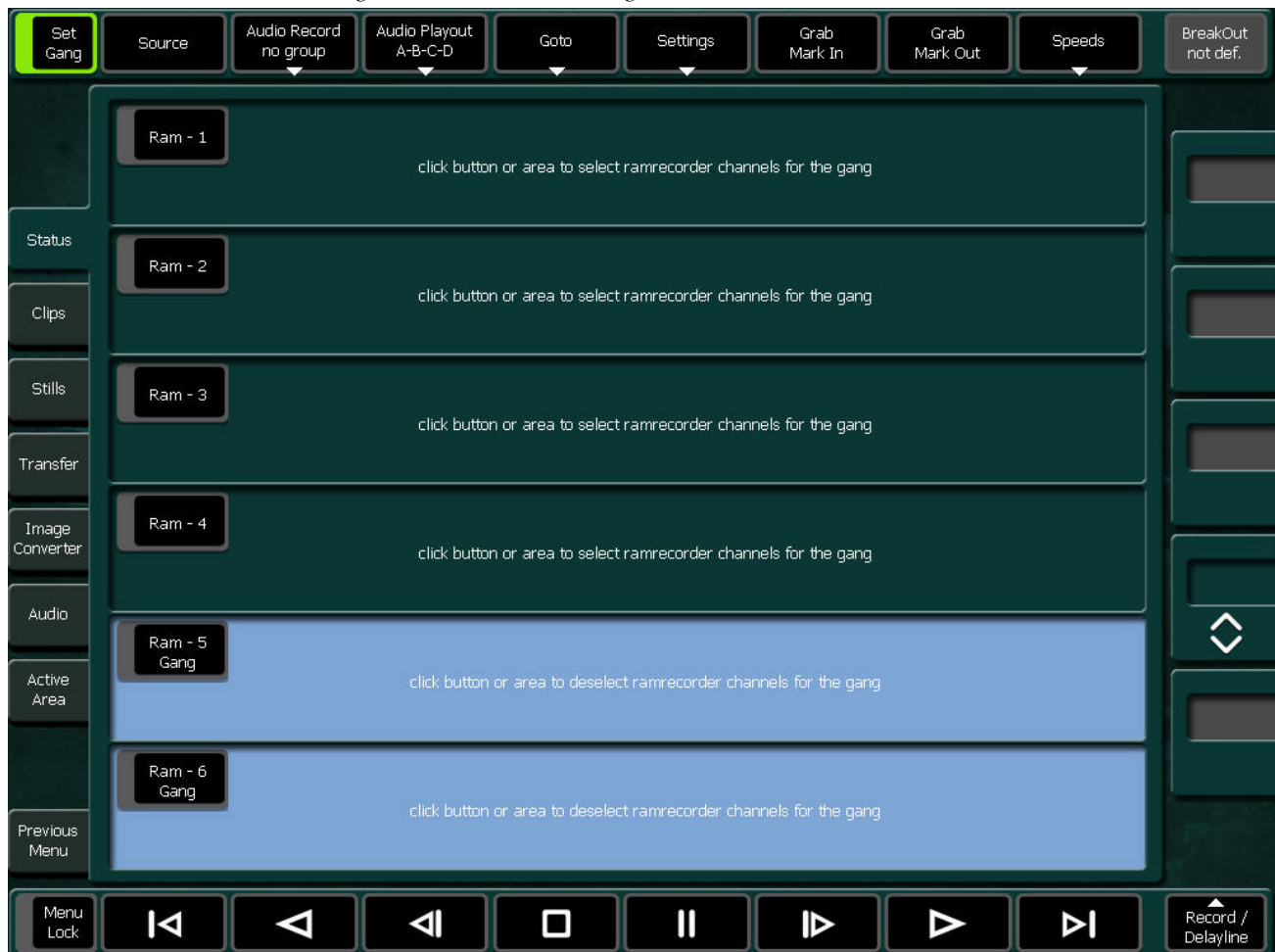


- **Set Gang**

Ganging is an operation used for parallel control of multiple channels. To activate the Gang press the **SetGang** button and use select/deselect toggle to configure the Gang.

**Note** Note: The SetGang function is a local function of the Graphical User Interface. However the parallel (ganged) execution of the RamRec commands can be recorded with the attached Control's Panel Makro recorder.

Figure 365. Ramrecorder Gang Selection



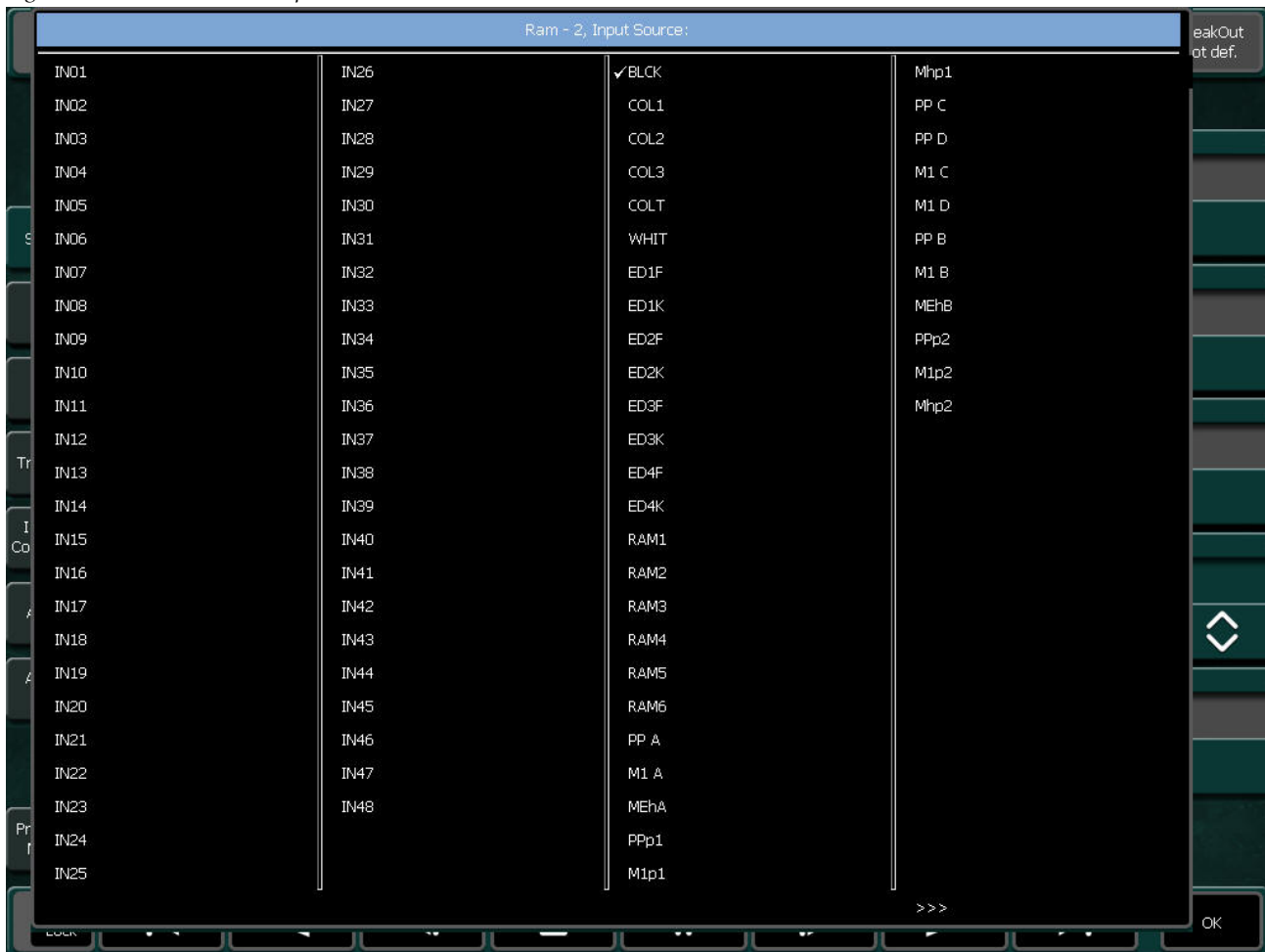
When the Gang is configured, press again the **Set Gang** to get back to the RamRec Status page. Now if you select one channel of the Gang all channels get selected and are controlled in parallel. This is useful e.g. when you use fill and key as two separate clips.

**Note** Double clicking the **Set Gang** button releases all channels from the Gang!

- **Input Source Selection**

Touch the **Source** button. A list with all input sources appears to select the desired input source. The selected input source is visible at the RamRec channels output only if the RamRecorder is in **RECORD** or **STOP** (E to E) mode.

Figure 366. RamRecorder - Input Sources



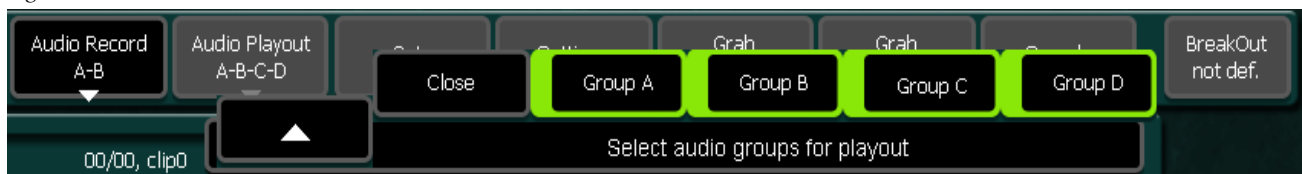


- **Audio Record, Audio Playback**

The RamRecorder Audio supports the 16 embedded tracks which are organized in Groups of 4.

- **Group A** contains audio channel CH1 to CH4
- **Group B** contains audio channel CH5 to CH8
- **Group C** contains audio channel CH9 to CH12
- **Group D** contains audio channel CH13 to CH16
- The **Audio Record** and **Audio Playback** buttons can be used to configure the channel groups to be included in the dedicated operation.

Figure 367. RamRecorder Status Audio Record



In the figure above the embedded Audio Channel 1..8 (A-B) are included into Records and Channel 1..16 (**A-B-C-D**) are included in the playouts.

**Note** The Audio Record / Playback selection must be configured individually per RamRecorder channel. For identical settings you can take advantage of the Gang Mode operation!

- **Go To ..**  
The **Goto** button can be used to position the selected RamRecorder channels.

Figure 368. RamRecorder Status Go To



- **Begin:** Moves clip to the beginning.
  - **End:** Moves clip to the end.
  - **Timecode:** Moves clip to the entered timecode. A popup appears to enter the timecode value
  - **Mark In:** Moves clip to the Mark-In preset.
  - **Mark Out:** Moves clip to the Mark-Out preset.
  -
- **Settings**  
To configure the RamRecorder channels, touch the **Settings** button on the top and select the desired parameter.

Figure 369. RamRecorder Status Settings



- **Bounce:**  
The Bounce function is only available if the RamRecorder is in Clip-mode or in a Loop mode. Bounce is not available in Normal VTR-Mode! If bounce is activated and the Playback reaches its end position then it runs in reverse to Mark In, and when it reaches Mark-In it runs forward to Mark Out. This is repeated until the loop's exit criteria is reached.
- **Loops:**  
Loops is used only if a RamRec Channel is in a Loop mode to specify the number of loops to be executed (value 0 = endless).

- **Read Out Play**

Figure 370. RamRecorder Status Read Out



- **Field1/2:** This mode is useful when a still or clip is made from a graphic source that has generated motion which is not in the expected field dominance. By stepping to Field 2 by pressing Previous Still / Next Still, before playing a clip, the display order of fields is reversed to F2/F1.
- **Field 1:** Only field 1 is played out resulting in "Film look" (only 25/30 motion updates per second).
- **Field 2:** Only field 2 is played out resulting in "Film look" (only 25/30 motion updates per second).
- **Frame:** Standard play out mode.

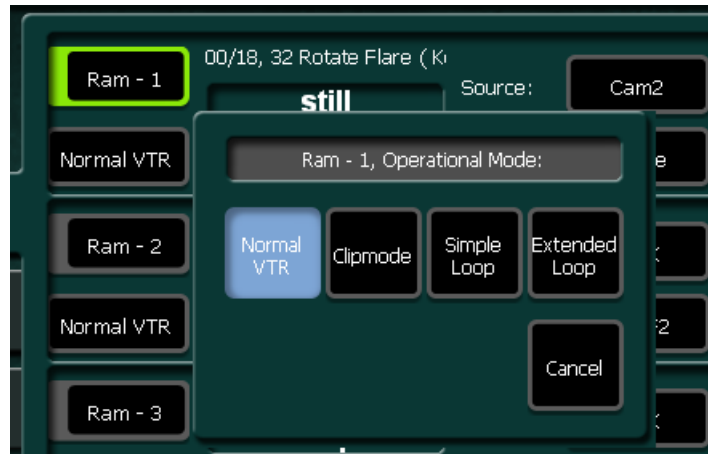
- **Read Out Still**

- **Field1/2:** Field 1 or field 2 is displayed and Previous Still / Next Still advances to the next fields, which results in single stepping in field resolution.
- **Field 1:** Field 1 is replicated to make frame and Previous Still / Next Still advances to field 1 of the next still.
- **Field 2:** Field 2 is replicated to make frame and Previous Still / Next Still advances to field 1 of the next still.
- **Frame:** Field 1 or Field 2 is replicated to make frame and Previous Still / Next Still advances to field 1/2 of the next still.

**Note** The Read Out selection must be configured individually per RamRec channel. For identical settings you can take advantage of the Gang Mode operation!

- **Mode**  
When you touch the **Mode** button, a popup appears to select the channel's basic operational modes:

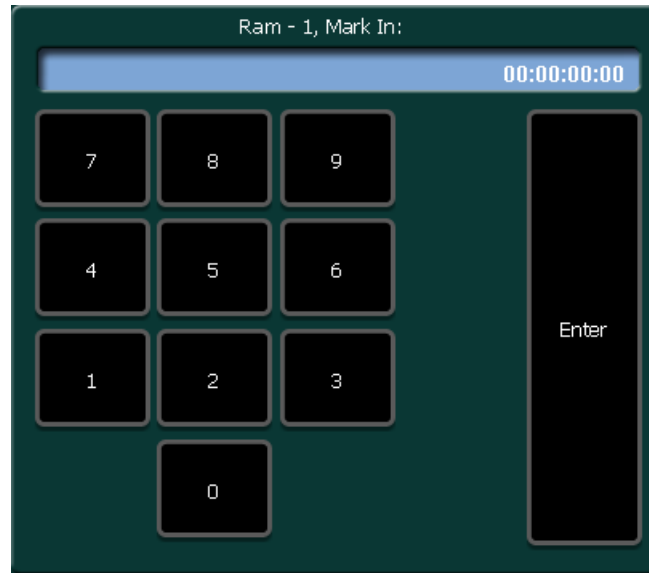
Figure 371. RamRecorder - Operational Mode



- **Normal VTR:** Standard behavior like a tape machine.
- **Clipmode:** Mark In and Mark Out limit the accessible timecode range. When you press play, the clip is always played from Mark In to Mark Out.
- **Simple Loop:** Mark In and Mark Out limit the accessible timecode range. When you press play, the clip starts at the current position, plays to Mark Out and repeats that range from Mark In to Mark Out n times, where "n" is the number of loops (0 = endless).
- **Extended Loop:** The looped section is from Mark In to Mark Out as is in Simple Loop mode, but play may start before Mark In and Offset setting determines the post Mark Out play duration.

- **Mark In, Mark Out**  
Set a **Mark In / Mark Out** point via numeric popup panel.

Figure 372. RamRecorder - Mark In

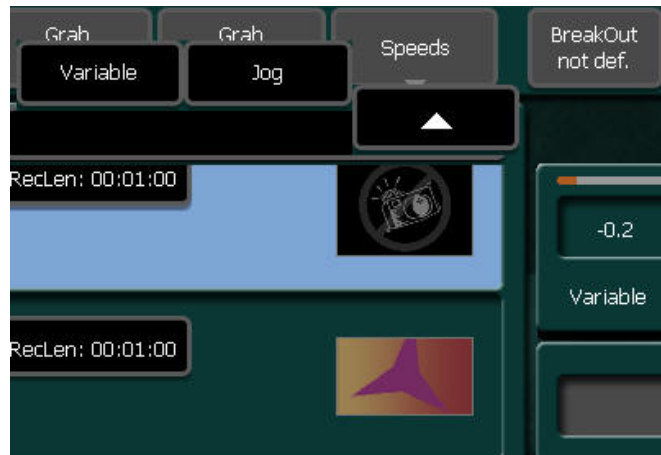


**Note** You can use the Gang operation mode to Grab current Mark-In and Mark-Out positions for multiple channels at any time!

- **Speeds**

The **Speeds** button offers the possibility to run a RamRecorder with Variable/Jog speed form the Sidepanel GUI. Once the Speeds operation mode **Variable** or **Jog** is selected, the GUI's top most digipot is assigned to control the playout.

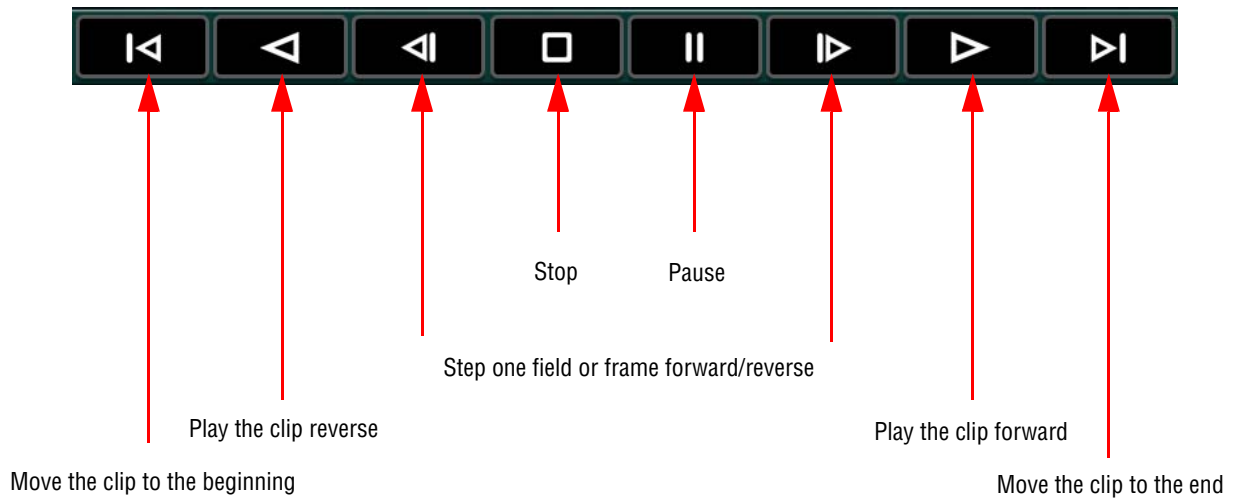
Figure 373. RamRecorder - Speeds



- **Variable:** In Variable mode the playout speed is specified by the digipots turning angle. Examples: 1 = normal speed, 2 = double speed, 0.5 = half speed, -1 normal reverse speed...
- **Jog:** Set RamRecorder to Jog mode. In Jog mode the position of the playout is following the digipot's turning angle

- Tape Motion Commands (TMC)**  
 The tape motion commands are used to control playout position, direction and speed

Figure 374. RamRecorder Tape Motion Commands



**Note** You can use the Gang operation mode to apply the TMC commands to multiple channels!

- **Record Delayline**

When switched on, the delegated channel behaves like a delay line, the desired delay can be specified with the **Record Length** or **Afterplay** setting. The delayline can be switched off with the next push of a Tape Motion Command.

Figure 375. RamRecorder - Record Delayline



**Note** When you change the Record Length value while you are in Delay Line mode, the new value is not accepted unless you exit and re-enter this mode

- **Trim Out / Trim In**

- **IN** (Trim inner part) All frames between Mark In and Mark Out will be deleted. The part before Mark In and after Mark Out will be joined.
- **OUT** (Trim outer part) All frames before Mark In and after Mark Out will be deleted.

**Note** Only the video track will be trimmed. Audio will stay in its original length. To play only the video part, play mode Clip should be used which will only play the part between Mark In and Mark Out.

- **Record New**

**Record New** starts recording a new Clip according to current presets like RecordLen, Audio Record group...



- **Record Edit**  
**Record Edit** allows to overwrite/append new content to an existing clip. The record starts at the current clip position and ends after a duration of RecLen.

**Note** Beside Video and Audio, the RamRecorder holds a set of Meta Data which are defining the Record / Playback behavior. With every record the mandatory Metadata are stored automatically. Some Metadata also are automatically stored if they are modified (e.g. Thumbnails). Other Metadata requests a successive request to be stored. These are: MarkIn, MarkOut, ActiveArea, Bounce, Loops, BreakOut, PlayMode, ReadOut, Audio Offset, Audio Mute, Audio Group Assignment and Audio Assign Enable. If you have modified those data after record, don't forget to execute a subsequent Save to Clip command as it is available in the RamRec Clips menu tab!

## Thumbnails and Animated Thumbnails

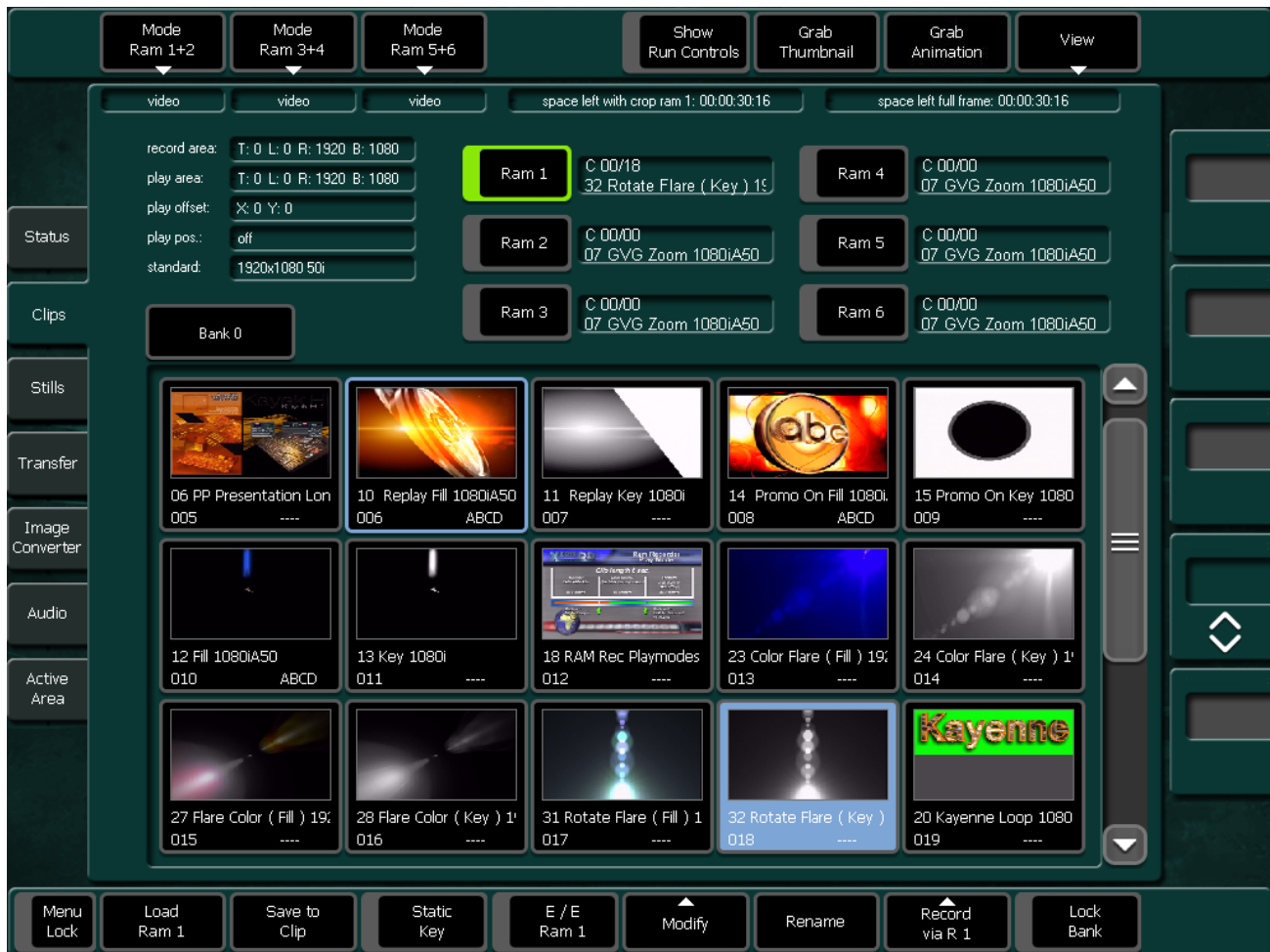
Every RamRecorder channel automatically generates a thumbnail with every **Record New** or **Record ID** command execution. The thumbnail appears immediately in all RamRecorder menu tabs.

With the 'Kayenne XL' license additionally animated thumbnails can be generated on request (see [RR Clips Submenu on page 454](#)). If a clip's animated thumbnail is available the RamRec status menu shows the moving thumbnail synchronized to the RamRec channels video output. This may be useful if there is no monitor available at the RamRecorder's output.

## RR Clips Submenu

The RamRecorder Clips menu page enables you to select and modify stored video clips.

Figure 376. RamRecorder Clips



- **Bank Selection**  
Press the **Bank** button to select the desired bank.

Figure 377. RamRecorder - Select Bank



- **Mode Selection**  
The following modes can be selected:
  - **Video:** Only video signal.
  - **Video/Key:** When the **Vid/Key** button is active, each video signal will have an associated key signal stored too. At recall, the key signal will only be recalled if the **Vid/Key** button is active. RAM 1 uses RAM2 as its associated key channel for record and recall, while RAM3 uses RAM4, and RAM5 uses RAM6.

Figure 378. RamRecorder Mode Selection



- **Show Run Control**  
Activating the toggle button **Show Run Control** changes the 8 button row control buttons to become to **Tape Motion Control** functionality.

- **Select View**

The following view for the available clips can be selected:

- **Small:** small-sized thumbnails (10x7 visible at a time)
- **Medium:** medium-sized thumbnail (5x3 visible at a time)
- **Large:** large-sized thumbnails (3x2 visible at a time)
- **List:** list view

Figure 379. RamRecorder - Select View



- **Grab Animation**

When the button is pressed the RamRecorder starts to generate thumb animation from the loaded clip. Multiple requests can be initiated and are executed in the given sequence. Once the moving thumbnails are generated they are stored along with the RamRecorders meta data and they become visible on all connected Sidepanel GUI applications.

The availability of animated thumbnails is indicated in the clip selection fields with an **(A)** index as shown in the figure below.

Figure 380. RamRecorder - Thumbnail



- Selecting a Clip showing the **(A)** index runs the thumbnail animation locally within the clip selection field (the mainframe's RamRec channel is not involved at all).

**Note** There is no feedback to the generation status other than the (A) appearance in the clip selection fields. The animated thumb generation lasts approximately 1 second per full HD video frame.

**Note** The Animated Thumbnail feature is only available with the Kayenne XL main-frame license.

- **Grab Thumbnail**  
Grab Thumbnail provides a convenient method to save the current frame as thumbnail for the loaded clip.
- **Load RAM1 - 6**  
Selects the clip / still to the output of the delegated RamRecorder channel.
- **Save to Clip**  
Parameters will be stored in the meta data storage, that is, MarkIn, MarkOut, Active Area, MarkIn, MarkOut, ActiveArea, Bounce, Loops, BreakOut, PlayMode, ReadOut, Audio Offset, Audio Mute, Audio Group Assignment and Audio Assign Enable.
- **E/E Ram1 - 6**  
The selected channel goes into STOP mode. In STOP mode the RamRecorder channel shows it's input signal with a delay of one video frame.

- **Modify**

Figure 381. RamRecorder - Thumbnail



- **Delete:** Delete all or selected clip or still.

Figure 382. RamRecorder - Thumbnail

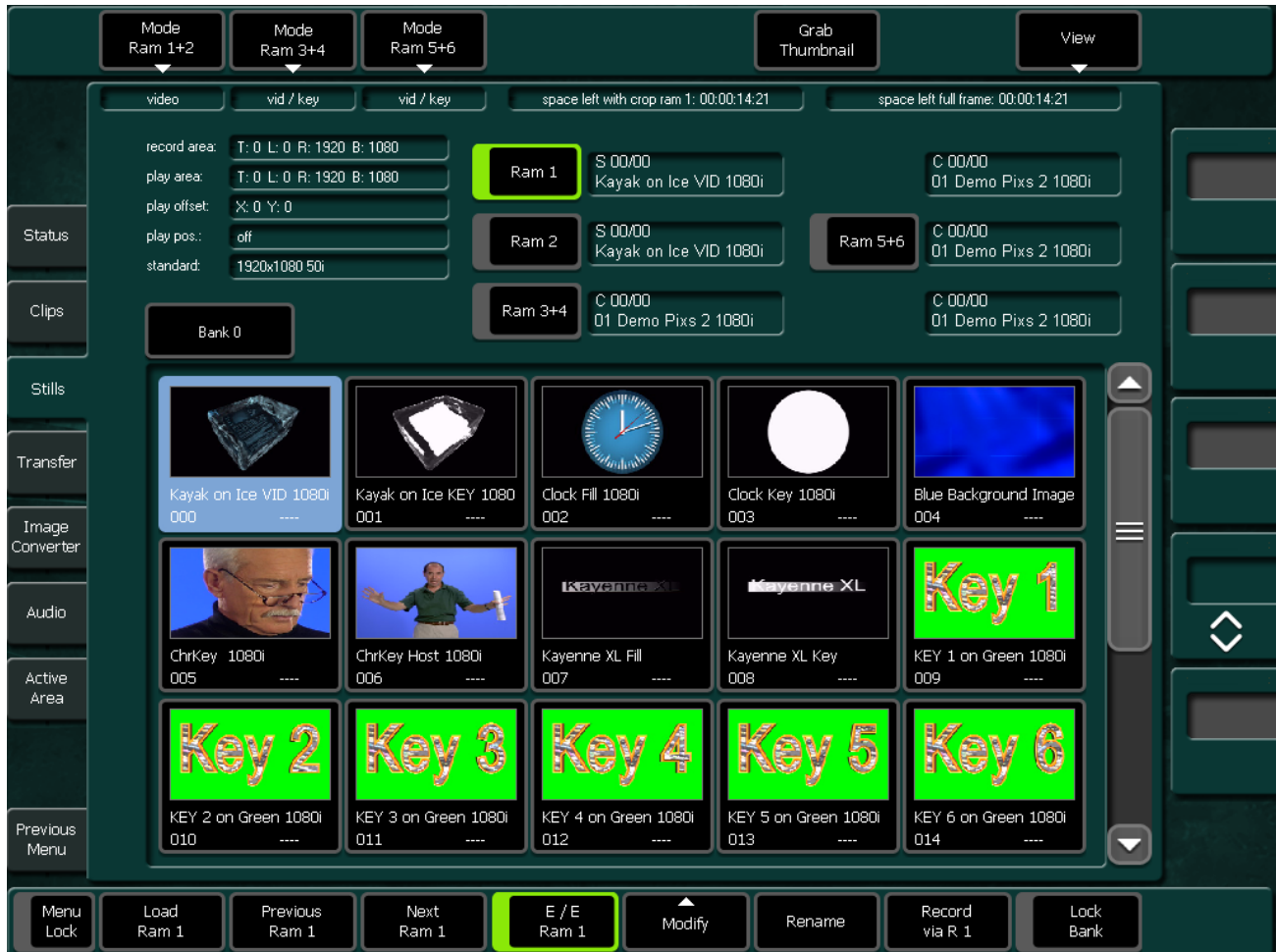


- **Move:** Move selected clip or still to another position.
  - **Join Key:** With the Join Key feature, it is possible to join a key signal with a video signal.
  - **Split Key:** With the Split Key feature, it is possible to split a key signal from its origin video signal and save it as an independent key signal.
  - **Join Aud:** With the Join Audio feature, it is possible to join single audio clips or embedded groups from a video clip with another clip.
  - **Split Aud:** With the Split Audio feature, it is possible to split the audio groups from its origin clip and save them as independent audio clip.
- **Rename**  
Renames the selected clip and makes automatic name changes for associated key signals. The software will prevent changes in key signal names only and the **Rename** button from going gray when a key signal is highlighted.
  - 
  - **Record via R1**
    - **New:** Starts recording a new clip. Clip position and clip name will be created automatically.
    - **Edit:** Starts recording into an existing clip at the current clip, which results in appending to the current clip.
    - **ID:** Starts recording after the clip position is selected.

## RR Stills Submenu

The RamRecorder Stills menu page enables you to select and modify stored video stills. Refer to Clips menu for operating details.

Figure 383. RamRecorder Still Menu



## RamRecorder Transfer Submenu

The menu page can be used to transfer clips and stills to a PC and vice versa and for backup purposes.

Figure 384. RamRecorder Transfer Menu



The buttons on the top are used to select and deselect stills which should be transferred.

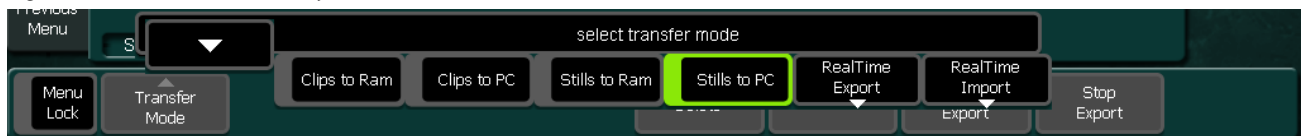


## Transfer Mode Selection

After touching the Transfer Mode button the desired mode can be selected:

- Clips to RAM
- Clips to PC
- Stills to RAM
- Stills to PC
- RealTime Export
- RealTime Import

Figure 385. RamRecorder Transfer Menu



## Single Transfer Mode

This is the default mode when you enter the Transfer dialog. Set the cursor (blue line) to the desired item in the clips/stills list and press the **Start Import** or **Start Export** button. A popup keypad enable you to change the name for the target file.

When you are transferring to the RamRecorder, the **to Pos** column shows you the slot where the item will be transferred to. You can change this position via **Change Position**. In case of missing slot information the **to Pos** column shows **pos?**, then you have to select a slot via **Set Position** before you can start the transfer.

When a slot is already occupied, you will be prompted for overwrite at the start of the transfer.

## Multi Transfer Mode

You enter the multi transfer mode when at least one clip/still is selected by the top row buttons **Select All**, **Begin Selection**, **End Selection**, **Toggle Selection**.

Selected items are indicated by a green color.

Since a transfer in this mode should run without prompting for overwrite, you can choose one of three Transfer Modes for the case that the target slot is already occupied:

- **Overwrite:** The slot will be overwritten.
- **Skip:** The image in the RamRecorder will be preserved and the file selected for transfer will be skipped.
- **Next Free:** The image in the RamRecorder will be preserved and the next free slot will be used to transfer the selected file.

For transfers to the RamRecorder you can also decide whether you want to use the slot position stored in the metadata ("Individual Positions") or whether you want to store the files in a subsequent order, starting at a certain position. This position can be changed via **Change Start Pos.** This is particularly useful when you have several files without metadata.

Depending on the transfer direction there can be one or two more types of conflicts which have to be resolved in advance to start the MultiTransfer.

## Transfer from the RamRecorder to the PC

Name Conflicts (indicated by "name!")

**Solution:** Rename either the target file or the source file.

## Transfer from the PC to the RamRecorder

Name Conflicts (indicated by "name!")

**Solution:** Rename either the target file or the source file.

Position Conflicts (indicated similarly to "19!") These conflicts occur when in the selected range several files have the same target position.

**Solution:** Change target position to a free position.

## Color Information for Multi Transfer

- **Green:** Items are selected and will be transferred.
- **Yellow:** Items are selected but will be skipped, due to occupied slots, double or missing target positions.
- **Red:** Transfer blocking conflict; resolve conflict or deselect item from list.

**Note** Name conflicts must always be resolved manually

## Realtime Export

The Kayenne XL switcher features a real-time backup system.

### Operating Philosophy:

For real-time backup the RamRecorder content and metadata will be split in two streams:

- Video content will be saved on a connected media server or video recorder.
- Audio content and the clip's metadata will be saved on a USB Flash Memory or to the mainframe's hard disc, when using the Kayak menu, or to the hard disk of the connected sidepanel PC, when using the sidepanel menu.

The restore of the RamRecorder clips is organized in two phases. First the metadata and audio will be restored. After that the video will be transferred and automatically synchronized.

## Backup your Clips/Stills

To backup a RamRecorder clip/still pool, proceed as follows:

- Go to the **RamRecorder - Transfer** menu.
- Select Transfer Mode and afterwards **Realtime Export**.
- Select a channel for the video playout, for example, **Ram1**.

**Note** During the transfer process, the other channels can be used for normal operation.

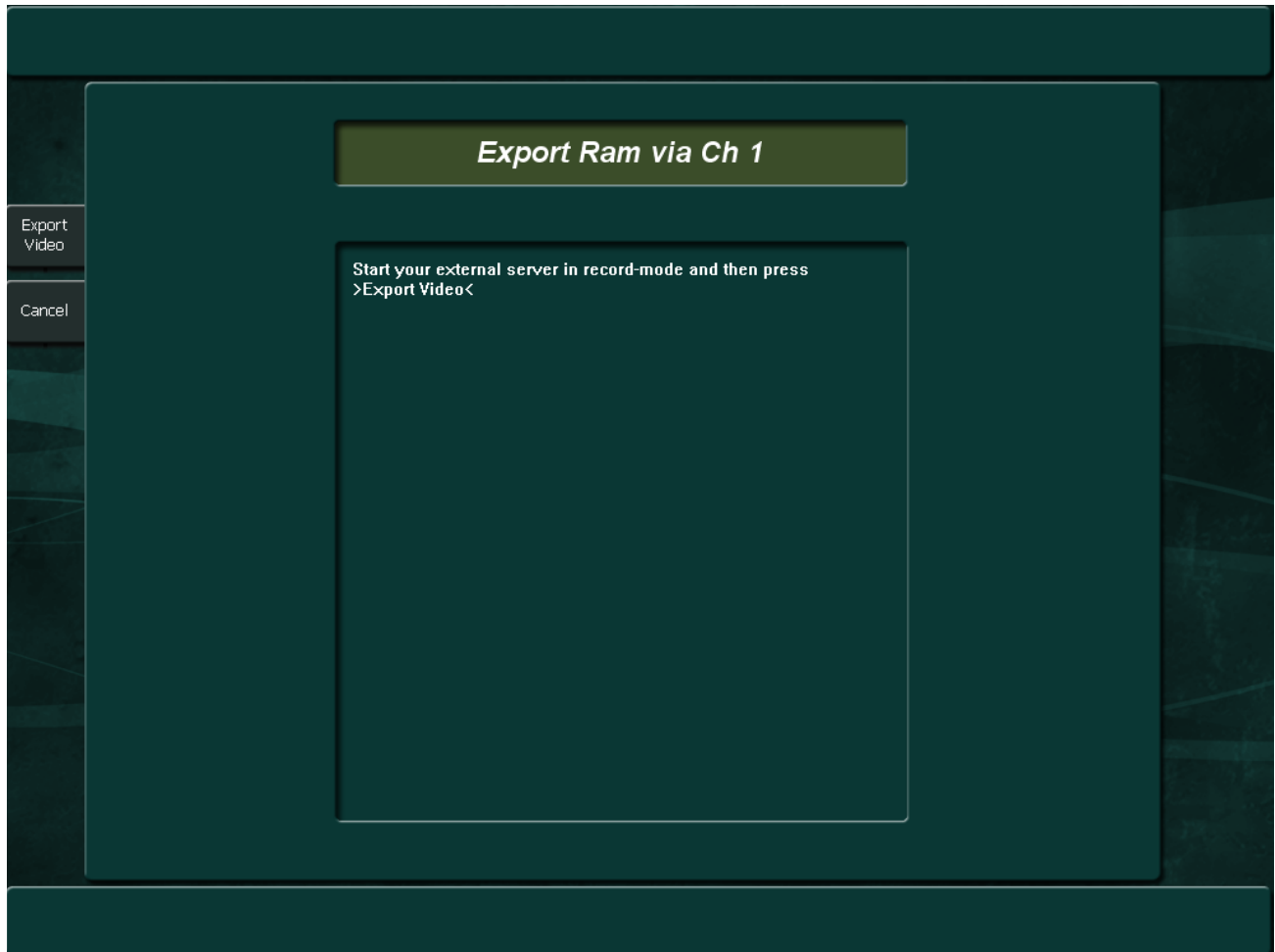
- A dialog appears for entering the backup directory and file name for metadata and audio package to be stored. As default a file name with a unique alpha-numeric character string will be generated in order to label the exported video package.
- In the next dialog you can select whether the metadata only or metadata as well as audio are to be stored.

Figure 386. Export Dialog



- Upon transferring the metadata and audio, a request dialog appears: **Start your external server in record mode and press Export Data.**
- Be sure that your external device is connected with the Ram channel selected.
  - Assign the Ram channel for playout (for example, **Ram1**) to an **Aux Out #**, using the Aux Controls in the **Aux** menu and **Install - E-Box - Aux Bus** menu.
  - Connect your external device with **Aux Out #**.
- Start your external device in **Record** mode.
- Press **Export Video**. All video clips/stills will be transferred in real-time to the external device.

Figure 387. Export Dialog 2



## Restore your Clips/Stills

To restore your RamRecorder clips/stills from the backup system, proceed as follows:

- Go to the **RamRecorder - Transfer** menu.
- Select **Transfer Mode** and afterwards **Realtime Import**.
- Select a channel for the data transfer.
- A dialog appears to open the backup file with the stored metadata and audio package.
- If the RamRecorder already contains clips, a Warning dialog appears. For real-time import, the RamRecorder has to be empty. Please delete the clips and stills first, and start the restore process again.
- Upon restoring the metadata and audio a request dialog appears: **Start your external server in playback mode and press Continue**.
- Be sure that you external device is connected with the Ram channel selected.
  - Select the input source for the desired RamRecorder (for example, **Input 30**).
  - Connect your external device with a video input (for example, **Input 30**).
- Make sure the video clip on the backup device is positioned in front of the clip.
- Press **Continue**. All video clips/stills will be transferred in real-time to the RamRecorder and synchronized with the metadata and audio automatically.
- Start your external device in **Playback** mode.

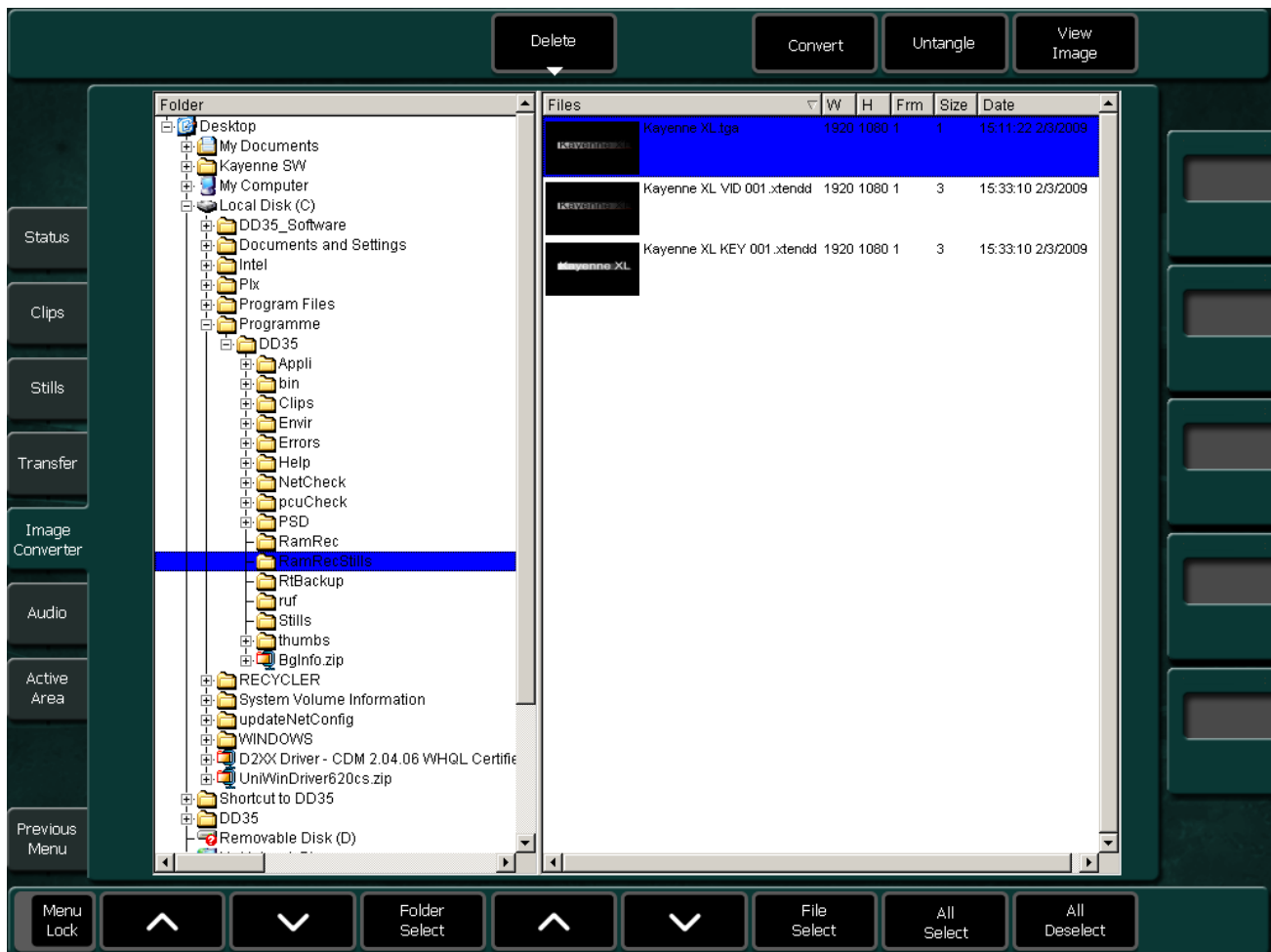
## RR Image Converter Submenu

The Image Converter is started with a browser. The left window shows the folders displayed as icons and the right window lists the files contained within the selected folder.

1. Double-click to select and open a folder.
2. Select a file to be converted with a left mouse click. You can select more than one file by using the right mouse key.

**Note** When converting, the associated filter is started and one single sequence is created from the individual files. The picture order in the sequence is determined by the order of the selected files.

Figure 388. Image Converter Menu

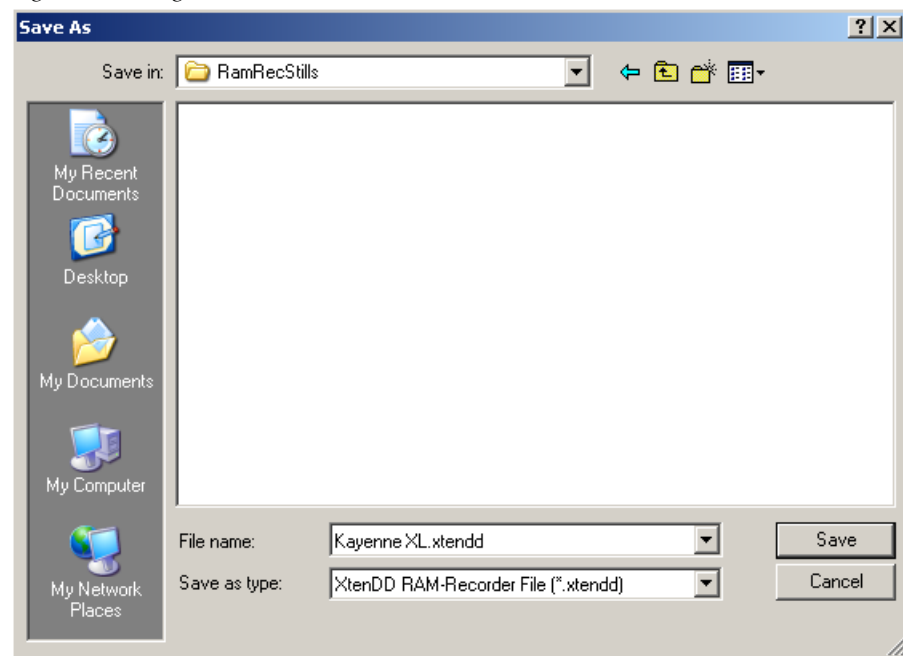


## Select Destination Format

Activating the **Convert** button opens a dialog window for the detail adjustments. The following picture formats can be converted among each other:

<b>AVI</b>	Audio Video Interleaved
<b>BMP</b>	Windows/OS2 Bitmap
<b>JPG</b>	Joint Picture Expert Group
<b>TGA</b>	TrueVision Targa Image
<b>TIFF</b>	Tagged Image File Format
<b>XTENDD</b>	RamRecorder File

Figure 389. Image Converter Menu



## Output File Name

The name of the exit file has to be entered in a dialog box. The file extension is added automatically depending on destination pixel format. In general, the entered file name will be enlarged with a three-digit number to generate different file names if a sequence will be converted to single images.



## Converting in AVI Format

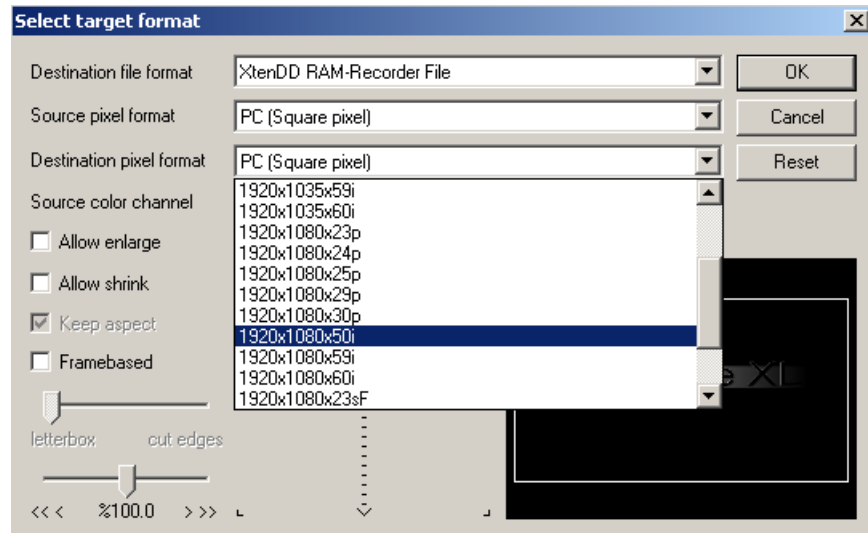
If AVI is selected as target format, a Codec dialog window appears. Select one of the listed Codec and close the dialog with OK.

**Note** If the dialog is canceled, an empty file will be generated.

## Source Pixel Format

Touching the **Convert** button opens a dialog window for detail adjustments. The following Source Pixel formats can be adjusted.

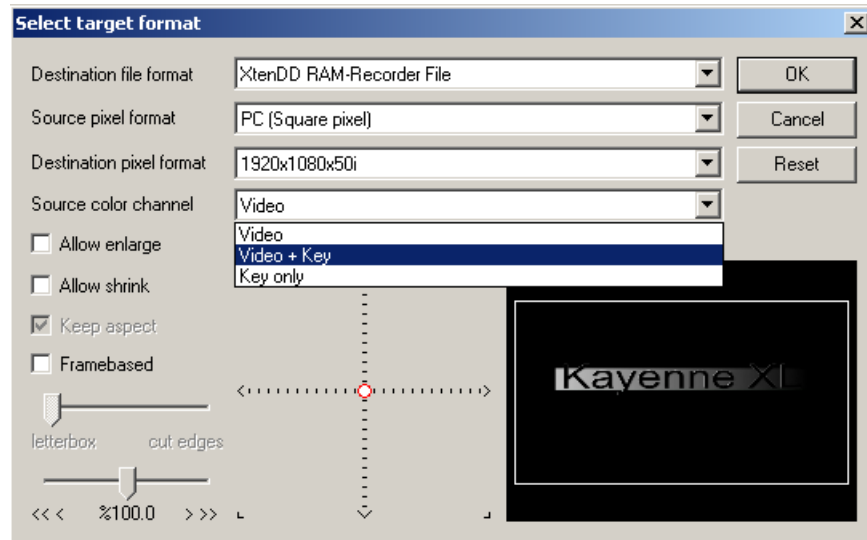
Figure 390. Select Target Format



## Destination Pixel Format

Actuating the **Convert** button opens a dialog window for the detail adjustments. The following destination pixel formats can be adjusted.

Figure 391. Select Target Format Details



If the source and destination pixel format is different, the image is resized to maintain the aspect ratio of the image content.

- If PC is selected as destination pixel format, the first picture to be converted determines the picture format of the destination file.
- If a TV format is selected as destination pixel format, the destination file is coupled with TV format.

## Converting Size, Positioning, and Preview

Having selected the conversion parameters, you may have a look at the format in the Preview window. The red frame shows the outer edge of the picture (TV format only) to be converted and the white frame shows the limits of the picture screen after conversion.

The switches **Allow enlarge**, **Allow shrink**, **Keep aspect** and the controls located below enable adjusting and locating the desired picture section.

If PC is selected as destination pixel format, only the **Size** control (<<< xx% >>>) is active.

## Untangle

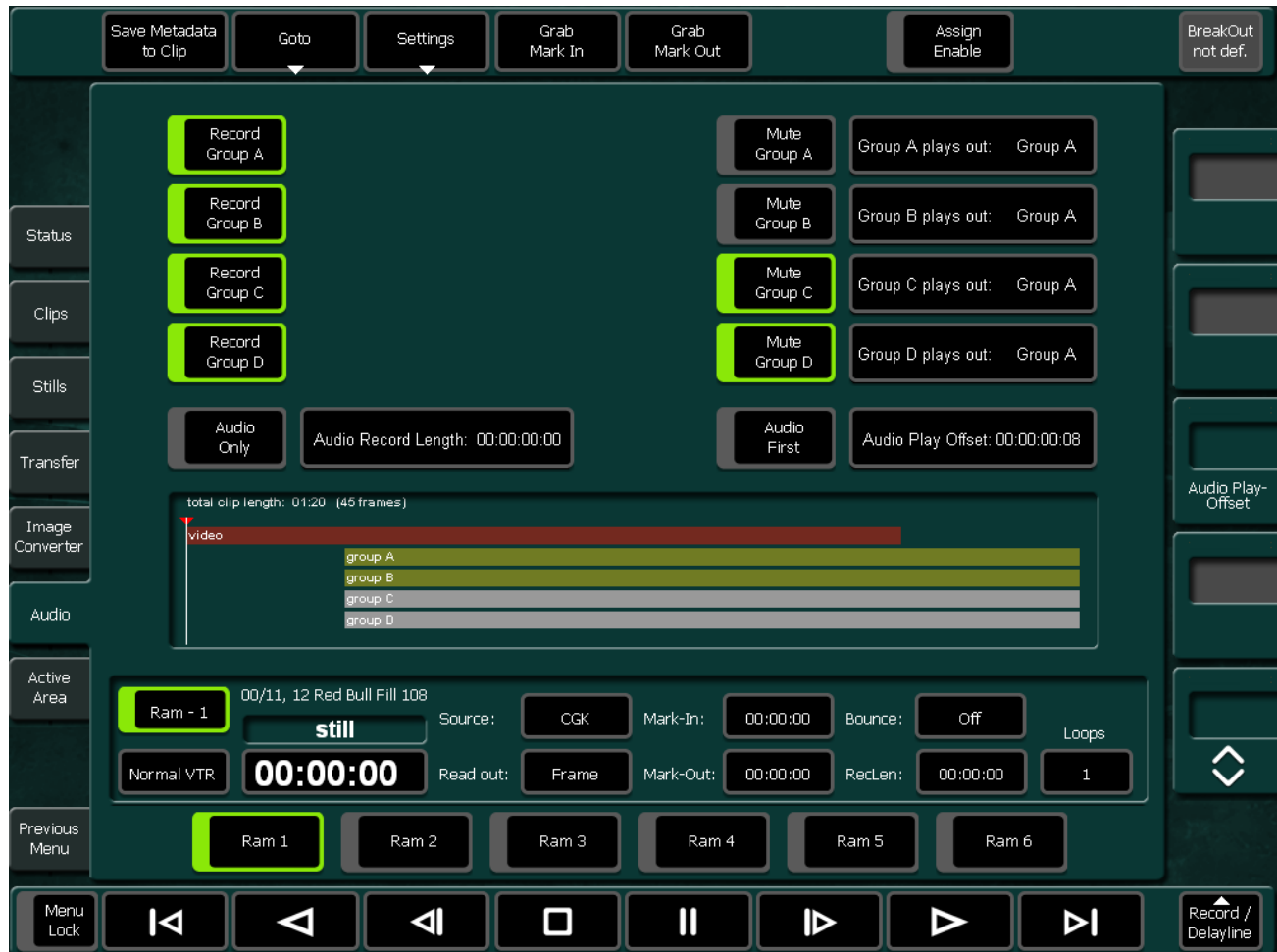
The Untangle feature can be used for clips. Selecting the function cuts a clip in single frames.

## RR Audio Submenu

The Audio Submenu serves for advanced audio operation modes of the RamRecorder:

- Audio play offset
- Different record length for video and audio
- Audio record only
- Split audio
- Join audio
- Audio group assignment
- Audio group mute (available in the Kayak menu as well)
- Delay line

Figure 392. RamRecorder Audio Menu



## Audio Play Offset

- Select a clip and go to the Audio submenu in the lower left corner.
- Video (red bar) and audio (green bar) clips are displayed in a timeline.
- Enter offset time by clicking in the Audio Play Offset field.
- Alternatively the offset can be done by mouse click and shifting the video or audio bar graph in the timeline.

**Note** No offset between individual audio groups is possible!

## Audio Group Assignment

With the Audio Group Assignment, it is possible to exchange the embedded audio groups of the recorded clip. For example, the content (4 audio channels) of audio group B can be played in group A. This makes sense when the external target device cannot process all four audio groups.

Figure 393. RamRecorder Group Playout



To assign the audio groups, click in the **Playout Audio** field and relocate the groups. In the example, the audio channels in **Group A** will be played in **Group A** and in **Group B**.

After changing the assignment, press **Assign Enable**.

## Split Audio

With the Audio Split feature, it is possible to split the audio groups from its origin clip and save them as independent audio clip.

To split an audio group, proceed as follows:

- Select a RamRecorder channel, for example, **Ram1**.
- Go to the **Clip** menu
- Select the clip from the clip list, for example, **Clip3**.
- Press **Modify** button and afterwards **Split Aud.**
- The **Modify** button changes to **Split A to sel. Pos.**
- Select an unused clip position, for example, **Pos 7**.
- Press **Split A to sel. Pos** and afterwards **OK**.

In the next dialog, the prepared split settings are listed. In addition to the split parameter, the assignment of the audio groups can be changed. In the example below, no changes are selected, that is, **Group A** goes to **Group A** and **Group B** to **Group B**.

- Press **Split selected Groups** to finish the split process.
- Or press **Cancel** to break the split process.

## Join Audio

With the Join Audio feature, it is possible to join single audio clips or embedded audio groups from a video clip with another clip.

To join an audio group, proceed as follows:

- Select a RamRecorder channel, for example, **Ram1**.
- Select the clip from the clip list, for example, **Clip4**.
- Press **Modify** and afterwards **Join Aud.**
- The **Modify** button changes to **Join A with sel. Pos.**
- Select a target clip, for example, **Clip3**.
- Press **Join A with sel. Pos** and afterwards **OK**.

In the next dialog, the prepared join settings are listed. In addition to the join parameter, the assignment of the audio groups can be changed. In the example below the origin **Group A** goes automatically to **Group C** because the groups A and B have already audio and group C is the next empty group.

- If desired, assign audio to **Group D**.
- Press **Join selected Groups** to finish the split process.
- Or press **Cancel** to break the split process.

The result of the join process can be checked in the clip list. After finishing, **Clip3** contains audio groups **ABC**.

## Delay Line

The Delay Line feature can be used for time-delayed advanced audio playback while in Delayline Record Mode including video and audio.

To delay a playback, proceed as follows:

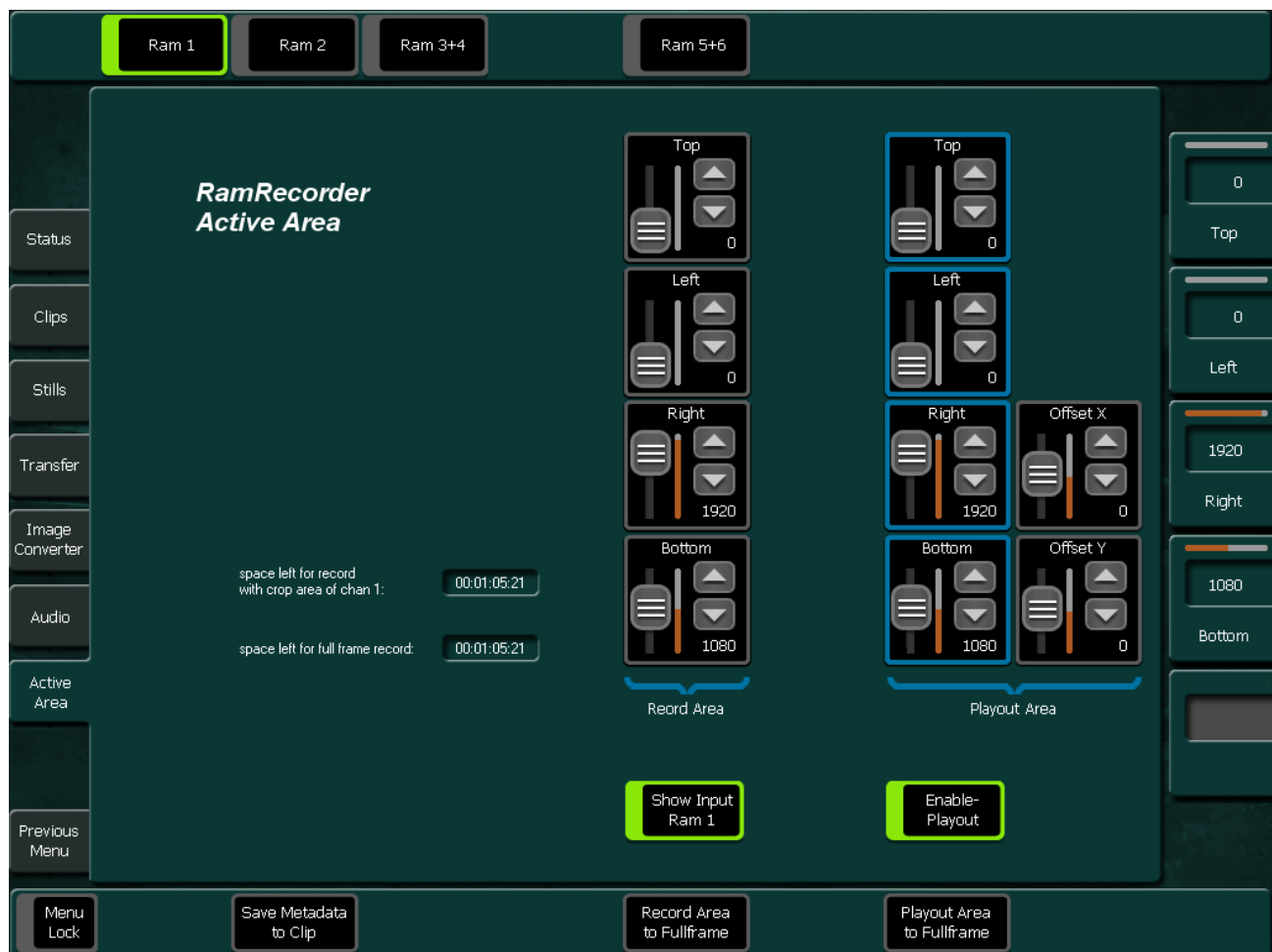
- Set the main delay time using the **RecLen** field.
- Press **Record/Delayline** and afterwards **Delayline**.
- Now video and audio can be shifted to adjust lip synch.

## RR Active Area Submenu

With the Active Area function the storage space of special clips (for example, logos) can be reduced to the active picture size.

The idea of the Playout Area/Playout Offset is that you could resize and reposition a recorded clip.

Figure 394. RamRecorder Active Area Menu



- **Enable Playout:** Position and crop the a stored clip on the screen.
- **Record Area to Fullframe:** Crop the area to record.
- **Playout Area to Fullframe:** Crop a portion of recorded clip to playback.
- **Playout Offset:** Move the cropped clip.

- **Save Metadata to Clip:** The parameters of the playout clip will be stored in the meta data storage.
- **Set to default:** Recalls default parameters; if Record Area is active, pressing the button sets the parameter to full frame. If Playout Area is active, pressing the button sets the Playout Area to the Record Area values and resets the Playout Offset values to zero.



# Aux / Router Menu

## Aux / Router Main Submenu

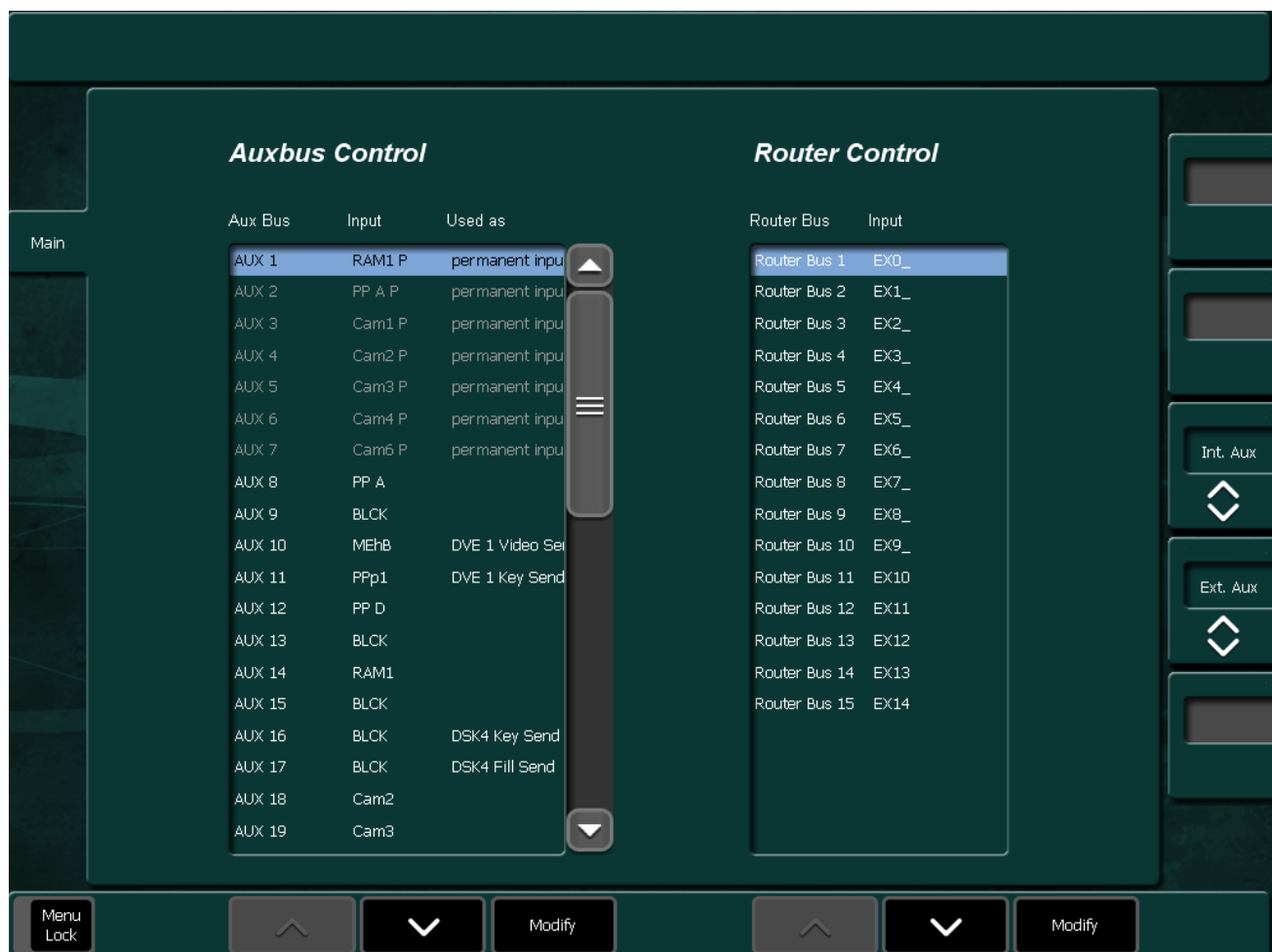
The AUX buses are programmable to output any of the internal M/E or Program Preset outputs, including Program, Look Ahead Preview and Cleanfeed.

Permanent installed buses are displayed as gray. These buses cannot be selected from this menu.

The Used as column shows AUX channels which are assigned for external keyers (e.g. Video Send and Key Send to external DVE unit).

- Touch **Modify** button to set an Input to an Aux Bus.
- The **Router** menu shows in column Input the Name of the source which is currently connected to the External AUX Bus of the Kayak system.
- Touch the **Modify** button to switch a source on the external router.

Figure 395. Auxbus Router Main



## Scaler Menu

Kayenne XL supports the MatchDef option for up, down, or crossconverting of different input formats to the production format on up to four inputs per M/E.

In addition the SetDef option for up, down, or crossconverting of the switcher production format to different output formats is supported. For this up to two outputs per M/E are available.

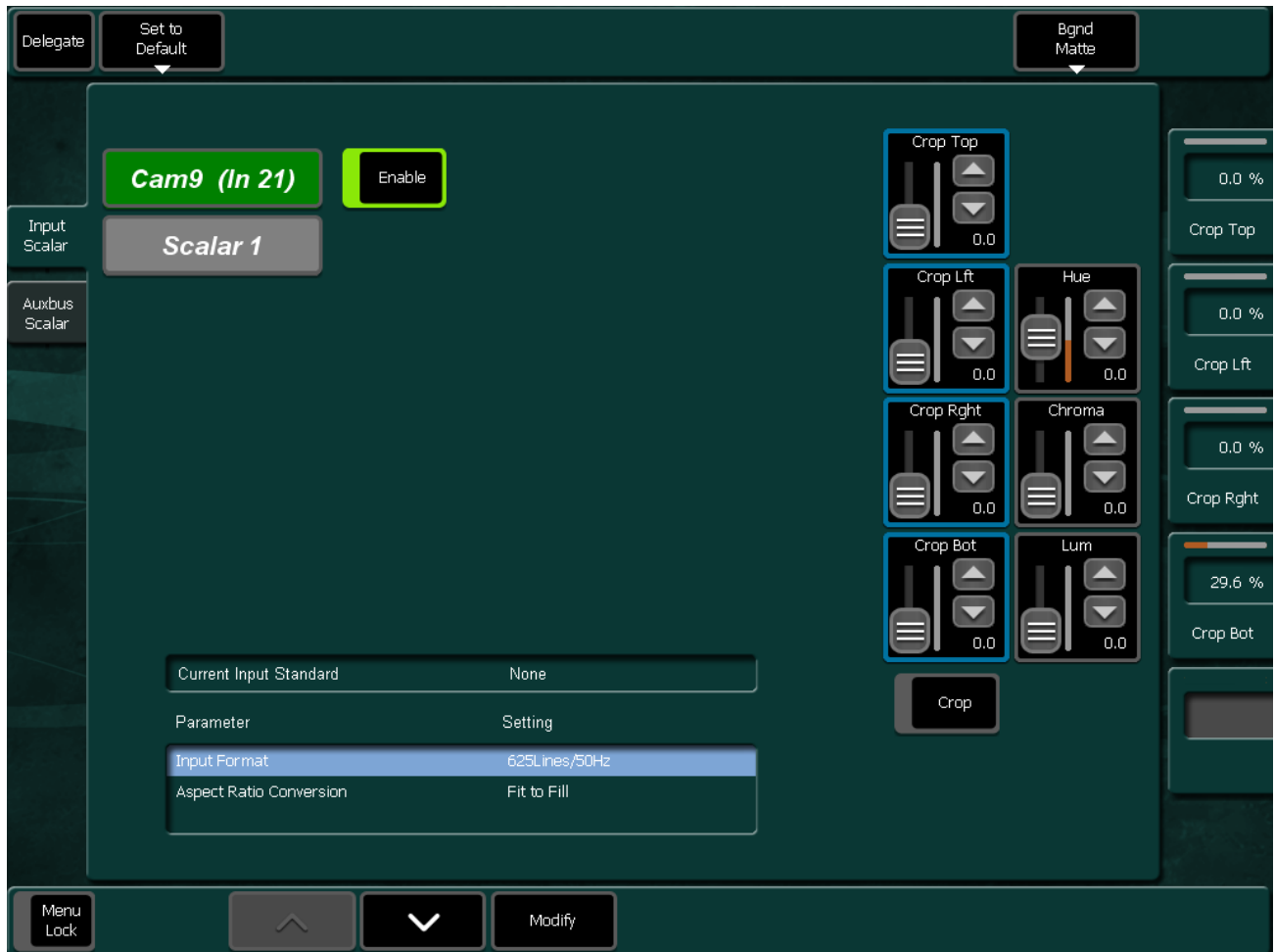
### Input Scaler Submenu (MatchDef™)

The MatchDef™ dual video input source scalars software option enable the Kayak HD switcher to seamlessly match video sources of different line rates and aspect ratios to the switcher's production format. The Scalers work by converting inputs of different formats to the same format as that used by the switcher. These converted/scaled inputs can then be used anywhere in the switcher. The system supports the use of up to four scalars per M/E that can be used for up-conversion of SD sources to HD formats.

The MatchDef dual video input scalars enable you to match SD sources into an HD production or HD sources into an SD production. You can cross match different HD formats as well without sacrificing critical production elements such as keyers. Scalers also let you match video sources using different aspect ratios to the native production format.

**Note** The SD and HD standards use different colorimetry. Color bar signals of a different standard that pass through the Scaler will not align with the color boxes of a vectorscope. However, the actual color of the video image will be accurate on screen.

Figure 396. Input Scaler



## Setting Up Scaler Inputs

The Kayenne XL package supports four scalar inputs. If you have purchased the scalar software license, plug a video source into one of the scalar BNC connectors on the back of the frame.

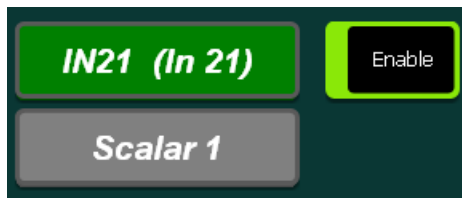
Enabled scalar inputs start at the lowest number of BNC connectors for the inputs as shown in the following table.

Table 7. Scaler input Connections/Requirements

Scaler Inputs		
M/E	Enabled Scaler Input	Installed M/E Board
M/E 0	21, 22, 23, 24	PP board
M/E 1	45, 46, 47, 48	M/E1 board
M/E 2	69, 70, 71, 72	M/E2 board
M/E3	93, 94, 95, 96	M/E3 board

- Touch the **Delegate** button to select the Scalar Input or touch Input field to toggle between the Scalar Inputs.
- Selecting **Enable** tells the switcher to use the Scalar input so the signal can be converted up or down to the Input Format selected.

Figure 397. Input Scaler enable



Additional the following settings can be configured for the Input Scaler:

- **Aspect Ratio Conversion:** Can be set as Fit to Fill, Pillarbox, Letterbox and Centercut. Details on Aspect Ration Conversion and the relation to the different video standards are described at the end of this section.
- **Background Matte:** Insert a matte color to replace black in the cropped / letter boxed / pillared region. Choose a predefined color and / or adjust the color by using the control knobs at the right of the control panel menu.
- **Crop:** Crop the edges to remove / mask any unwanted artifacts that appear around the edges.
- **Set to Default:** Sets the default background matte to black, the crop values to zero and the aspect ratio to the related default setting.

Figure 398. Input Scaler Aspect Ratio Conversion

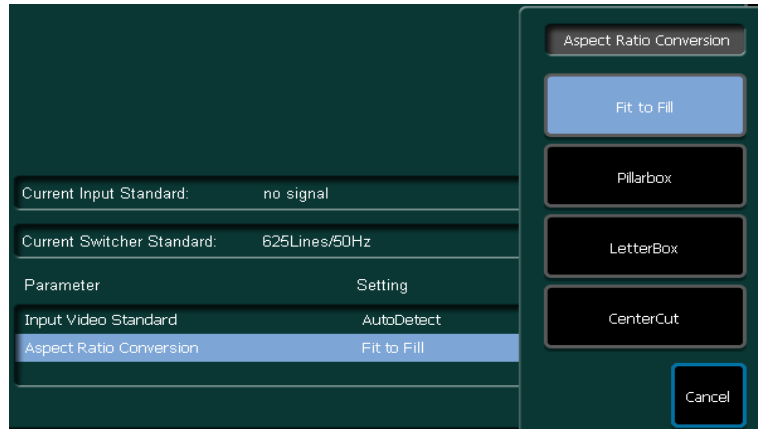


Figure 399. Input Scaler Bgnd Matte



Figure 400. Input Scaler Input Format

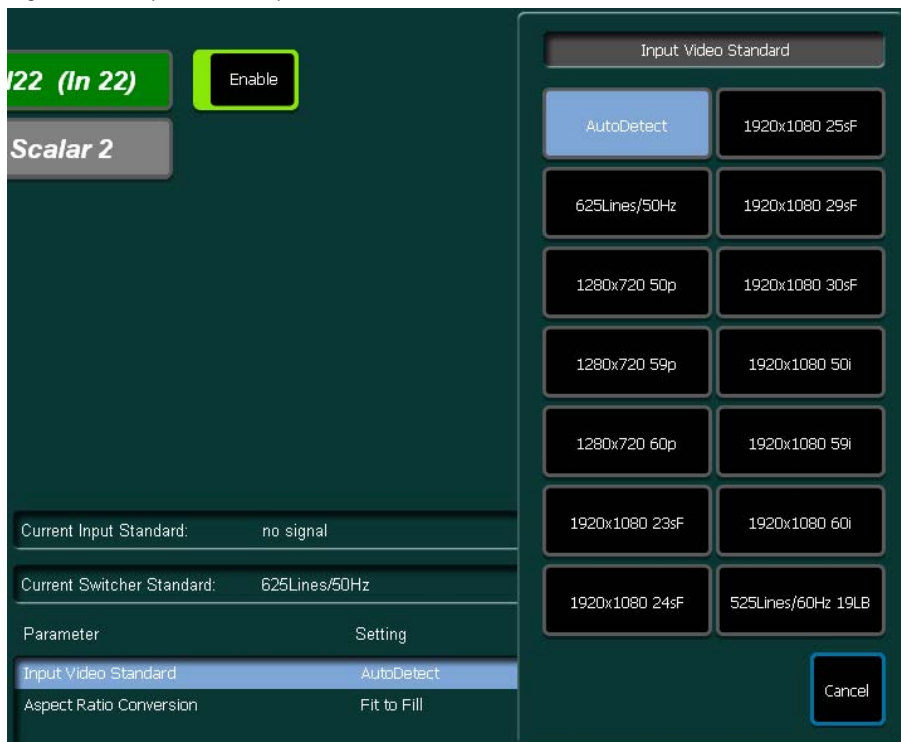


Figure 401. Input Scaler Set to Default



## Aux Bus Scaler Submenu

### Overview

The SetDef option enables conversion of the production format to another Standard Definition or High Definition format. This includes some aspect ratio conversion controls with choice of, depending on direction of conversion, either Letterbox, Pillarbox or Fit to Fill. The conversions are between formats of the same vertical refresh rates only, such as 60 fields per second and 30 frames per second (interlaced/progressive).

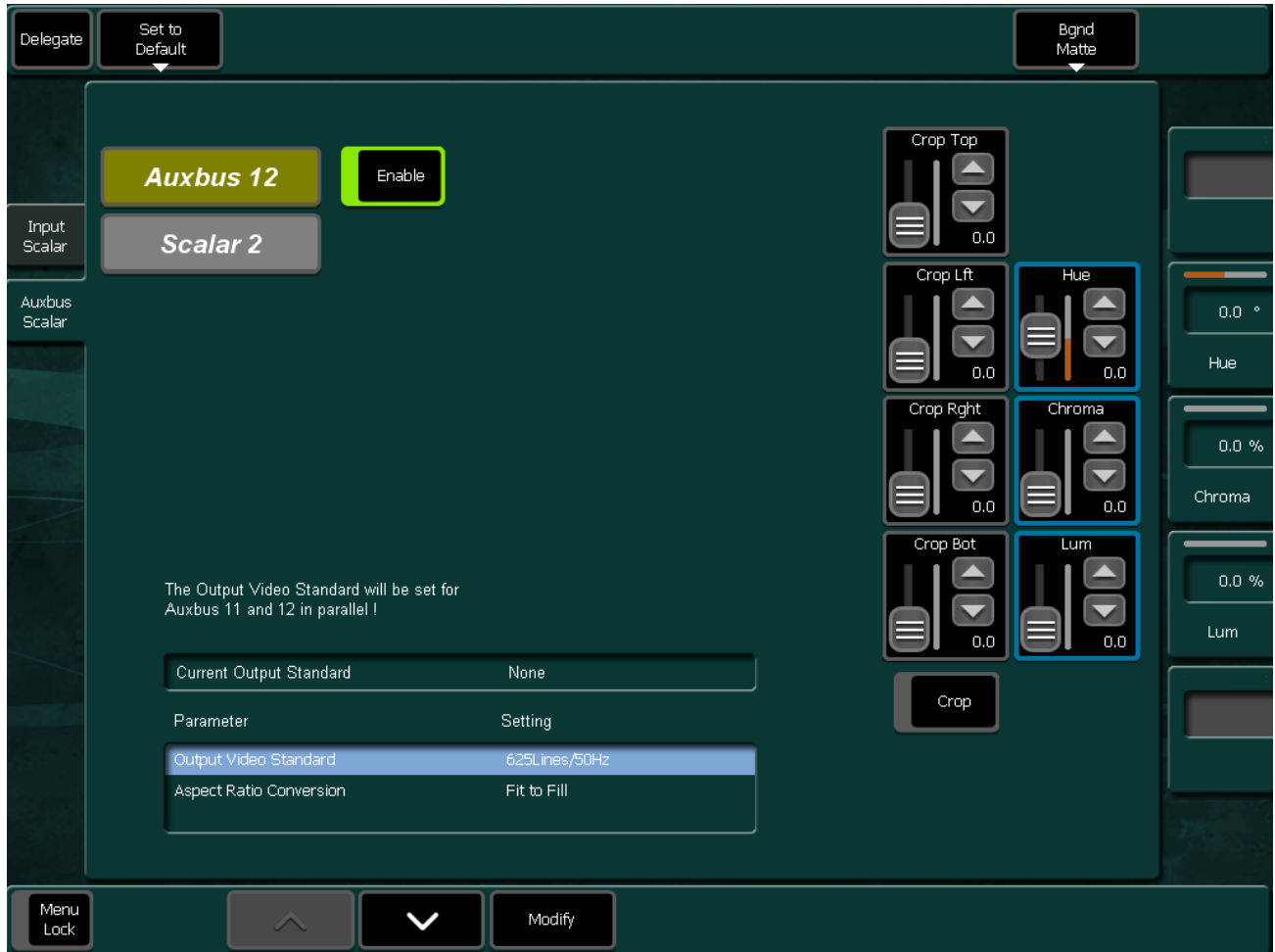
- When scalars are enabled, there is a one frame delay at maximum.
- At minimum, there are the same conversion capabilities as the MatchDef Scalar inputs; up, down, cross, and aspect ratios. See additional aspect ratio features below.

Setting up Scaler Outputs works the same way than Scaler Inputs. Check [Setting Up Scaler Inputs on page 479](#) for details.

### Known Limitations

- Each output SetDef pair (e.g. AUX11;12, AUX23;24, AUX35;36, AUX47;48) is set to the same output standard. Each pair can be a different standard than other pairs, but each output can have different aspect ratio settings.
- The sources of the Output Scalars must be of the same format as the switcher's current video standard. Primary inputs can be used when locked to the Switcher reference.
- The video standard of the SetDef outputs must be of the same vertical frequency as the selected video reference format of the switcher.
- When scalars are enabled, the ancillary data (e.g. embedded audio) is not passed.

Figure 402. Aux Bus Scaler



The menu structure designed for the Auxbus Scalers are the same as used for the Input Scalers.

## Supported Scalar Conversions (Input and Auxbus Scalar)

The conversions are between formats of the same vertical refresh rates only, such as 60 fields (interlaced) per second and 30 frames (progressive) per second.

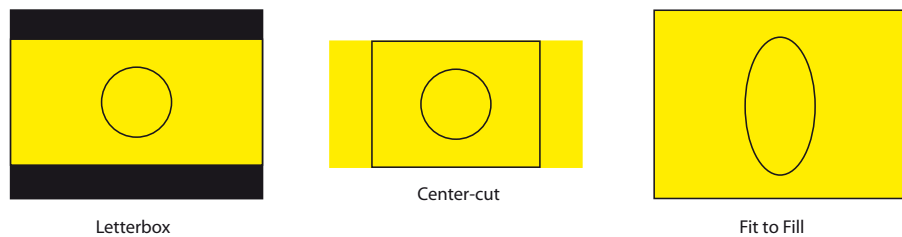
Table 8. Scaler Conversions and supported Aspect Ratio Modes

Input	Outputs					
	525 4x3	525 16x9	625 4x3	625 16x9	720p	1080i
525 4x3	Fit to Fill	Pillarbox, Center-cut (V)			Pillarbox, Center-cut (V)	Pillarbox, Center-cut (V)
525 16x9	Letterbox, Center-cut (H)	Fit to Fill			Fit to Fill	Fit to Fill
625 4x3			Fit to Fill	Pillarbox, Center-cut (V)	Pillarbox, Center-cut (V)	Pillarbox, Center-cut (V)
625 16x9			Letterbox, Center-cut (H)	Fit to Fill	Fit to Fill	Fit to Fill
720p	Letterbox, Center-cut (H)	Fit to Fill	Letterbox, Center-cut (H)	Fit to Fill	Fit to Fill	Fit to Fill
1080i	Letterbox, Center-cut (H)	Fit to Fill	Letterbox, Center-cut (H)	Fit to Fill	Fit to Fill	Fit to Fill

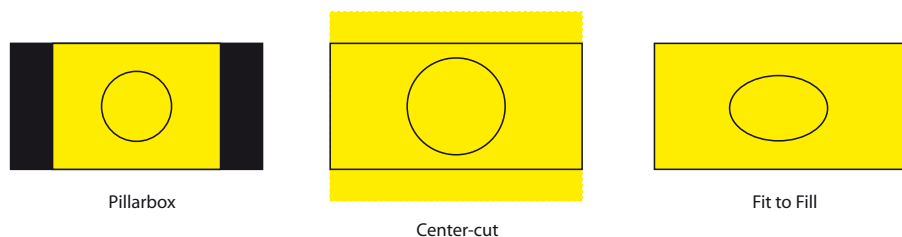
## Aspect Ratio Conversion (Inputs and Auxbus Scalar)

Figure 403. Aspect Ratio Conversions

Down Converting HD (16:9) to SD (4:3)



Up Converting SD (4:3) to HD (16:9)







## DPM Menu

The DPM menus are organized in five submenus:

- iDPM Main
- iDPM Edit
- eDPM Main
- eDPM Edit
- DVE Extern

### Definition of Terms

- iDPM - internal Digital Picture Manipulator using M/E resources
- eDPM - expanded (external) Digital Picture Manipulator without using M/E resources. This is an option with additional hardware.

### iDPM Main Submenu

The Kayak HD system supports one DPM channel per keyer, that means a Kayak HD 100C may have up to 4 DPM channels, a Kayak HD 200 up to 8 DPM channels. For units currently shipping the DPM channel for the first keyer per M/E-bank is standard, the remaining 3 channels per M/E are options.

The parameters of the Digital Picture Manipulators are not stored as part of the EMEM system. They are treated per M/E-bank like external DVE channels with a separate timeline system with 100 registers. That means the switcher can recall independently extra DPM effects per M/E while running an EMEM timeline.

To offer even more flexibility the user can define per register, which of the 4 channels should be affected. For example register 1 could only include the DPM channel of keyer 1 running an endless loop to spin a logo while the user is able to recall independently other registers containing only channel 3+4 displaying differently sized boxes.

Figure 404. iDPM Main



The inner window consists of several sections:

- Inputs Selection Keyer/Fill,
- Effect selection (5 x 5 buttons per page),
- Page selection

### Keyer Input Selection

Input selection for the 4 channels, click on the corresponding fields for source selection.

### Effect Selection

25 buttons for DPM effect selection (in total 100 effects on 4 pages). In the bottom part per button you find an indication of the channels used in the corresponding effect.

To select an effect, first preselect it (dark blue border) then press **OK** or double-click an effect directly. The selected effect (light blue background)

can be controlled by the motion control buttons or by the DPM digipot on the right side.

The effect selection can be learned in a macro. Since you can run up to four DPM effects simultaneously, learning motion control commands in macros has to be done carefully.

Pressing the **Play** button while learning a macro, this macro will record a play command for the first channel in the selected effect.

**Example:**

If the effect contains channel 2, 3, 4 – the macro will record the play command for channel 2. This macro can be used to play any effect containing at least channel 2, because a play command for one of the used channels will play all used channels. So 4 macros is enough to play all effects.

**Current Effect Number**

In this section you find an indication of the selected effect per channel. This can differ from the last recalled effect, since an effect recall only loads the channels included in the DPM effect.

**Delegate Button**

Delegating the menu to an M/E or P/P stage of the switcher.

**Highlight Effect No.**

This feature is only a help to get a quick overview, which channel is used in which effect. This is only important for customers using the DPM as a multiple DVE. The overlay row is special and consists of two parts, which have to be selected independently:

- **No show:** No highlighting
- **1 incl.:** Highlight all effects which contain at least one of the selected channels.
- **All incl.:** Highlight all effects which contain all of the selected channels.
- **Exact:** Highlight all effects which contain exactly the selected channels.
- **Chan 1 (... 4):** Toggle selection channel 1(... 4): "-- --" is off, "chan 1" is on.
- **Global:** Toggle selection global: "-- --" is off, "global" is on.

## Use DPM Source

DPM Channel selection: You can select per local channel whether this channel should be affected by the global channel.

## DPM Loop

Activates the DPM function for the corresponding keyer, that means when on, the DPM is looped into the signal path.

## Sure Touch Mode

Sure Touch changes the way in which effects behave during recall and playback, providing more control and flexibility. An effect can be safely recalled using two new modes which eliminate abrupt changes: hence the name Sure Touch is being used. When using a Sure Touch mode, the effect adapts itself to the switcher's current state. Upon recall of any effect, no changes are made to the current state, regardless of the nature or the composition of the effect. Then, when the effect is run, the relative changes from the interpolated effect are applied instead of the traditional absolute output. Only elements which changed over the course of the original effect are affected.

One way of thinking about safe touch is to think of it as running an effect in "relative" mode.

These changes can be applied in different ways, allowing the effect to interpolate on a path parallel to the original effect (Parallel mode), or on a path that converges the changing state smoothly to the actual end state of the original effect (Converge mode). A safe touch mode can be "forced on" just prior to recalling an effect, or it can be saved with the effect to be used automatically.

This feature changes the paradigm of control for effects, allowing effects to be applied under more flexible set of conditions and also to be used as specialized functions to perform specific actions.

Within the DPM timeline system, when an effect is first created, a snapshot of all values is saved. For any subsequent keyframes, only values which have changed are then saved. Those values that have changed are referred to as "bound elements" and are subject to interpolation as the effect runs.

When an effect is recalled in a sure touch mode, the current states of the bound elements are read by the timeline system. These values are compared with the original first keyframe (snapshot) of the effect, and an "offset" or "new zero" is established for each bound element of the effect. This "offset" is then applied during all subsequent fields of the effect. A new "offset" is established each time the effect is recalled. The result is that a "new effect" is established each time the effect is recalled.

The essential result is this: When an effect is recalled in a safe touch mode, only those values which underwent changes after the first key-frame of the original effect are touched, and only changes in values are applied.

### **Auto Run**

When Auto Run is on a recall of an DPM effect will automatically run the effect. When Auto Run is off, the run has to be triggered either in the Show Timeline menu by pressing **Play** or by pressing the **Cut** button in the Effects area again while the section is delegated to DPM control.

The **Auto Run** button is also used when a DPM effect is recalled by an **EMEM**. When **On**, a keyframe containing **DPM Eff. No** in the Define Memo will trigger an immediate run of the relevant DPM effect. (Define memo is set in the EMEM define memo menu.) When **Off**, a trigger has to be set to run the effect.

### **Cursor Control**

The top row buttons **Go To**, **Begin**, **Rev Play**, **Pause**, **Play**, and **End** let you run the current effect or position the cursor to a specific keyframe. The effect position can also be adjusted by the **Eff. Pos.** digipot.

Refer also the [iDPM \(eDPM\)](#) section of the Multi Function Control Panel.

## iDPM Edit Submenu

The iDPM Edit menu is organized in the following subpages:

- Transform
- Shadow
- Crop & Reverse
- Input
- Priority
- Kurl
- Splits & Mirrors
- Misc
- Light
- Defocus
- Glow
- Recursive
- Setup & Default
- Timeline
- Save & Recall

The Kurl subpage is only available when the Kurl option is installed

The Light, Defocus, Glow, and Recursive subpages are only available when then Spektra option is installed.

The following elements are available in most of the subpages:

## The Top Button Row

Figure 405. Top Button Row



The buttons **DPM 1 Control** through **Global Control** indicate which DPM channels will be affected when you turn the digipots and adjust the according parameter. A disabled button indicates that in the current effect setup this channel is not included. Note that the "Global Control" button is only enabled in the **Transform** subpage. You can toggle the buttons on and off. Double clicking a button automatically deselects all other buttons.

The **Insert**, **Modify**, and **Delete** buttons allow you to insert the current DPM state as a keyframe in the effect. For which channels keyframes will be inserted/deleted please see further down in the description for Timeline display.

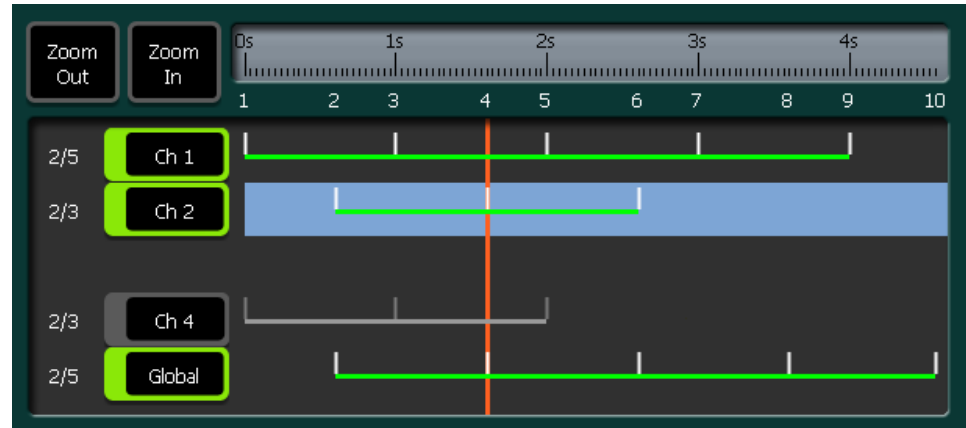
For more details of these functions please see the Timeline subpage.

With the **Copy Clipboard** button you can cut or copy keyframe states to a Clipboard and insert it at a different position of the effect.



## Timeline Display

Figure 406. Timeline Display



The Timeline display serves several purposes. In the first place it shows the keyframes/pauses for the according channels and the current cursor position. With **Zoom Out** and **Zoom In** you can adjust the zooming level. Double clicking in the time bar right to the **Zoom** buttons adjusts the zoom automatically to show all keyframes.

The channel track buttons **DPM1-4** and **Global** show which channels are included in this effect and for which channels keyframes will be inserted/modified or deleted. Click on the buttons for selecting/deselecting the channel. Like in **DPM Control** a double click deselects all other channels.

The selected keyframe track itself shows the channel for which the parameters are displayed. This is also indicated by the button **P/PiDPM 1**.



Changing the display channel can be accomplished in different ways:

- Clicking on a Timeline keyframe track.
- Pressing the **P/PiDPM 1** button. This will automatically deselect all other channels and every subsequent press will advance to the next channel.
- Select a channel via a **DPM 1 Control** button.

When you deselect the control for the channel which is currently displayed the system automatically searches for a controlled channel to be displayed.

## The Bottom Button Row

Figure 407. Bottom Button Row



The buttons **Start** through **End** provide the motion control commands for the effect.

The **Save/Discard** button allows you to save your changes to the current effect or revert to the previously stored version. This button is also an indication whether a modification has taken place since the last time it was stored. Otherwise this button is disabled.

With the **Arrow Left** and **Arrow Right** buttons you can step from one keyframe to the next or previous one.

With the **Goto Keyframe** button you go to a specified keyframe number. For details on keyframe numbering please see the Timeline subpage.

## Parameter Groups

Figure 408. Parameter Groups



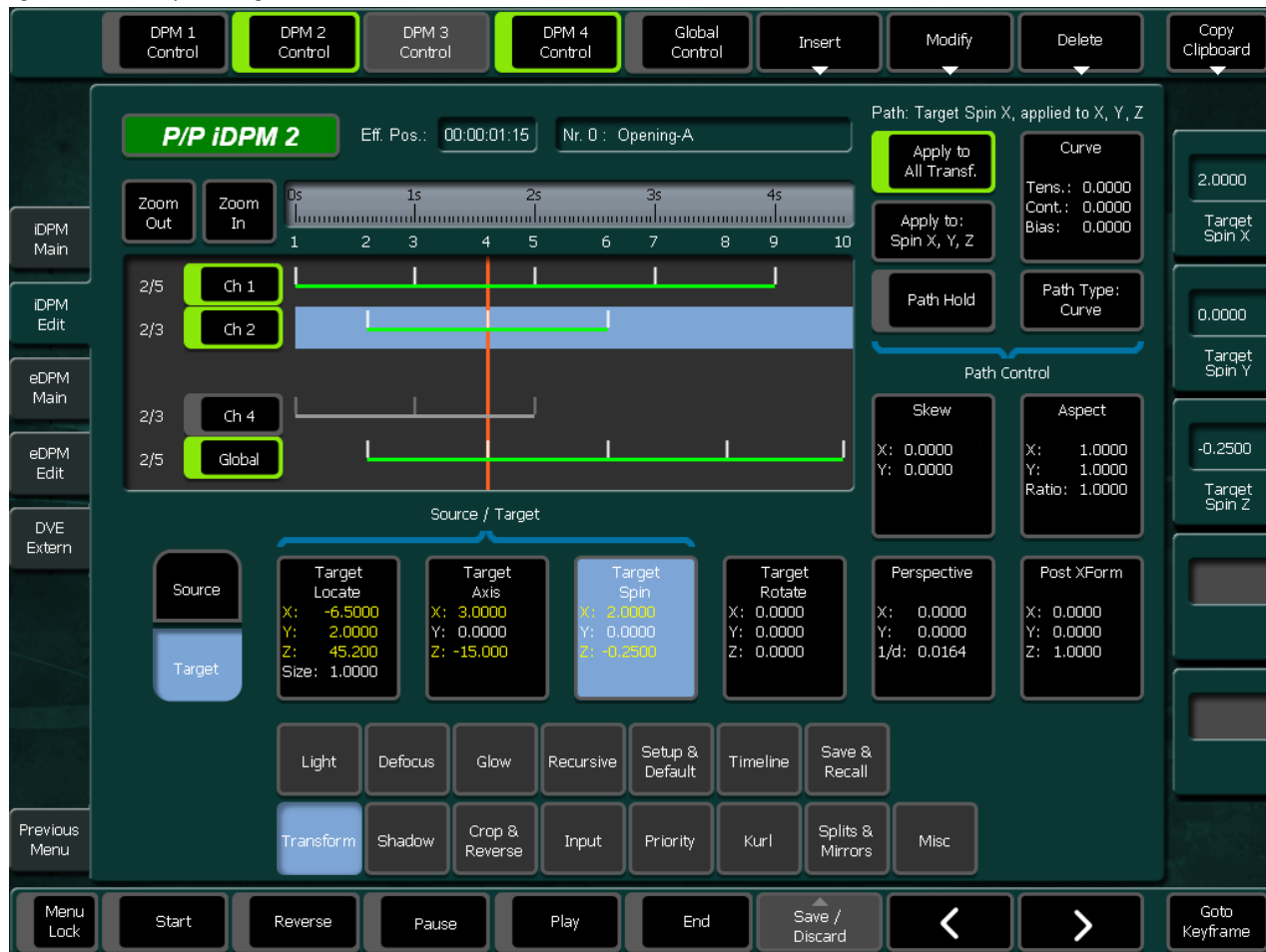
These groups consist of a group of 5 parameters maximum which can be delegated simultaneously to the digipots by clicking.

When a parameter differs from its default value the text color changes from white to yellow. Double clicking the group will reset all parameters to default. To reset an individual parameter, click on the display field of the according digipot. In the popup keypad the default button provides the value for reset to default.

When you use the Sidepanel program on a standard computer without digipots you can click the name field of the digipot to have scroll wheel control for this parameter.

## Transform Page

Figure 409. Transform Page



The Transform Menu is used for positioning the channels in the 3D space. Some of the parameters (Locate, Axis, Spin) you can position either in the Source or the Target space.

### Path Control:

Parameter groups like **Locate**, **Spin**, etc. can have individual paths. The path for the last selected parameter group is always displayed and can be controlled. When you e.g. want to display and control the path for the Perspective group, first select the **Perspective** group, then select the **Curve** group to adjust **Tension**, **Continuity**, or **Bias**.

The Spin group offers control of the individual X, Y, Z parameters within the group. The selection is made with the button "Apply to: Spin..."

When the button **Apply to All Transf.** is selected, the path changes are applied to all Transform parameters.

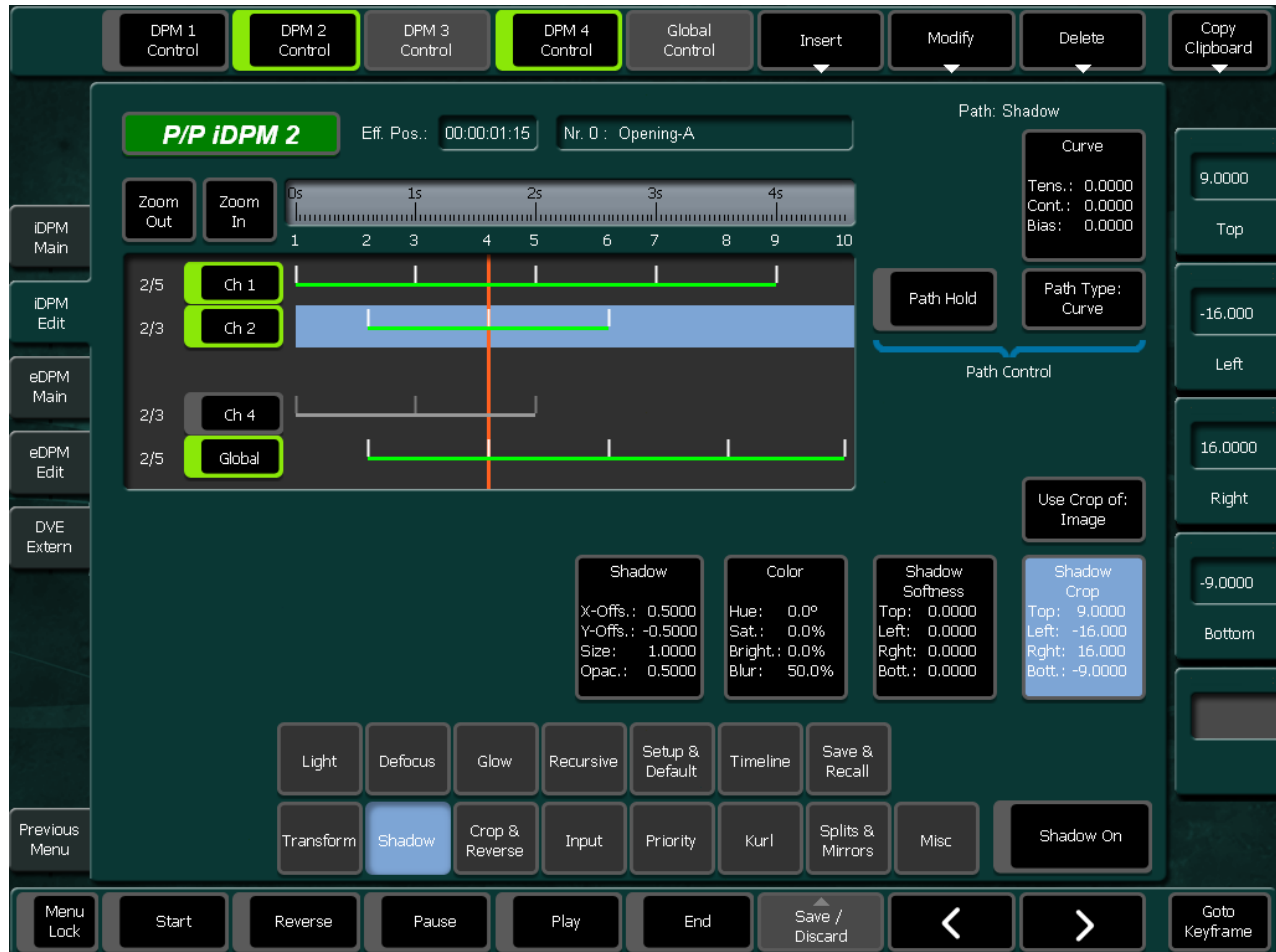
For general behavior of the DPM Edit Menu please see [iDPM Edit Submenu on page 491](#).

For more details on the individual parameters please refer [3-D Digital Effects Concepts on page 59](#).

For more details please refer to [Path Control on page 68](#).

## Shadow Page

Figure 410. Shadow Page



The shadow can be used as a drop shadow or create a border around the image. The Shadow Crop parameters are only active when **Use Crop of:** is set to **Shadow**.

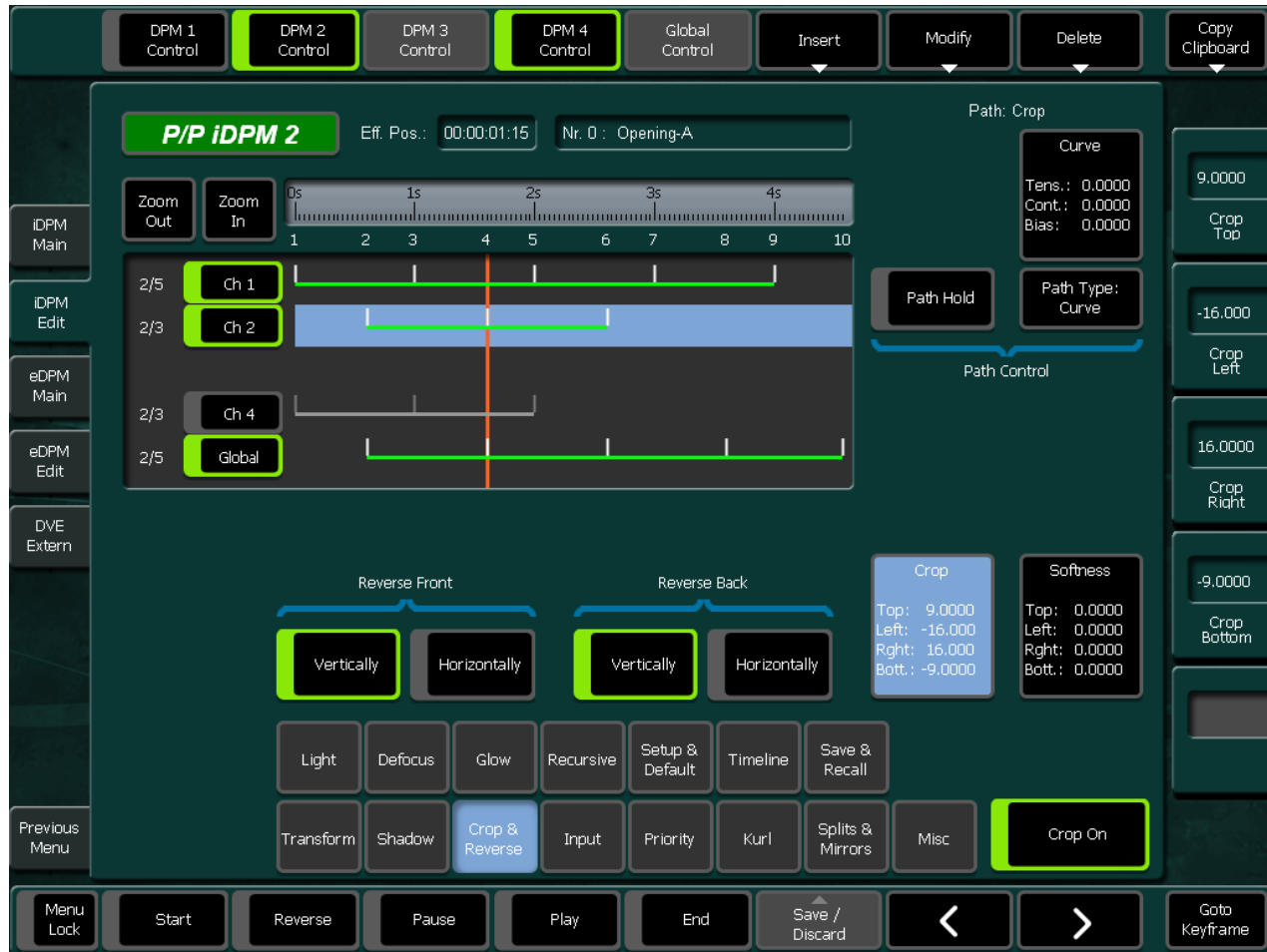
The remaining parameter names are self-explaining

For general behavior of the DPM Edit Menu please see [iDPM Edit Submenu on page 491](#).

For more details please refer to [Path Control on page 68](#).

## Crop & Reverse Page

Figure 411. Crop & Reverse Page



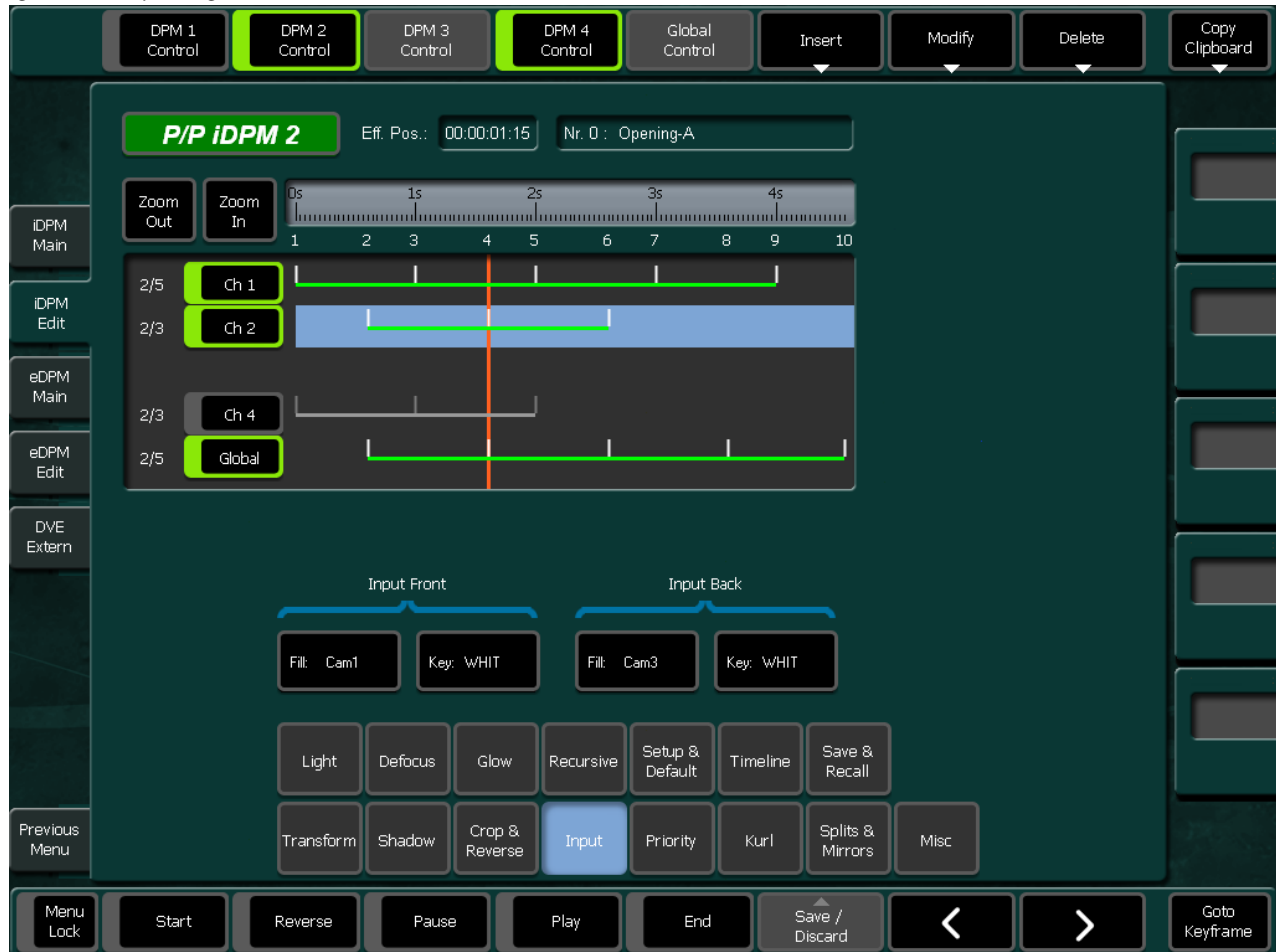
The **Crop** and **Softness** parameters are only active when crop is switched on. The remaining parameter names are self-explaining.

For general behavior of the DPM Edit Menu please see [iDPM Edit Submenu on page 491](#).

For more details on Path Control please refer to [Path Control on page 68](#).

## Input Page

Figure 412. Input Page



The source information for front fill/key and back fill/key is always stored per keyframe.

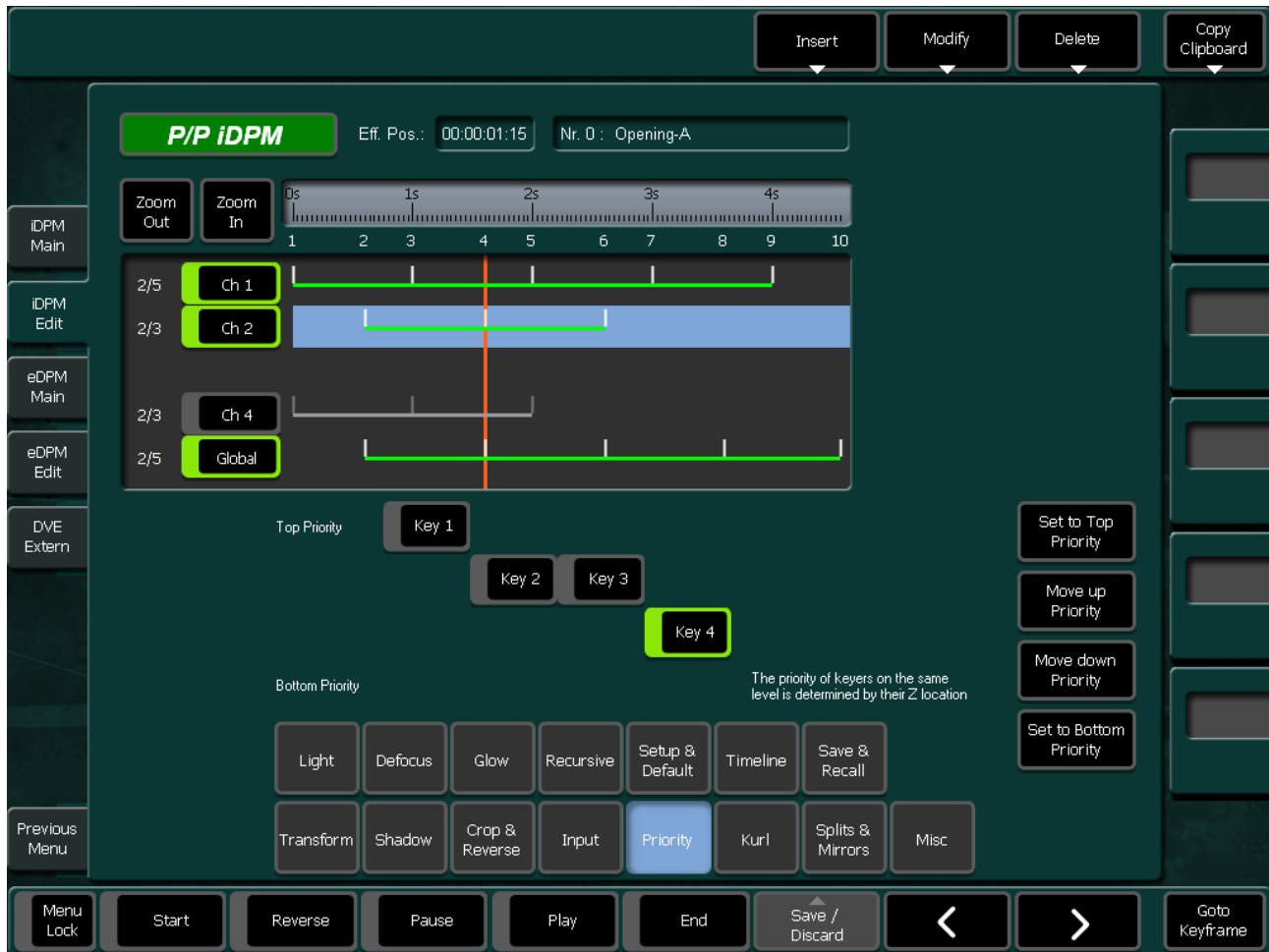
Whether this information will be used can be set per channel in the DPM Main Menu (see [DPM Menu on page 486](#)).

If you are not familiar with the difference between front/back versus near/far please see [Front and Back, Near and Far on page 64](#).

For general behavior of the DPM Edit Menu please see [iDPM Edit Submenu on page 491](#).

## Priority Page

Figure 413. Priority Page



The priority of a channel can be either fixed or depending on the Z-Location in the 3D space.

In the example above Key 1 has always the top priority, Key 4 will always be in the background. Between these two keyers Key 2 and Key 3 are fighting for higher priority by their Z-Location. Whether the priority of the Keyers is controlled by the DPM effect depends on the setting of the effect (see [Save & Recall Page on page 523](#)).

For general behavior of the DPM Edit Menu please see [iDPM Edit Submenu on page 491](#).



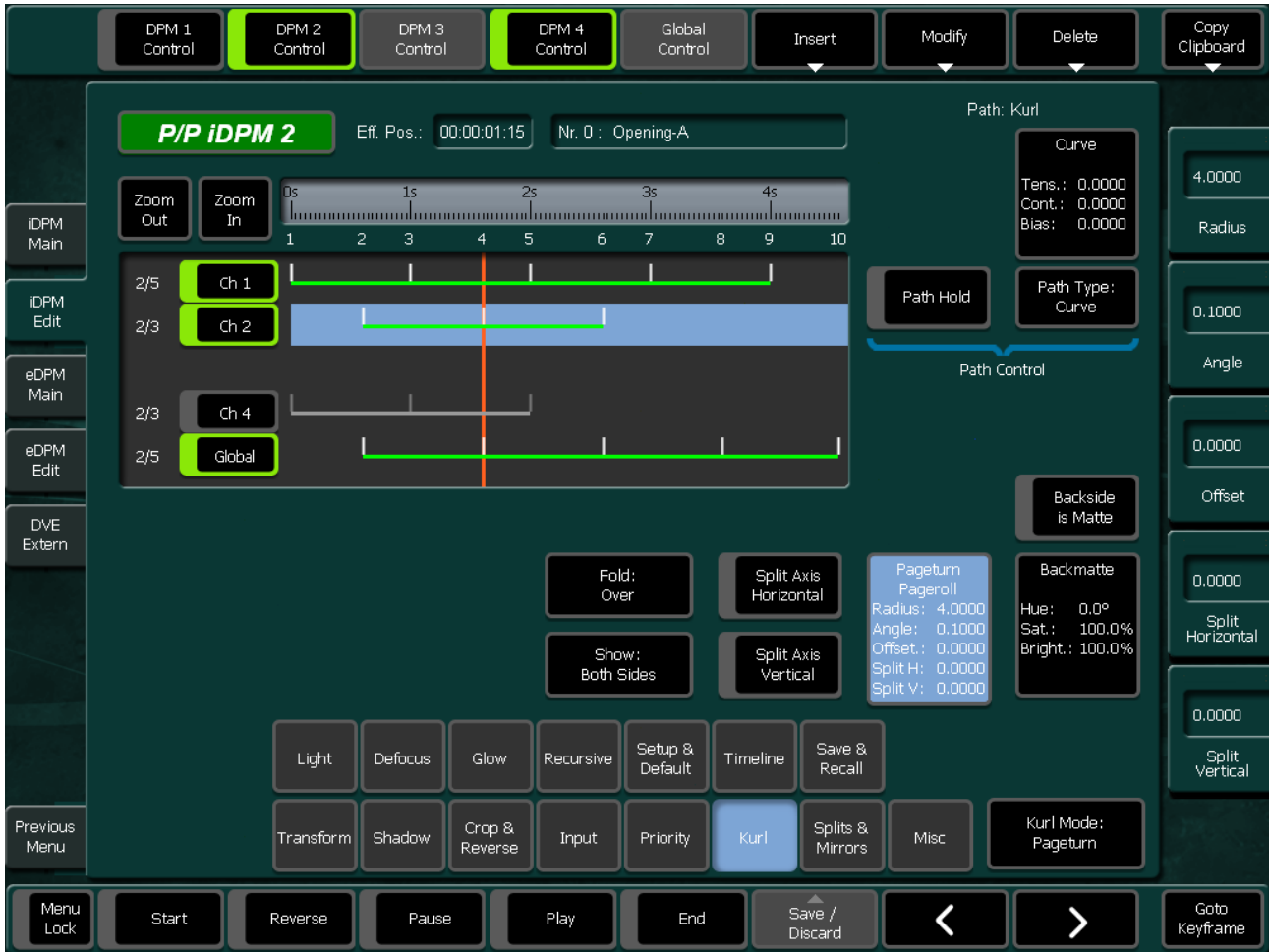
## **Kurl Pages**

Kurl is divided in 6 subpages

- PageTurn, see [Kurl Pageturn/Pageroll Page](#)
- Pageroll, see [Kurl Pageturn/Pageroll Page](#)
- Postion/Size-Modulation, see [Kurl Position/Size Modulation Page](#)
- Slits, see [Kurl Slits Page](#)
- Ripples, see [Kurl Ripples Page](#)
- Sphere, see [Kurl Sphere Page](#)

## Kurl Pageturn/Pageroll Page

Figure 414. Kurl Pageturn/Pageroll Page



The control parameters for Pageturn and Pageroll are identical.

When you create a pageturn with one channel the front and back side will show the same image (or back side will show matte)

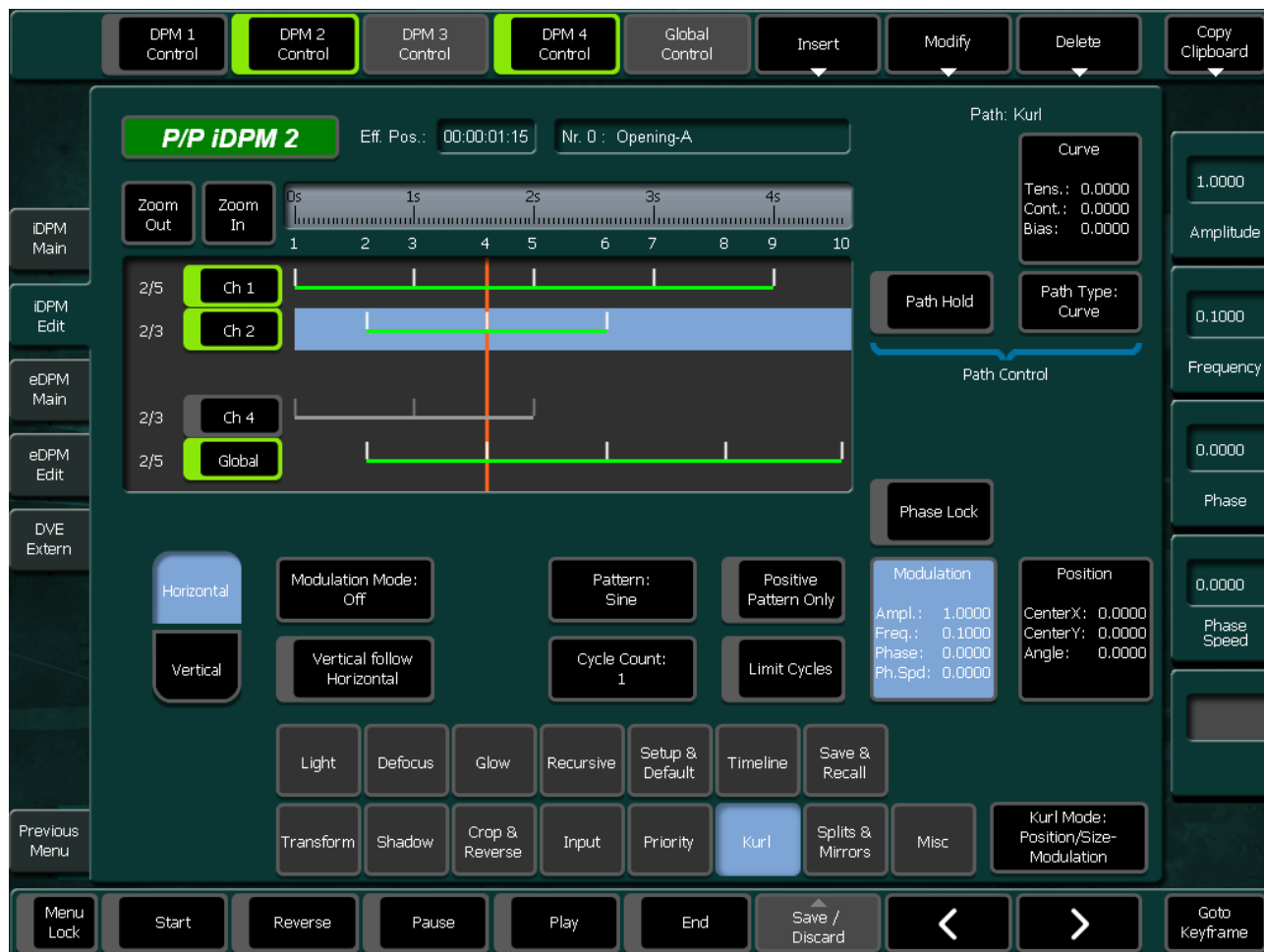
For a different image on the back side you have to use two channels in parallel. In this case change "Show: Both Sides" to "Show: Front Side" for the first channel and to "Show: Back Side" for the second channel.

For general behavior of the DPMDPM Edit Menu please see [iDPM Edit Submenu on page 491](#).

For more details please refer to [Path Control on page 68](#).

## Kurl Position/Size Modulation Page

Figure 415. Kurl Position/Size Modulation Page



The modulation can be applied horizontally and/or vertically.

- Change the according **Modulation Mode** to either **Size** or **Position** to enable the modulation.
- Available modulation patterns are: **Sine, Triangle, Square, Ramp, Circle, Random, Pulse, Trapeze.**
- **Cycle Count** only is active when **Limit Cycle** is **On** and **Phase Speed** is greater than 0.
- **Positive Pattern Only** flips the negative part of the modulation to positive, creating a new shape with twice the frequency. This works for all patterns but the **Square**.
- **CenterX** and **CenterY** are only active for **Modulation Mode Size**.

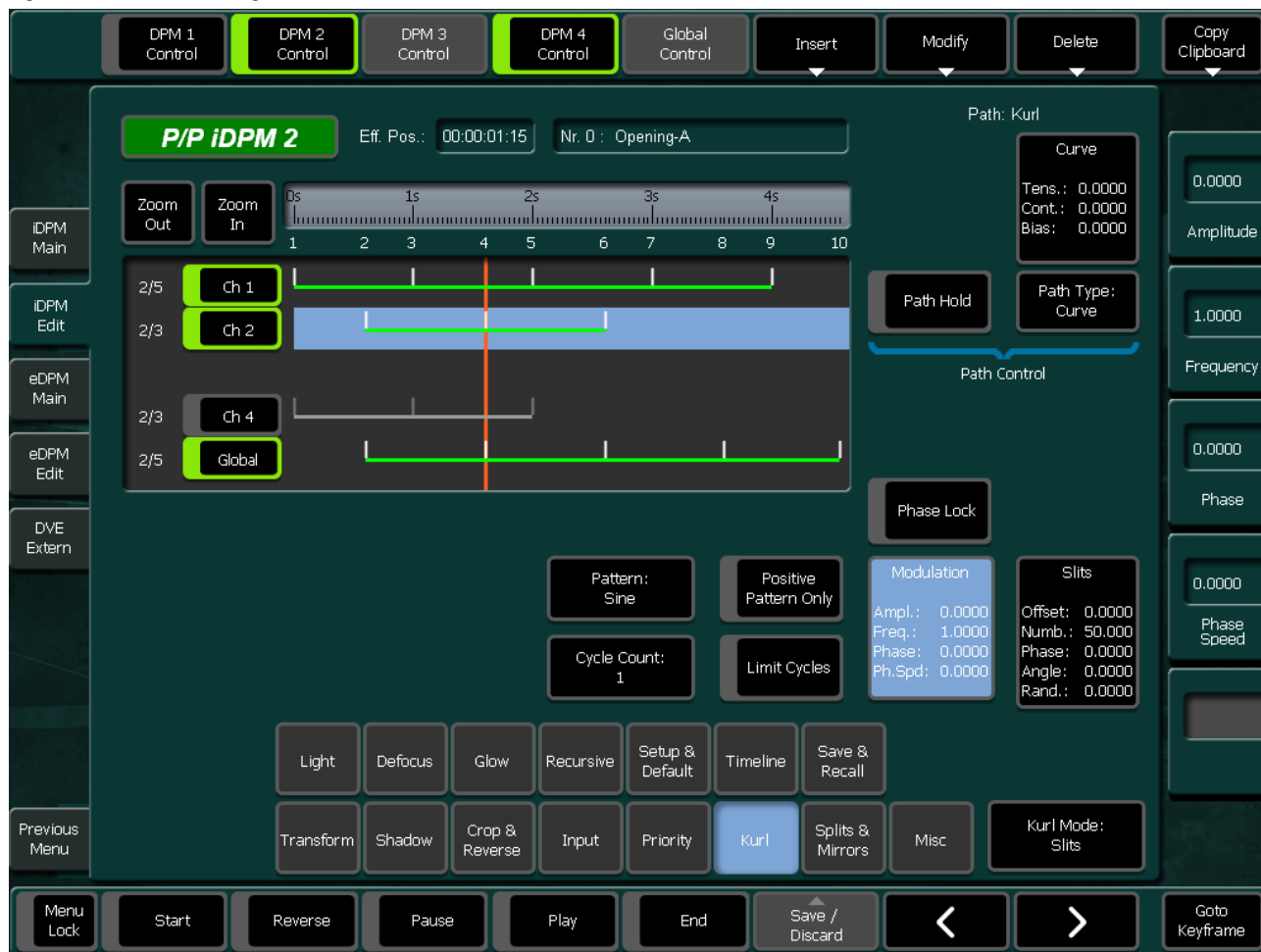
The remaining parameter names are self-explaining

For general behavior of the DPM Edit Menu please see [iDPM Edit Submenu on page 491](#).

For more details on Path Control please refer to [Path Control on page 68](#).

## Kurl Slits Page

Figure 416. Kurl Slits Page



Change the Amplitude parameter to a value greater than 0 to enable the slits.

- Available modulation Patterns are: **Sine, Triangle, Square, Ramp, Circle, Random, Pulse, Trapeze.**
- **Cycle Count** only is active when **Limit Cycle** is **On** and **Phase Speed** is greater than 0.
- **Positive Pattern Only** flips the negative part of the modulation to positive, creating a new shape with twice the frequency. This works for all patterns but the **Square**.
- When **Randomness** is 0 all slits have the same width, depending on the number of slits, otherwise the width varies more or less, depending on the value of **Randomness**.

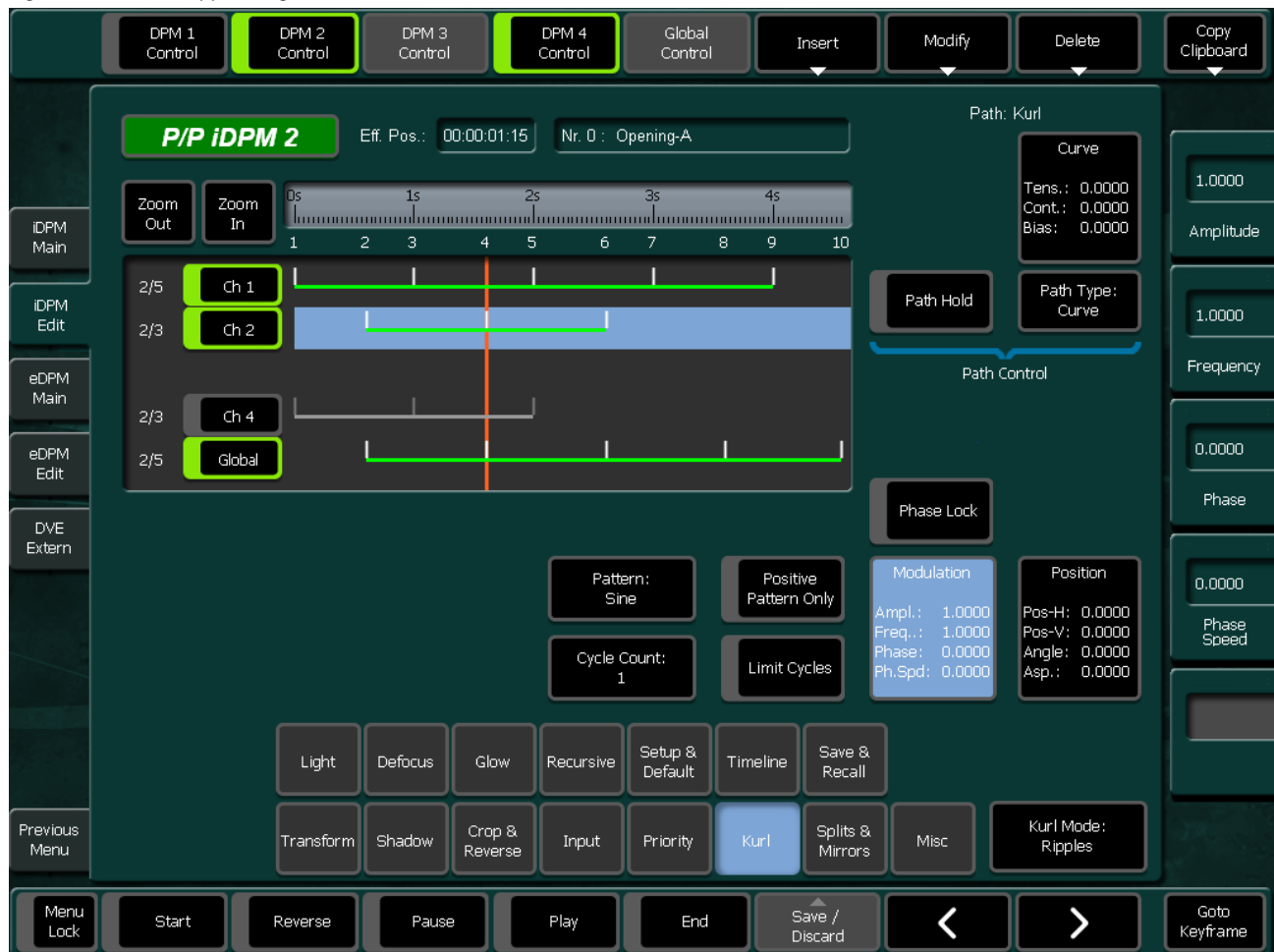
The remaining parameter names are self-explaining.

For general behavior of the DPM Edit Menu please see [iDPM Edit Submenu on page 491](#).

For more details on Path Control please refer to [Path Control on page 68](#).

## Kurl Ripples Page

Figure 417. Kurl Ripples Page



- Available modulation Patterns are: **Sine, Triangle, Square, Ramp, Circle, Random, Pulse, Trapeze.**
- **Cycle Count** only is active when **Limit Cycle** is **On** and **Phase Speed** is greater than 0.
- **Positive Pattern Only** flips the negative part of the modulation to positive, creating a new shape with twice the frequency. This works for all patterns but the **Square**.
- **Position-H** and **Position-V** define the center of the ripples.

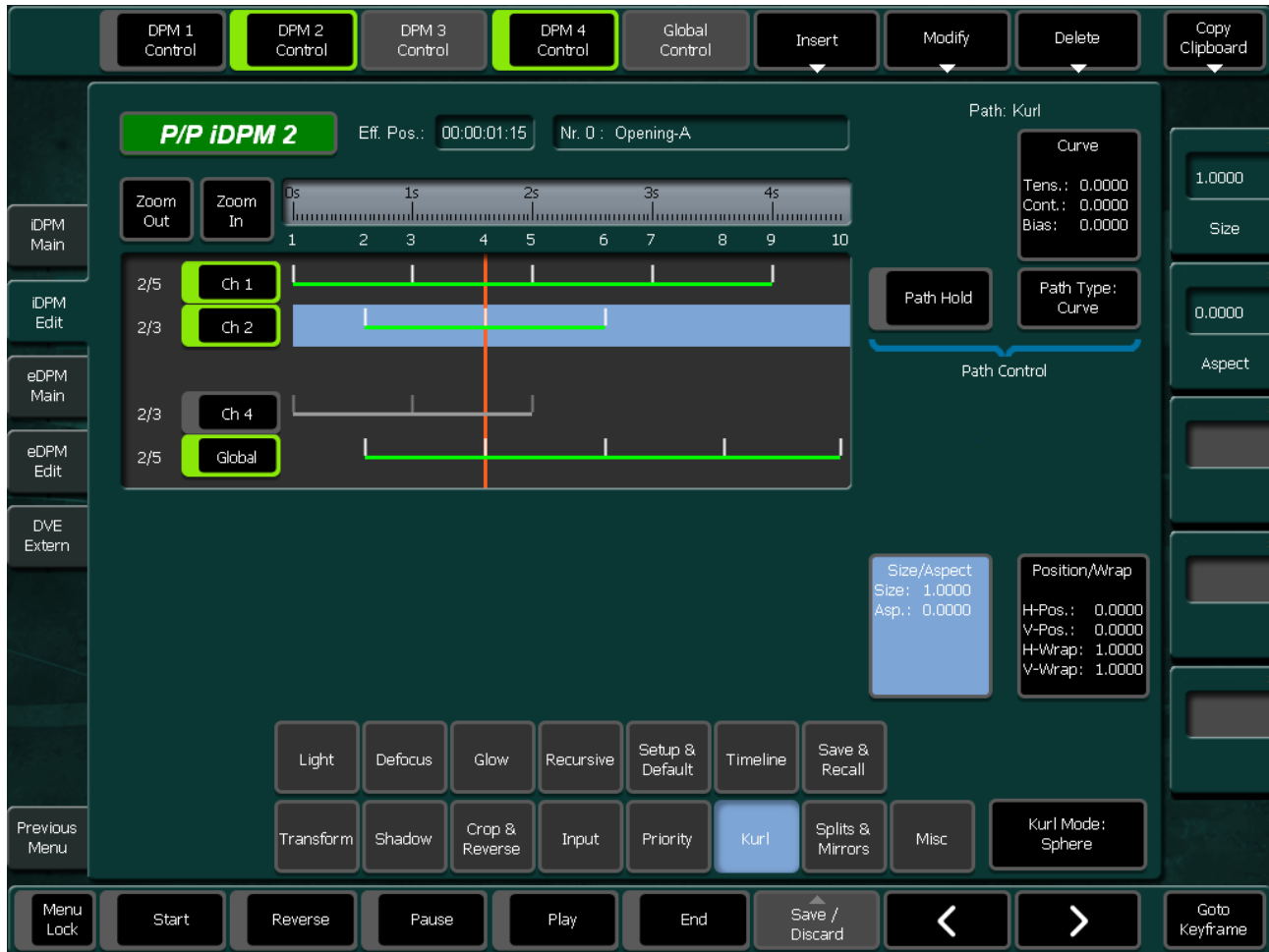
The remaining parameter names are self-explaining

For general behavior of the DPM Edit Menu please see [iDPM Edit Submenu on page 491](#).

For more details on Path Control please refer to [Path Control on page 68](#).

## Kurl Sphere Page

Figure 418. Kurl Sphere Page



- **H-Position** turns the sphere horizontally
- **V-Position** turns the sphere vertically
- **H-Warp** stretches the image horizontally around the sphere
- **V-Warp** stretches the image vertically around the sphere

The remaining parameter names are self-explaining

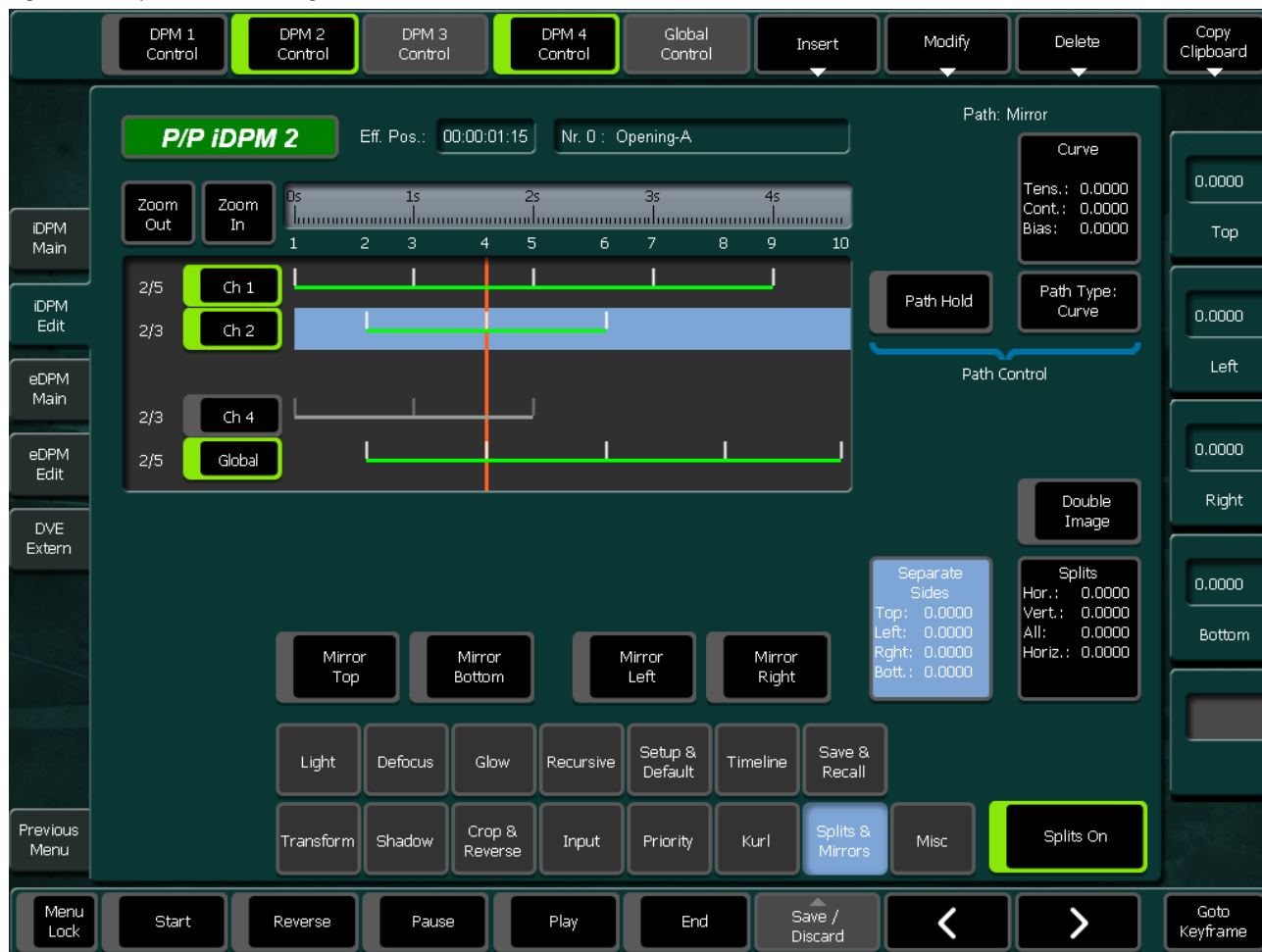
For general behavior of the DPM Edit Menu please see [iDPM Edit Submenu on page 491](#).

For more details on Path Control please refer to [Path Control on page 68](#).



## Splits & Mirror Page

Figure 419. Splits & Mirror Page



- The **Splits** parameters are only active when **Splits** is switched on.
- **Position-H** and **Position-V** define the center of the ripples.

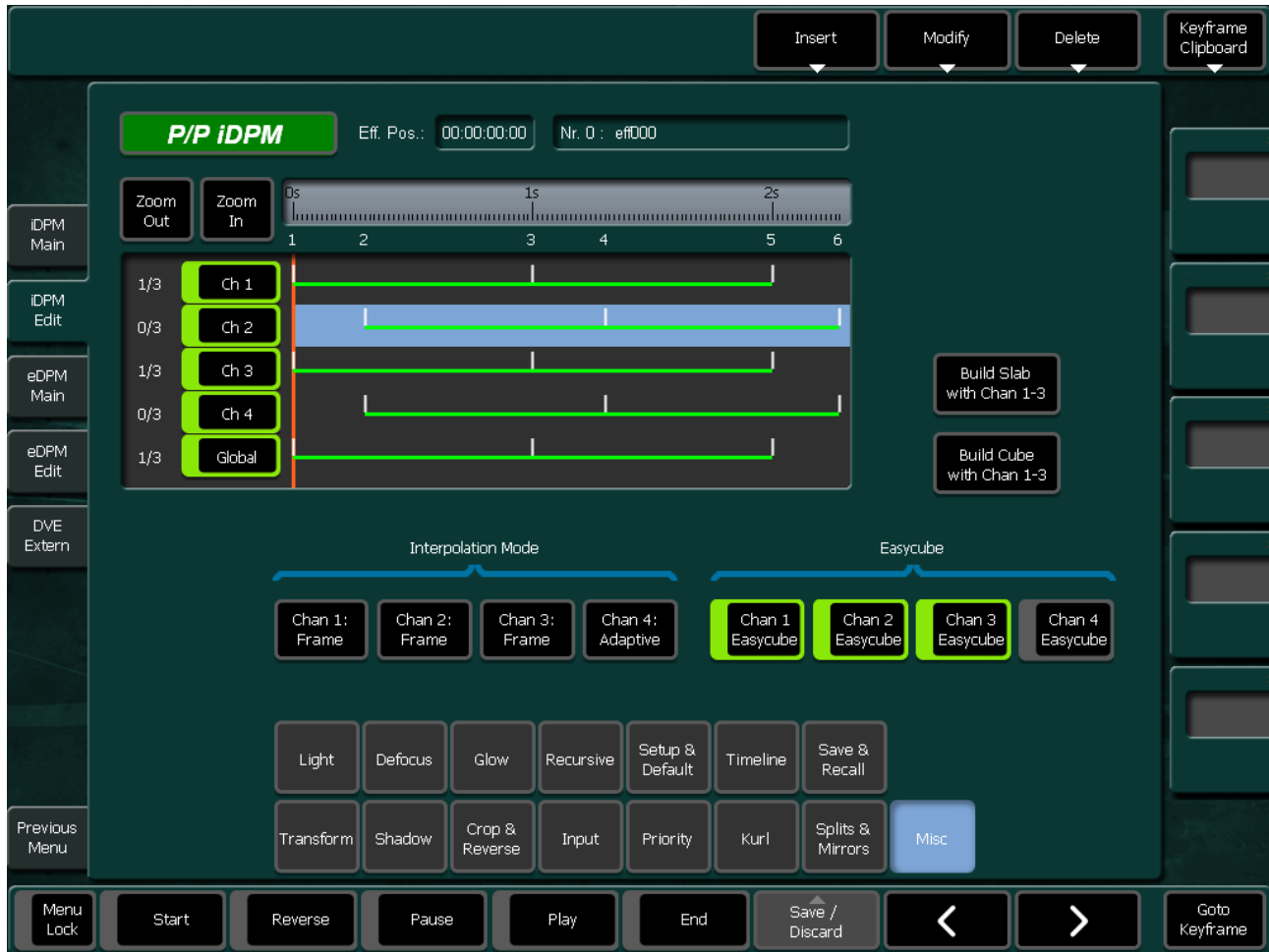
The remaining parameter names are self-explaining

For general behavior of the DPM Edit Menu please see [iDPM Edit Submenu on page 491](#).

For more details on Path Control please refer to [Path Control on page 68](#).

## Misc Page

Figure 420. Misc Page

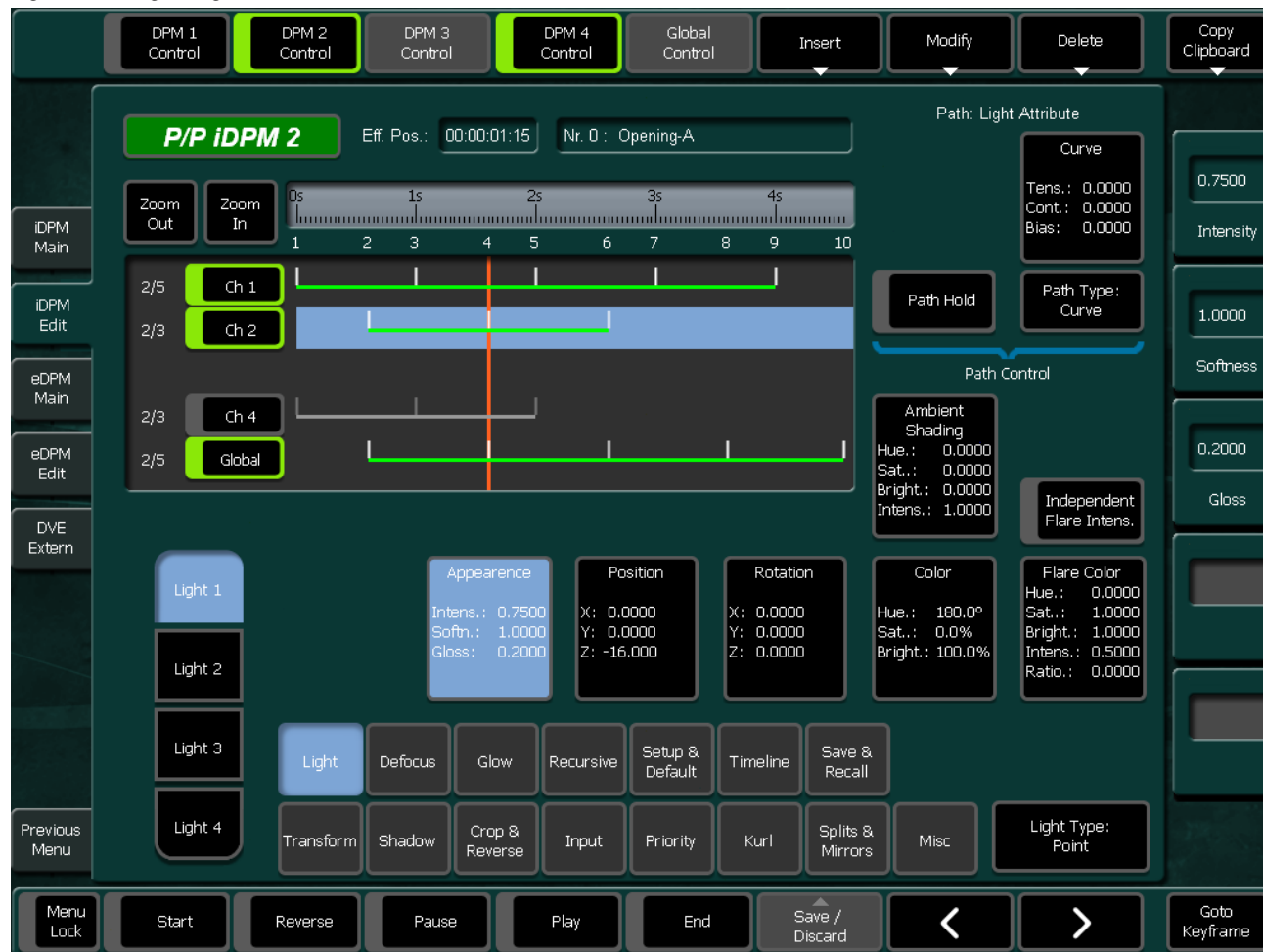


**Interpolation Mode** defines the mode of video interpolation

- Available modes are **Adaptive**, **Frame**, **Field**
- In frame mode an interpolation uses 2 fields. This may cause artifacts if e.g. a Cut is performed between the two fields of a frame.
- **Easycube** should be enabled for all channels which are used to form a cube or slab. Since in a cube or a slab only 3 sides are visible at a time, with **Easycube** enabled the channel automatically will flip its position during rotation from the left to the right or from the top to the bottom side accordingly.
- **Build Cube with Chan 1-3** and **Build Slab with Chan 1-3** sets up the local parameters for channels 1 through 3 automatically to form a cube or slab.
- This cube should only be positioned/rotated with the **Global Channel** in the **Transform/Target** menu

## Light Page

Figure 421. Light Page



- Each DPM channel has four light sources and one Ambient Shading light. The available light types are: **Point, Bar, and Plane**.
- **Appearance / Gloss Size** of the light spot (**Point**), width of the **Bar**.
- The light parameters are only active when then light type is different from **Off**.
- The **Rotation** parameters are only active for light type **Bar**.
- The Flare Intensity is only active when **Independent Flare Intensity** is **On**.

The remaining parameter names are self-explaining.

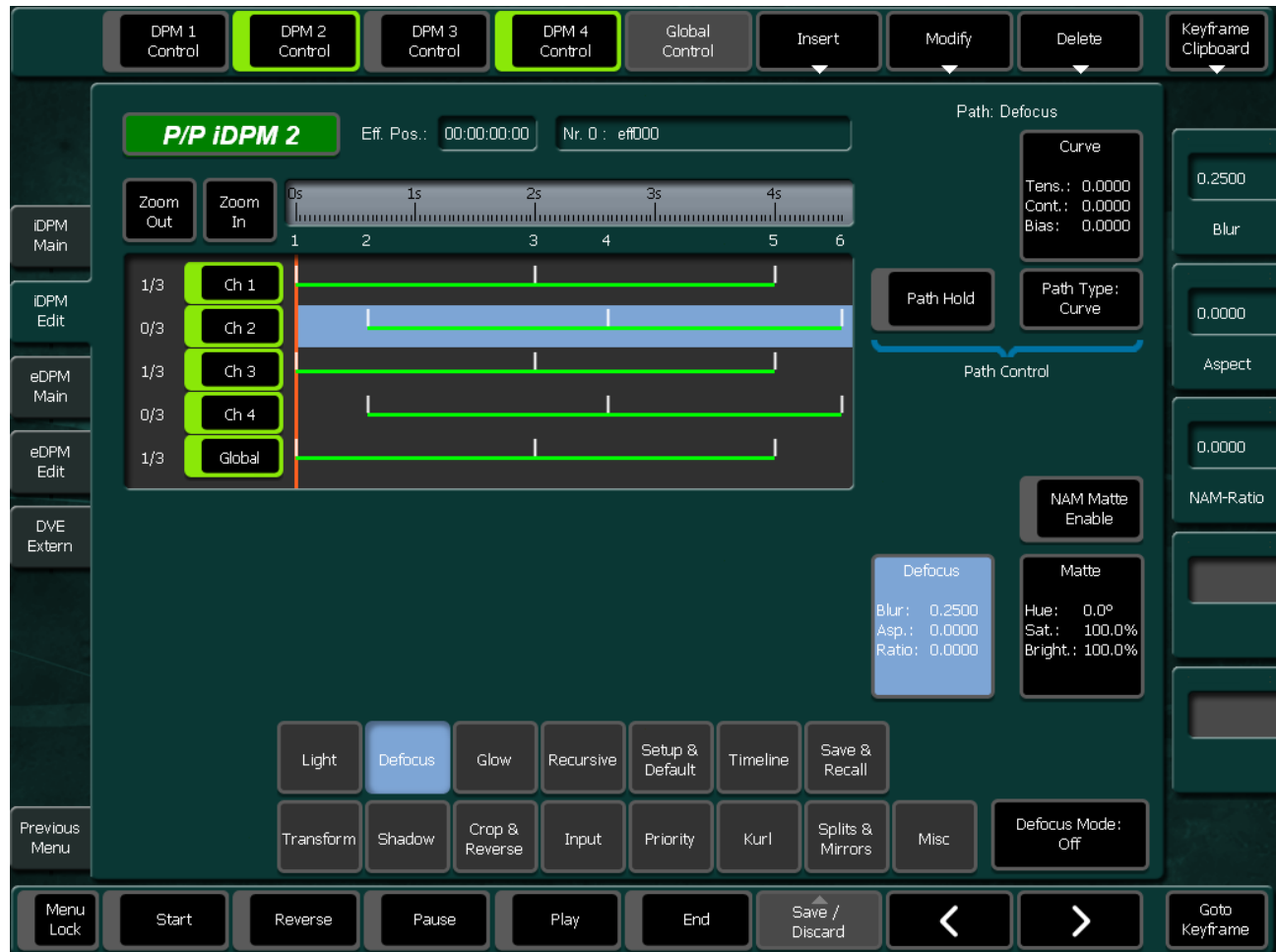
- **Path Control:**  
There are 3 individual path controls available per light per channel:
  - Path **Light Attribute** for parameter groups **Appearance**, **Color**, and **Flare Color**
  - Path **Light Position** for parameter groups **Position** and **Rotation**.
  - Path **Ambient Shading** for **Ambient Shading**.
- To display/control a desired path, select first one of its parameter groups e.g. **Appearance** when you want to control the **Light Attribute** path.

For general behavior of the DPM Edit Menu please see [iDPM Edit Submenu on page 491](#).

For more details on Path Control please refer to [Path Control on page 68](#).

## Defocus Page

Figure 422. Defocus Page



There are three Defocus modes available:

- **Defocus:** Standard defocus mode.
- **Defocus NAM+:** Combines the defocused image with the original image in a non-additive mix mode.
- **Defocus NAM-:** Combines the defocused image with the original image in a non-additive mix mode.
- **Aspect:** Allows to apply the defocus more horizontally or more vertically.
- **Ratio:** Controls the mix amount for **Defocus NAM+** and **Defocus NAM-**.
- **NAM Matte Enable:** Replaces the original image for **Defocus NAM+** and **Defocus NAM-** mix modes.

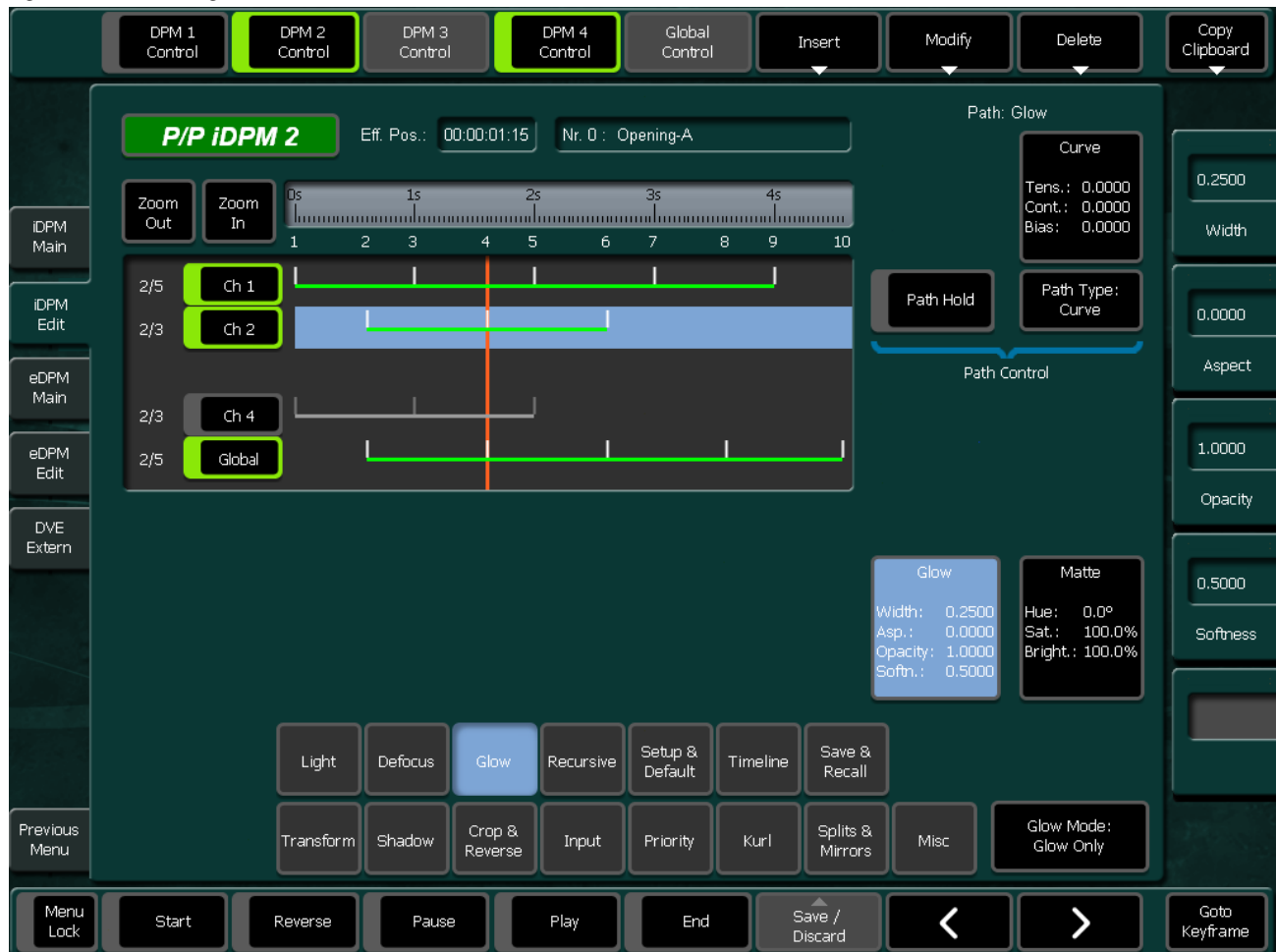
The remaining parameter names are self-explaining.

For general behavior of the DPM Edit Menu please see [iDPM Edit Submenu on page 491](#).

For more details on Path Control please refer to [Path Control on page 68](#).

## Glow Page

Figure 423. Glow Page



There are three **Glow** modes available:

- **Glow:** Standard glow mode, adds a glow e.g. around a caption.
- **Glow Only:** Like **Glow** but replaces the fill signal of the caption by the glow color.
- **Outline:** Like **Glow** but replaces the fill signal of the caption by the background signal.
- **Aspect:** Allows to apply the glow more horizontally or more vertically.

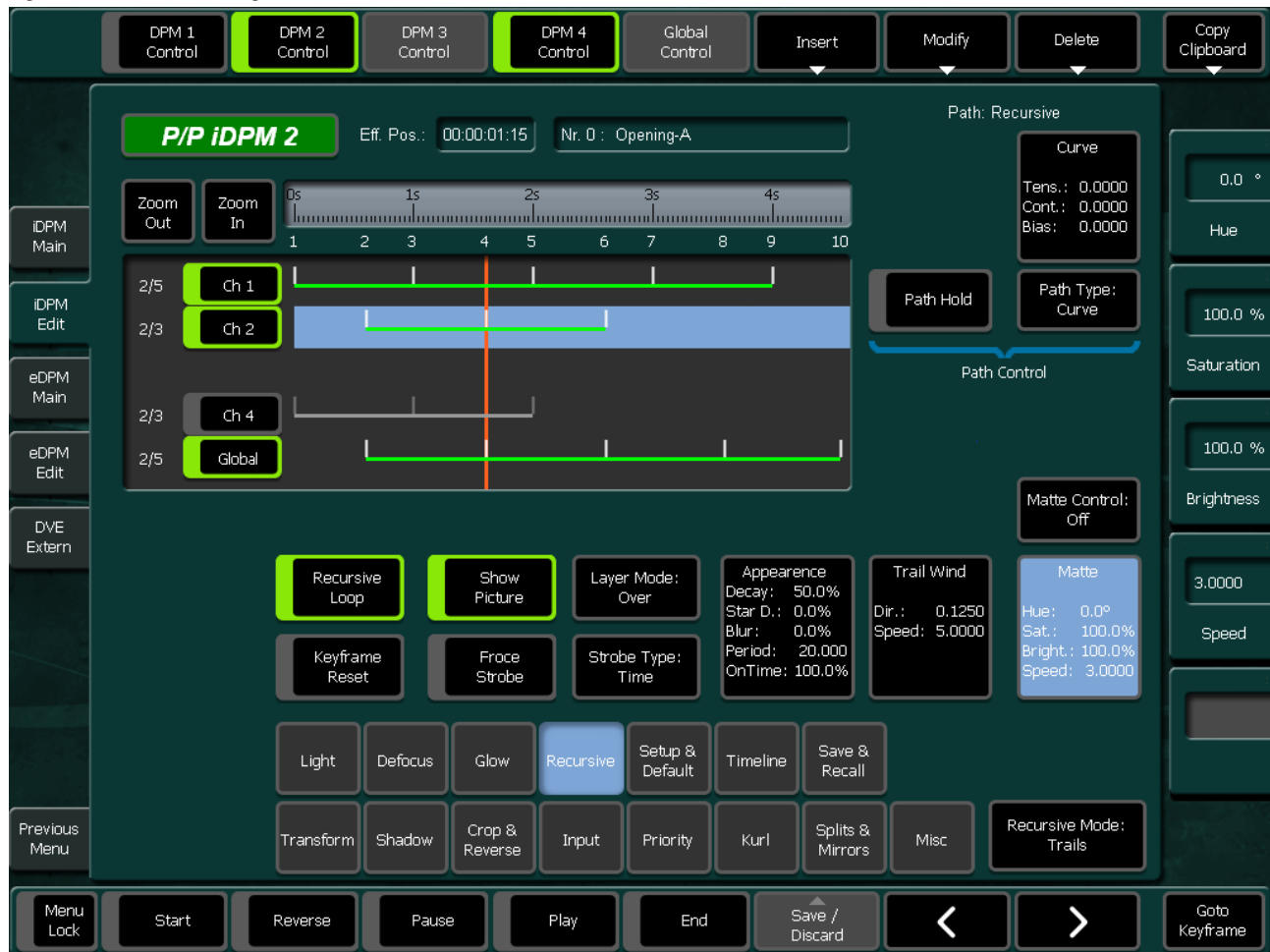
The remaining parameter names are self-explaining.

For general behavior of the DPM Edit Menu please see [iDPM Edit Submenu on page 491](#).

For more details on Path Control please refer to [Path Control on page 68](#).

## Recursive Page

Figure 424. Recursive Page



There are four Recursive modes available:

- **Trails:** Creates trails on an image by using wind to create the displacement.
- **Freeze:** Creates effects like film Look, etc. It generates the image captures in the current location (which can be moved by **Transform**).
- **Montage:** Creates random displaced images.
- **Motion Decay:** Creates motion blur. Motion Decay applies recursive overlay to the motion within the channel image itself.



A recursive strobe action (**Trails, Freeze**, etc.) can start at each keyframe of an effect or triggered after a certain period.

- **Recursive Loop:** Switch on to enable recursive modes.
- **Show Picture:** Continues to show current image when recursive mode is active
- **Layer Mode: Over** causes the recursive images to be superimposed on top of the existing image. **Under** causes them to be added beneath. **Erase** removes image in recursive image area.
- **Keyframe Reset:** Clears the recursive memory. With this operation, all traces of previous recursive images are removed. This can be useful when an effect is rewound.
- **Force Strobe:** When **On**, strobe action take places even when no effect is running. Active for Trails, Freeze, and Montage.
- **Strobe Type:** Controls type of Recursive strobe events. **Time** uses the **Period** as a basis for strobe actions. **Keyframe** uses the keyframes of the channel's running timeline as a trigger for strobe actions
- Parameter group Appearance
  - **Decay:** Rate of image decay
  - **Star Decay:** Rate of random points (star) decay
  - **Blur:** Amount of blur
  - **Period:** Number of fields! between each image capture for the strobe.
  - **On Time:** Amount of time (percentage) that the image is frozen within the period

**Note** When Strobe Type is set to Time the minimum Period should be 3 (fields). Otherwise no recursion will be visible!

**Matte Control** applies matte to the recursively generated image. With **Matte** the image is filled with color as defined by **Hue, Saturation, and Brightness**. With **Rainbow** the recursive image is filled with color having hue that varies by **Speed**.

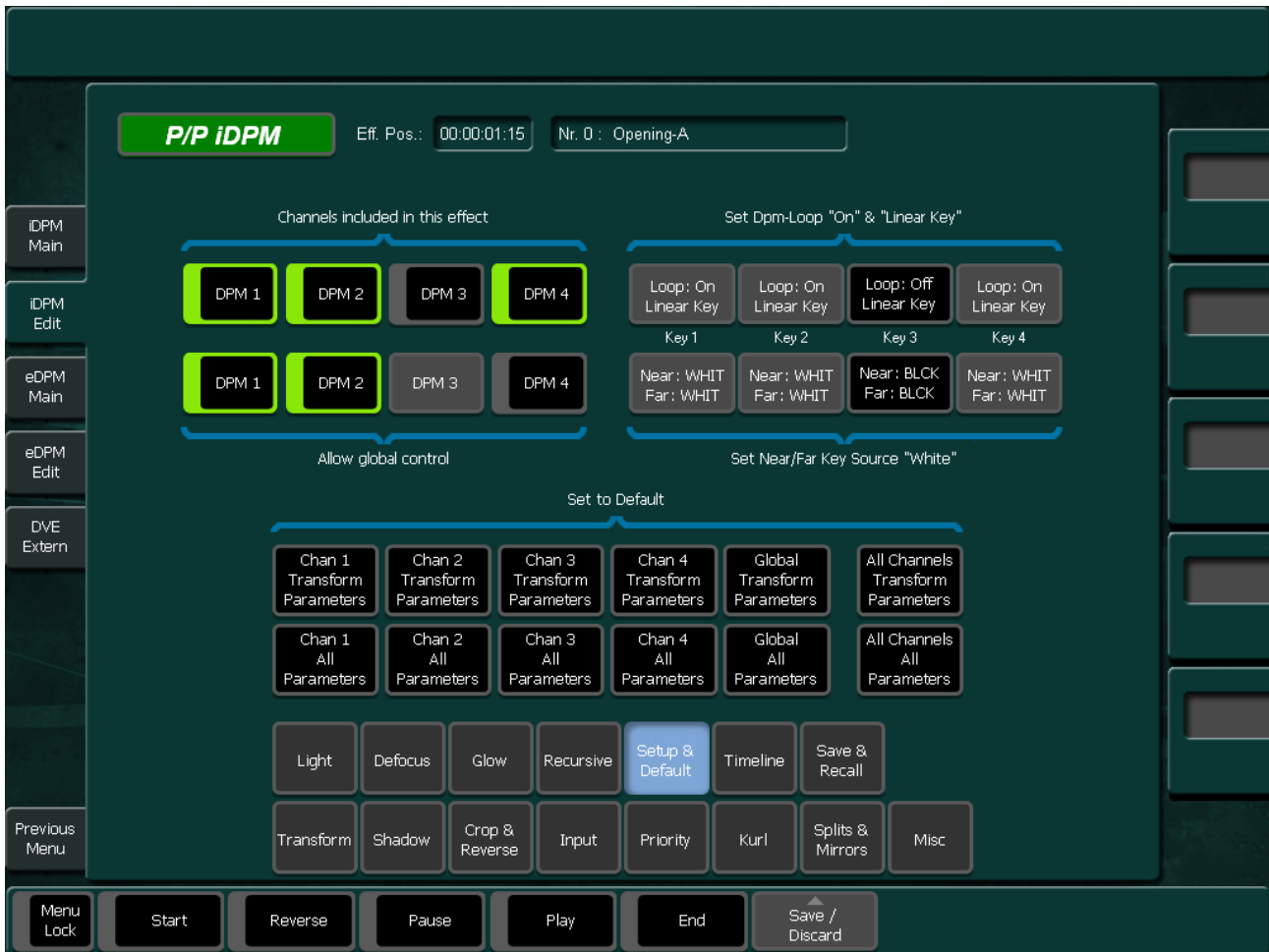
The remaining parameter names are self-explaining.

For general behavior of the DPM Edit Menu please see [iDPM Edit Submenu on page 491](#).

For more details on Path Control please refer to [Path Control on page 68](#).

## Setup &amp; Default Page

Figure 425. Setup &amp; Default Page



When you select **Create New** in the **Save & Recall** subpage, all four DPM channels are enabled by default. The switcher allows you to use the channels independently, that means you can run e.g. channel 1 & 2 in an endless loop while you recall different effects for channel 3 & 4. In order to accomplish this, only channels you need should be included in the effect. Not included channels will not be touched when the effect is recalled.

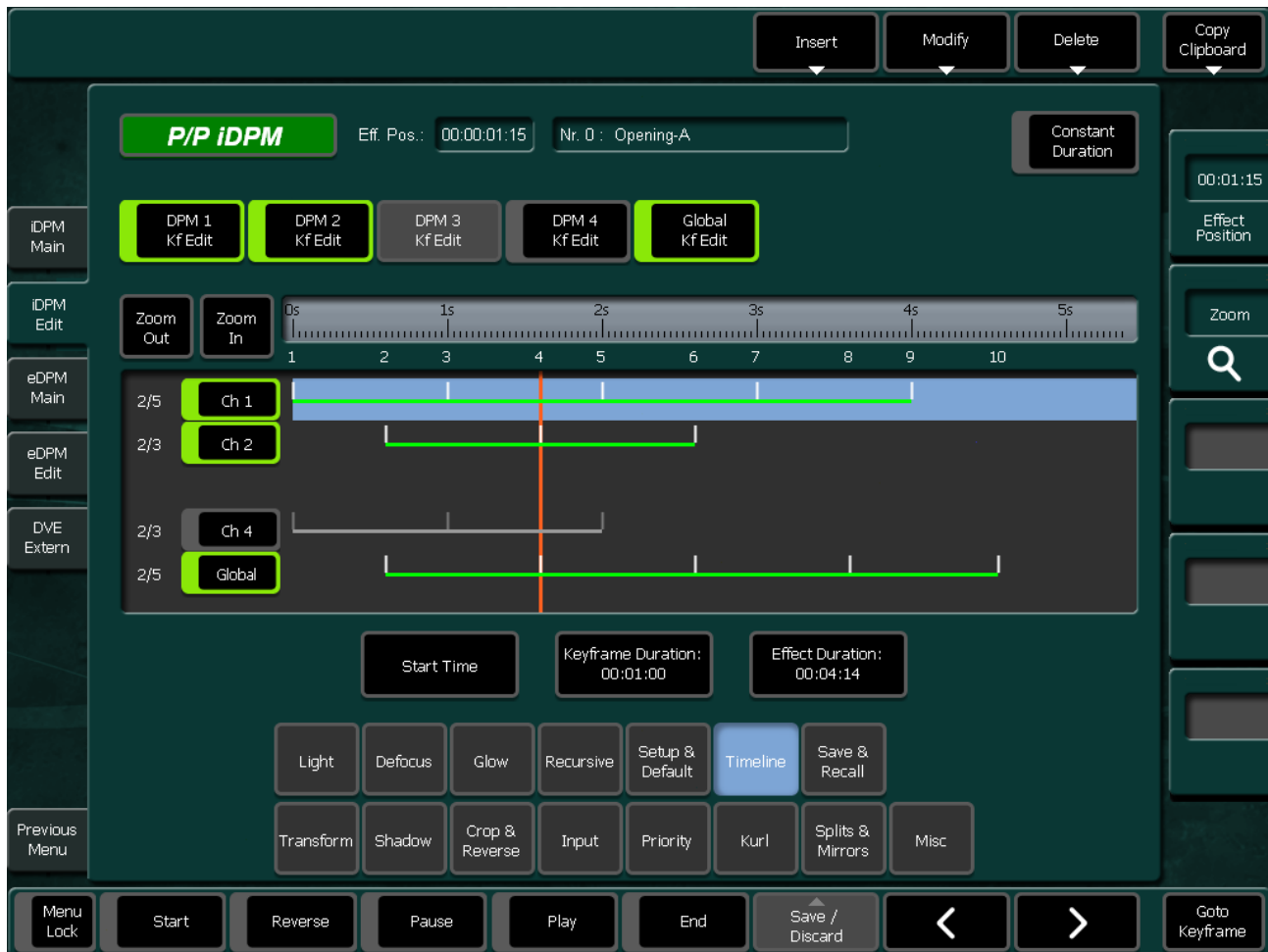
- **Channels included in this effect:** Select the channels needed
- **Allow global control:** Deselect channels you do not want to have controlled by the global channel. When you e.g. build a cube with channel 1-3, but channel 4 is also included in the effect to stay pushed back in the background, you should exclude channel 4 from global control when you rotate your cube. Because this rotation is normally done by global target rotate and otherwise your channel 4 will behave like a satellite orbiting the cube

- **Set to Default:** You can either default the parameters of the Transform subpage only or all parameters of a channel. For a complete start from scratch buttons are added to default all channels by one button press.
- **Set DPM-Loop "On" & "Linear Key":** These buttons display the current state of the (iDPM only) keyers of the according DPM channels. When the buttons are enabled, the state differs from what is normally necessary to key properly. Pressing the buttons enables the **DPM-Loop** of the keyer and sets the key mode to **Linear Key**.
- **Set Near/Far Key Source "White":** When you use the DPM channel to manipulate a full frame image you should key on **White**. Pressing the buttons sets the key source for near and far to **White**.

If you are not familiar with the difference between front/back versus near/far please see [Front and Back, Near and Far on page 64](#).

## Timeline Page

Figure 426. Timeline Page



The Timeline display serves several purposes. In the first place it shows the keyframes/pauses for the according channels and the current cursor position. With **Zoom Out** and **Zoom In** you can adjust the zooming level. Double clicking in the time bar right to the Zoom buttons adjusts the zoom automatically to show all keyframes. The Zoom and the effect position can also be adjusted by digipots.

The channel track buttons **Ch 1-4** and **Global** show which channels are included in this effect and for which channels keyframes will be inserted/modified or deleted. Click on the buttons for selecting/deselecting the channel. A double click deselects all other channels.

The buttons **DPM 1-4 Kf Edit** and **Global Kf Edit** have the same function as the channel track buttons.

The keyframe edit buttons in detail:

- **Insert**
  - **Keyframe Before:** Inserts a keyframe before the current keyframe position.
  - **Keyframe After:** Inserts a keyframe after the current keyframe position.
  - **Pause:** Inserts a pause. A pause can only exist on a keyframe. When you insert a pause while the effect position is between keyframes, a new keyframe is inserted.
  - For the first keyframe Insert **Keyframe Before** or **Insert Keyframe After** can be used.
  
- **Modify**
  - **All Kf's Absolute:** Applies the **result of all changes** you made to your current keyframe to all keyframes in the effect. E.g. you changed in your current keyframe the size parameter from 0.4 to 0.5. This command will change the size of all keyframes to 0.5.
  - **All Kf's Relative:** Applies the **amount of the changes** you made to your current keyframe to all keyframes in the effect. E.g. you changed in your current keyframe the size from 0.4 to 0.5. The amount of change is 0.1. This increment will be added to the size of all other keyframes
  - **Current Keyframe:** Applies the changes you made to your current keyframe. When you press modify while the effect position is not on a keyframe, a new keyframe will be inserted at that position.
  - **Channel Clipboard:** Copies a complete channel to or from the clipboard.
  
- **Delete**
  - **All Kf's:** Deletes all keyframes from all selected channels
  - **Current Keyframe:** Deletes the current keyframe. When the Constant Duration button is On the duration time of the deleted keyframe will be added to the duration time of the previous one, keeping the total effect time constant.
  - With the **Keyframe Clipboard** button you can cut or copy keyframe states to a Clipboard and insert it at a different position of the effect.
  - **Start Time:** Delays the start of the selected channels to the given time.

- **Keyframe Duration:** The keyframe duration for the next keyframe to be inserted. When you want to change the duration of an existing keyframe, go to this keyframe, change the time and confirm by pressing Modify Current Keyframe.
- **Effect Duration:** Changes the total duration for the selected channels. When you want to change the duration of the total effect, make sure all channels, including the global channel are selected.

## Save & Recall Page

Figure 427. Save & Recall Page



100 DPM effects can be stored at position 0 though 99.

- The **Save & Recall** sub-delegation shows you all available effects and allows to either recall an effect in the work buffer (press the **Recall** button or double click the listbox position), or to select a position to create a new effect with the **Create New** button.

**Note** Changes to the work buffer will always be stored at the position of the recalled effect at the position which was selected for Create New.

- The display also shows which channels are included in the effect.
- **Control Priority:** When On, this DPM effect will control the keyer priority, depending on the DPM settings of the keyframes (see [Priority Page on page 500](#)).

- **Sure Touch Mode:** The following modes are available: **Normal** (no Sure Touch), **Converge**, and **Parallel**.  
For more details on Sure Touch please see [Sure Touch on page 77](#).
- **Loop Mode:**
  - **Normal:** Effect runs once from begin to end.
  - **Loop:** Effects runs endless. When the end is reached it jumps to start and plays again.
  - **Bounce:** Plays endless from start to end and then plays reverse from end to start.
- **Lock Effect:** When **On**, no changes are possible for this effect.

**Note** Control Priority, Sure Touch Mode, Loop Mode, Lock Effect, Rename, Delete are buttons which work on the selection in this listbox, independent from the effect currently loaded in the work buffer and are executed immediately

In contrary the **Save / Discard** button indicates changes made to keyframe in the work buffer. When this button is active the changes can be accepted (Save) are discarded.

**Note** When you recall another DPM effect, e.g. by an EMEM or by a macro while Save / Discard is active these changes are automatically accepted and saved before the new effect is

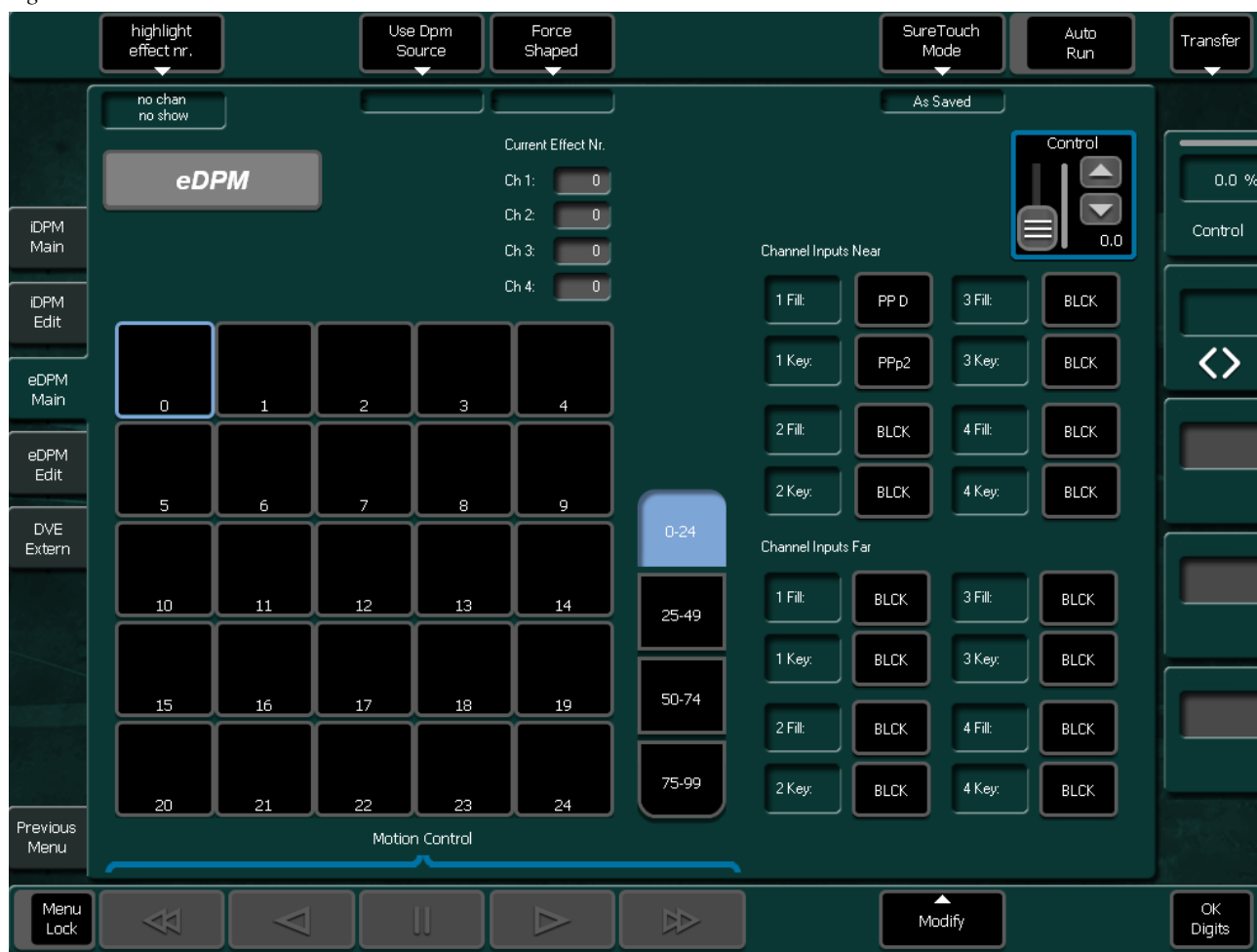


## eDPM Main Submenu

The eDPM menu pages are identical with the iDPM menus described in the sections above. As example, only the eDPM Main menu page and the eDPM Edit menu page are pictured in this section.

Refer to [How to work with eDPM on page 545](#) for operating details.

Figure 428. eDPM Main Menu



The eDPM Main Menu (sidepanel) consists of several sections:

- **Channel Inputs** - displays and enable source selection (Near and Far Side/ Front and Backside) per channel including related Tally information.
- **Effect selection** - (6 x 5 buttons + Page shift **1st, 2nd, 3rd, 4th**) 100 recall buttons for eDPM effects.
- **Current Effect No.** - indicates the loaded eDPM effect per Channel.
- **Motion Command** - executing applicable Motion Commands for selected effect.

### Input Source Selection

Input selection for the 4 FX processor channels, click on the related fields for source selection:

Each channel has a separate source selection for front and back side, which is automatically selected, depending on the rotation angle of the channel and on whether **Use DPM Source** is activated for the corresponding eDPM Channel.

### Effect Selection

The menu contains 25 buttons for eDPM effect selection (in total 100 effects on 4 pages). The bottom section of each button displays the channels used in the corresponding effect. To select an effect, first pre-select it (dark blue border), then press **OK** - or double click any effect directly by mouse and/or touchscreen.

### Current Effect Number

This section shows the selected effect per eDPM channel. This can differ from the last recalled effect, since an effect recall only loads the channels included in the eDPM effect.

**Note** Any channel combination is possible.

### Motion Control Buttons

The selected effect (light blue background) can be controlled by the motion control buttons (**Begin, Reverse, Pause, Play, End**) or by the DPM digipot on the lower right side.

### Function Buttons

- **Highlight Effect No.** - Filtering for Specific Effect Channels and Channel Combinations.
- **DPM Use Source** - Enables or disables eDPM crosspoint recall on selected effect per Channel (per EMEM).
- **Force Shape Mode** - Allows independent settings per Channel in order to compensate for unprocessed Video and Key signals, for example, Character Generator.
- **Sure Touch** - Please refer to iDPM section of the User Manual.
- **Transfer** - Allows transferring entire effects from any iDPM into eDPM.
- **Modify** - Dialog for various operations for example, Cut, Copy, Paste, Rename, Delete etc.

## Highlight Eff Number

This feature is for help to get a quick overview of which channel is used in which effect. This is most important for customers using the eDPM option as multiple single Channel DPM!

The overlay row is special and consists of two parts, which have to be selected independently.

- **no show** - No highlighting.
  - **1 incl.** - Highlight all effects which contain at least one of the selected channels.
  - **all incl.** - Highlight all effects which contain all of the selected channels.
  - **exact** - Highlight all effects which contain exactly the selected channels.
- 
- --- / **chan 1** - Toggle selection channel 1 on/off.
  - --- / **chan 2** - Toggle selection channel 2 on/off.
  - --- / **chan 3** - Toggle selection channel 3 on/off.
  - --- / **chan 4** - Toggle selection channel 4 on/off.
  - --- / **global** - Toggle selection global: on/off.

## Use DPM Source (for Channel 1-4)

If any DPM Channel is enabled for **Use DPM Source**, a loaded DPM effect will recall the crosspoint related to the information formerly saved per Key-frame.

**Note**      The settings for enabling or disabling "Use DPM Source" are EMEM sensitive and can be effected in TiM/EMEMo / Define Memo / eDPM Send Channel 1-4.

## Modify

- **Rename** - Rename selected effect.
- **Cut** - Cut out selected effect into Clipboard.
- **Copy** - Copy selected effect into Clipboard.
- **Paste** - Paste Clipboard into Cursor destination.
- **Swap** - Exchange selected Cursor positions.
- **Undo** - Undo last action (does not recover deleted effect).
- **Delete** - Delete selected effect.
- **Lock** - Enable/Disable write protection/read only.

### **Dialog Buttons**

- **DVE Extern** - Switch to control page for external DVE 1 + 2.
- **eDPM Main** - Switch to the main menu page for internal eDPM
- **eDPM Edit** - Switch to edit page for internal eDPM.
- **iDPM Main** - Switch to the main menu page for internal iDPM.
- **iDPM Edit** - Switch to edit page for internal eDPM.
- **Previous Menu** - Return to the previous menu.

## **eDPM Edit Submenu**

For detail see [iDPM Edit Submenu](#) on page 491

## **Transform**

Editing of eDPM is identical to iDPM. Please see iDPM [Transform Page](#)

## **Shadow**

Editing of eDPM is identical to iDPM. Please see iDPM [Shadow Page](#)

## **Crop & Reverse**

Editing of eDPM is identical to iDPM. Please see iDPM [Crop & Reverse Page](#)



## **Input**

Editing of eDPM is identical to iDPM. Please see iDPM [Input Page](#)

### **Priority**

Editing of eDPM is identical to iDPM. Please see iDPM [Priority Page](#)

## **Kurl**

Editing of eDPM is identical to iDPM. Please see iDPM [Kurl Pages](#)

## **Splits & Mirrors**

Editing of eDPM is identical to iDPM. Please see iDPM [Splits & Mirror Page](#)

**Misc**

Editing of eDPM is identical to iDPM. Please see iDPM [Misc Page](#)

### **Light**

Editing of eDPM is identical to iDPM. Please see iDPM [Light Page](#)

## **Defocus**

Editing of eDPM is identical to iDPM. Please see iDPM [Defocus Page](#)

**Glow**

Editing of eDPM is identical to iDPM. Please see iDPM [Glow Page](#)



## **Recursive**

Editing of eDPM is identical to iDPM. Please see iDPM [Recursive Page](#)

### **Setup & Default**

Editing of eDPM is identical to iDPM. Please see iDPM [Setup & Default Page](#)

## **Timeline**

Editing of eDPM is identical to iDPM. Please see iDPM [Timeline Page](#)

### **Save & Recall**

Editing of eDPM is identical to iDPM. Please see iDPM [Save & Recall Page](#)

## How to work with eDPM

### Definition of Terms

- iDPM - internal Digital Picture Manipulator using M/E resources
- eDPM - expanded (external) Digital Picture Manipulator without using M/E resources

The eDPM (Digital Pixel Manipulator) is a powerful option for the Kayenne XL (HD/SD) 8RU switcher mainframes. It improves the feature set and the value of the switcher significantly for all production purposes. It supports the user of Kayak (HD/SD) to increase the efficiency of productions and investments.

The eDPM is designed to cover the basic effects that are mainly used in day to day productions, including defocus per channel, Warp effects (Page Turns, Rolls, Ripples, etc.), Lightning (4 light sources per Channel), Z-Priority (includes also every possible channel priority setting), Key Channel operations, Recursive Effects, Drop Shadow, etc. Integration of the eDPM into the switcher avoids the requirement of additional space for installation, additional power supply, air-conditioning and additional cabling. No separate inputs or Aux buses are required to feed the DVE. This frees up all I/Os of the switcher for other/additional video signals. Close integration of eDPM control into the user interface of the switcher gives more creative power to the operator and optimizes the efficiency of the users.

## General Information

### eDPM Processor Functions

The eDPM Processor board provides 4 channels Video + Key of DPM with linear effects in 3D space. Every channel handles video and key signals. Sizing, Positioning and Rotation in all 3 axis can be performed, and perspective representation of the images. A combiner function combines the DVE channels on the board in order to not lock or waste Keyers or even entire M/E's for multi channel effects. The combiner also provides Z-priority for the DPM channels. All local DPM channels can be controlled independently or together in any combination. On top of this, a Global Channel provides additional control to any number of selected Local Channels. Examples for multi Channel effects are: multi split screen, double boxes, cubes, etc.

### Video Architecture

The Kayak (HD/SD) internal DPM (DVE) offers a high flexibility in the way it can be controlled. You can control it in the same way like existing external DVEs, that means you can combine up to 4 channels via a combiner and feed it into the switcher via a single video and a single key input.

That means you can combine up to 4 eDPM channels via the combiner and the eDPM Video and Key signals are available at the input matrix (**eD1F - eD4F** = Combined Video, **eD1K - eD4K** = Combined Key). It is also possible to break down the architecture into two 2-Channel eDPMs (any channel combination is possible), each pair with a video and key signal also available at the input matrix. Both pairs can be controlled independently. Each of the 2-channel eDPMs can further be split into two 1-channel eDPMs. So up to 4 individual eDPMs can be controlled independently, for example Background or Key Transitions. Single Channel effects will appear on their designated Video and Key outputs (at the Input Matrix), whereby any combination of Multichannel effects will also combine their related Video and Key outputs (at the Input Matrix).

For more details regarding eDPM signal routing, please refer to [Figure 429 on page 547](#).

The Kayak HD 8 RU mainframe provides an expansion slot that can house a single M/E Board (PN# xxx-6631-xx or xxx-0390-xx). This hardware option can be utilized to provide up to 4 channels of Expansion Video/Key DPM (DVE) known as **eDPM**.

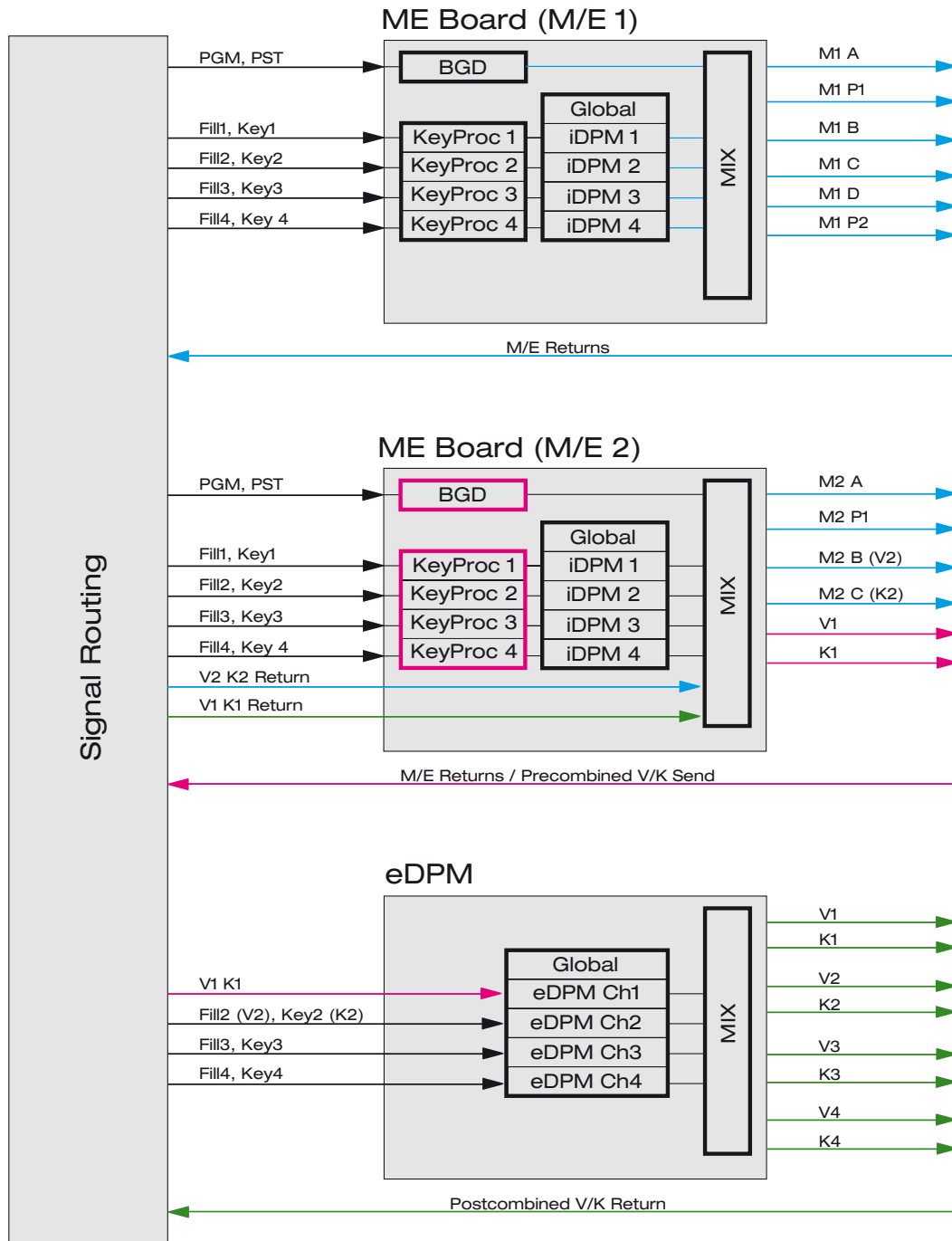
**Note** This option is not available for the 4 RU mainframe version!

## eDPM Advantages

The eDPM has some advantages over the iDPM systems. These advantages include:

- Video/Key combining of channels without the use of any M/E resources.
- The ability to have two separate combiner V/K outputs reentered into the switcher.
- Independent preview of combined channel outputs or channel inputs without the need of M/E resources.
- Separate effect creation and recall controls not associated with M/E functions.
- The portability of effects between systems by using independent effect file systems independent of M/E effects.
- The portability of effects between M/Es by using the eDPM as flexible / routable resource.
- Dedicated Send and Return lines to and from the eDPM.
- The effects features for the eDPM are identical to those available with the Kayak HD iDPM, **Kurl** and **Spektra** options.

Figure 429. Block Diagram eDPM



## Creating a Simple Zoom Effect Using eDPM Channels

Proceed as followed:

1. Set first keyframe = Size 0 %.
2. Set second keyframe = Size 100 % (set all to **Default**).
3. Save effect and rename "Zoom". Effect duration is supposed to be 1 second.
4. Enable eDPM-1 Send signals in **Config - E-Box- M/E**, for example, for M/E1.
5. Activate Return Key 6 in **M/E1 Main** menu.
6. Select for **Transition - eDPM - eDPM1 - Channel-1** in M/E1 Main menu.
7. Re-program a button in the Transition module of M/E1 in order to use it as **Next Transition Type - eDPM1**.
8. Pick two reasonable crosspoints in Program and Preset bus of M/E1 and set Next Transition to Background only, Transition Type = eDPM-1.
9. Now the **Auto** Transition button and the Lever-arm/Fader can be used to control the eDPM-1 Transition.
10. Any duration time in the Transition Module can be entered to run the eDPM-1 effect.
11. Changing the "BGD DVE" between PGM and PST will change the Run-Direction.
12. The created effect also can be used for a keyer transition.
13. Also pre-combined signals can be effected with the eDPM (for example, BGD + Key1 + Key2).

**Note** In order to contain a combination of Keyer1-4 into a pre-combined send signal, then - in terms of priority settings - they have to be next to each other.

## Copying of DPM Channels

This copy feature enable you to copy DPM channels in different modes:

- Copy of DPM channels within an effect.
- Copy of DPM channels between different effects, using the clipboard.



## Copy a Channel Within an Effect

- Go to the **DPM Timeline** menu.
- Press the **Edit Misk** button.
- Press the **Copy Channel** button.

## Copying DPM Channels Between Different Effects

- Go to the **DPM Timeline** menu.
- Press the **Edit Misc** button.
- Press the **Copy Channel** button.
- Select the source channel by pressing **Key 1** to **Key 4** buttons.
- Select the target by pressing **Clipboard**.
- Press the **Copy Channel** button.
- Select the source by pressing the **Clipboard** buttons.
- Select the target channel by pressing the **Chan 1** to **Chan 4** buttons.

## Copy Effects

This feature can be used to copy one or more effects either between switcher levels or between iDPM and eDPM. The **Cut**, **Copy**, **Paste** and **Swap** functions work across iDPM and eDPM.

- Go to the **DPM Timeline** menu. Example: Source level **PP DPM**.
- Select the desired effect to be copied.
- Press the **Edit Misc** button.
- Press **Copy** to copy the effect to the clipboard.
- Select the target position and press **Edit Misc**.
- Press **Paste** to copy the effect from the clipboard to the desired effect position.

## Transfer All Effects

To transfer all effects from a DPM, go to the Timeline menu of the target DPM.

- Press **Edit Misc.**
- Press **Transfer all Effects.**
- Select **DPM** to copy all effects from the directory.

A system warning appears if the target DPM contains effects and one or more register(s) are already used.

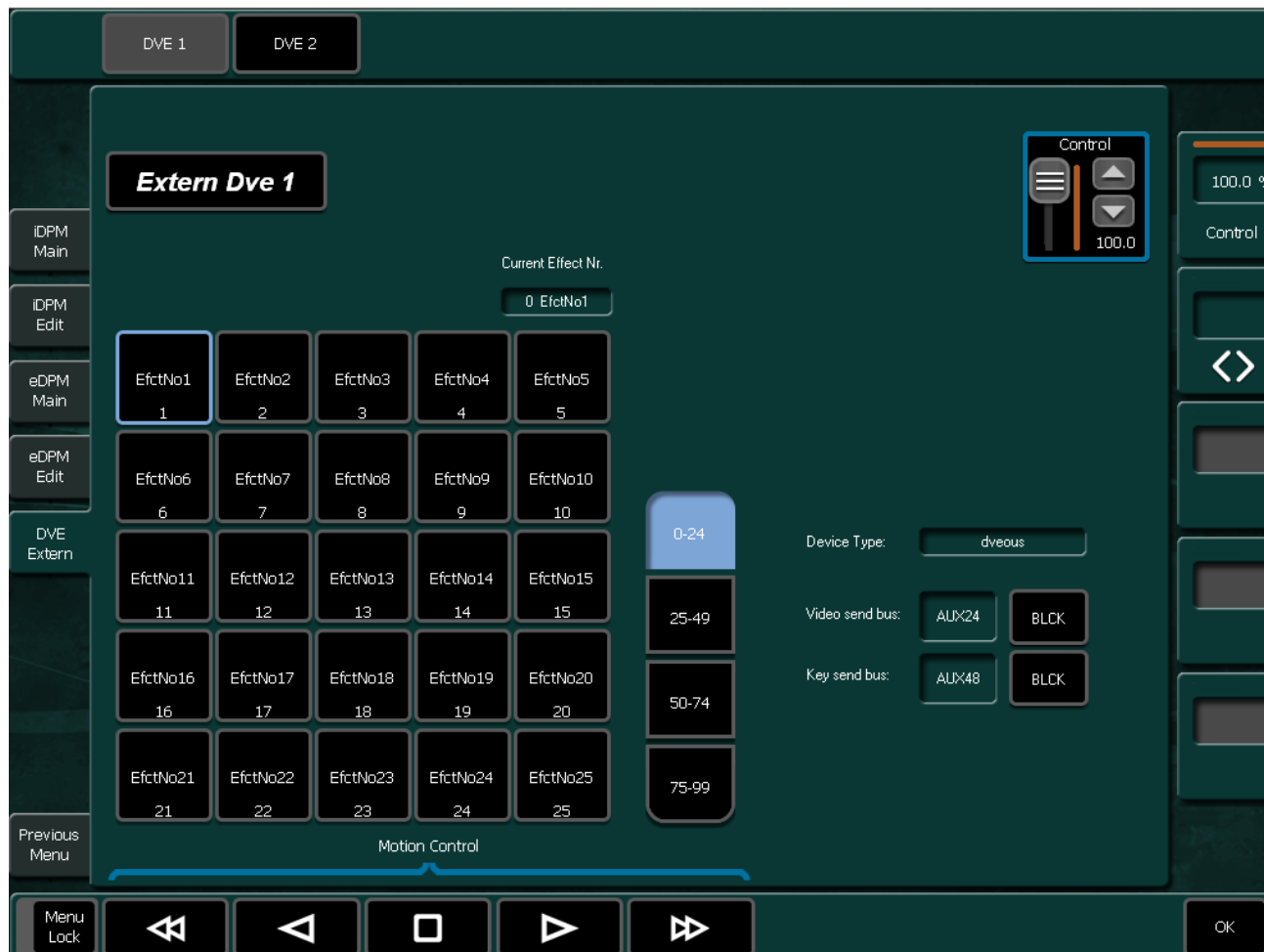
Make your choice to solve the copy conflict:

- **No** - skip the register.
- **Never** - skip all used registers.
- **Yes** - overwrite register.
- **Always** - overwrite all used register.
- **Cancel** - cancel the copy process.

## DVE Extern Submenu

The menu page serves to control an external DVE unit connected to the switcher mainframe. Refer to the DVE Manual for details.

Figure 430. EMEM Select



### DVE1 / DVE2

Selecting the channel of the external DVE.

### Effect Selection

25 buttons for DPM effect selection (in total 100 effects on 4 pages). In the bottom part per button you find an indication of the channels used in the corresponding effect.

To select an effect, first preselect it (dark blue border) then press **OK** or double-click an effect directly. The selected effect (light blue background) can be controlled by the motion control buttons or by the DPM digipot on the right side.

The effect selection can be learned in a macro. Since you can run up to four DPM effects simultaneously, learning motion control commands in macros has to be done carefully.

Pressing the **Play** button while learning a macro, this macro will record a play command for the first channel in the selected effect.

Example:

If the effect contains channel 2, 3, 4 – the macro will record the play command for channel 2. This macro can be used to play any effect containing at least channel 2, because a play command for one of the used channels will play all used channels. So 4 macros is enough to play all effects.

### **Motion Control Buttons**

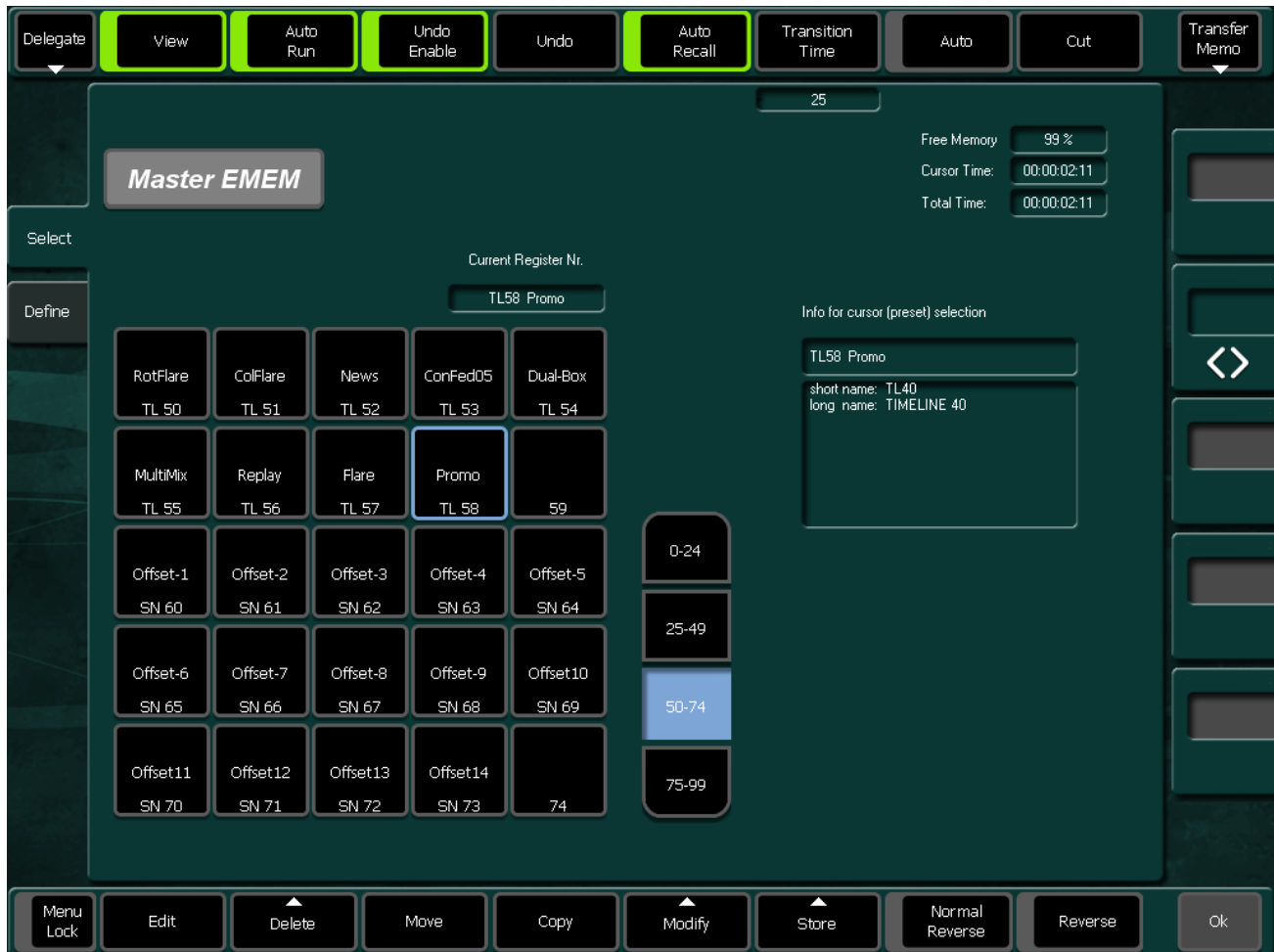
The selected effect (light blue background) can be controlled by the motion control buttons (**Begin, Reverse, Pause, Play, End**) or by the DVE digipot on the lower right side.

# EMEM Menu

## EMEM Select Submenu

The Select menu enables you to directly select the individual register 0 ... 99. The info field on the left side displays the short name, the long name and the text of the register just marked with the cursor frame.

Figure 431. EMEM Select



### Delegate

If this button is pressed, the user can select another EMEM to go to. So it is possible to switch over to the PP, M/E1, M/E2, M/E3 or Master EMEM Select Menu.

**Note** EMEM edit menu: If an M/E is in Edit mode and if the M/E changed with the **Delegate** button to an M/E which is in Select mode, the menu remains in edit mode and vice versa. The M/E cannot be changed with the **EMEM** menu button on the right side of the menu display.

### View

**On:** If you are going to edit a timeline, then you will see the results of your modifications and cursor movement in the video, that is, if a keyframe or snapshot object will be selected, it will be recalled and displayed in the video.

**Off:** If you are going to edit a timeline, then you will not see the results of your modifications and cursor movement in the video, that is, the state of any object and the video will not be affected.

### Auto Run

When Auto Run is switched **off**, the timeline is played completely and only stopped when a **Wait** is inserted into the timeline.

When Auto Run is switched **on**, only the first keyframe of the timeline is recalled, thereafter the timeline is stopped until you continue the timeline with Continue. Subsequently it continues running normally.

### Undo Enable

If this button is pressed, the state before the last recall or timeline play is restored.

### Undo Enable/Disable

For special application, the Undo function can be disabled. If Undo disabled, no undo state is stored before snapshot recalls and playing timelines. Recalling the undo state is therefore not possible. The reason for disabling the Undo feature is that it saves time before snapshot recalls.

### Auto Recall

If this button is pressed, snapshots and timelines will be recalled / played as they were stored or edited, i.e. they will not be filtered through the currently adjusted define memo. The define memo is changed after a snapshot recall / timeline play to that define memo which is implicitly stored within snapshots and timelines. Starts playing a selected timeline immediately.

## Cut

- If snapshot selected: Recall
- If timeline selected: Timeline Play

## Auto

If this button is pressed and a snapshot is selected, a dissolve operation with the Auto transition time for this snapshot will be done. If a timeline is selected and then the **Auto** button is pressed, the selected timeline will be played in the given Auto Time. While the dissolve or auto play operation the button LED is on. Timelines containing endless loops or waiting for an event (GPI, time) can not be played with Auto.

## Time

Pressing this button, enables you to adjust the Auto Time for snapshot dissolves and timeline auto play and the default transition time for key frames in timelines.

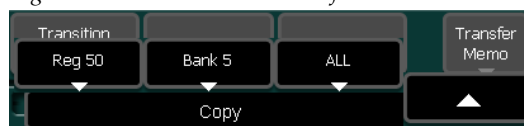
Figure 432. EMEM Select Delegate



## Transfer memo

Pressing this button, enables you to save the contents (snapshot or timeline) of a register (Reg1 .. 99) to a floppy disk (FD) or load data into a register.

Figure 433. EMEM Select Transfer Memo



## Menu Lock

Locks the current menu.

## Edit

Selects the Edit menu and enables the edit function for the register selected with the blue cursor frame. For details refer to the section [EMEM Edit Menu on page 557](#).

## Delete

Deletes the register selected with the blue cursor frame.

### **Move**

Moves a snapshot from one register to another. If the destination register already contains a snapshot or timeline, both register contents will be changed.

### **Rename**

Renames the currently selected register. You can rename the 4, 8 and 20 character names and change the 256 character comment.

### **Store**

Stores the entities currently in Define Memo to the selected (blue cursor frame) register as a snapshot.

### **Modify**

Modifies a stored snapshot related to the currently defined Define Memo. The state of all entities currently enabled in Define Memo will be changed in the selected snapshot to the currently adjusted state, that is, if the border color of a wipe effect has to be changed from red to green in an already stored snapshot, you have to select this snapshot, enable only the wipe in the Define Memo and adjust the mixer to the state where the border color is green. Then press **Modify**. The border color of this wipe now will change in the selected snapshot to green.



## EMEM Edit Menu

The menu appears after clicking the Edit button in the Select menu.

**Note** If the edit mode is activated, the respective Select menu of the EMEM cannot be selected.

### Function Buttons

#### View

**On:** If you are going to edit a timeline, then you will see the results of your modifications and cursor movement in the video, that is, if a keyframe or snapshot object will be selected, it will be recalled and displayed in the video.

**Off:** If you are going to edit a timeline, then you will not see the results of your modifications and cursor movement in the video, that is, the state of any object and the video will not be affected.

#### Delete

Deletes the keyframe marked with the cursor.

### Selecting of the Modify All mode:

#### Modify All / Modify range

If range is selected, the changes refer only to this area, otherwise the changes are carried out in the entire timeline.

#### Simple:

Changes the parameters which can be adjusted with digipots and buttons absolutely on the adjusted value.

#### Advanced:

The following functions change the keyframe contents:

#### Digipots Relative:

Changes the parameters which can be adjusted with the digipots in a relative amount, for example, color, brightness, pattern size, clip level.

#### Digipots:

Changes the parameters which can be adjusted with the digipots absolutely on the adjusted value, for example, color, brightness, pattern size, clip level.

### **Buttons:**

Changes the state of values which can be adjusted with buttons, for example, crosspoints, key modes, wipe pattern, rotation on/off.

### **Exchange Buttons:**

This function changes only values which have a certain value. In order to set this value, first press previously the Set KF Ref button. Then enter the desired new value and press the **Exchange Buttons** button.

### **Example:**

Exchange the circles in the time line by stars.

1. Select wipe pattern no 119 (circle).
2. Press **Set KF Ref**.
3. Select wipe pattern no. 131 (stars).
4. Press **Exchange Buttons**.

The following functions do not change the keyframe contents:

### **Transition → Duration**

Changes all transition times.

### **Transition → Type**

Changes the transition type (Linear / S-Linear).

### **Hold Time**

Changes the hold time of the keyframe.

### **End Edit**

Closes the edit mode and saves the modification.

### **Cancel Edit**

Cancels the edit mode without saving.

### **Left / Right Cursor**

Navigates the cursor inside the timeline.

### **Modify Current**

The parameter listbox appears for the current selected object. If it is a keyframe, the parameter listbox shows the entry Store Keyframe [Yes/No]. The default value depends on whether View On or Off is selected. Store Keyframe [Yes] means that the keyframe data of the object are also stored

when the listbox is closed with OK. This means, there is a simple possibility to change the keyframe data.

- When the listbox is opened, the cursor can be set with the mouse or the digipot to other objects in the timeline. The listbox then shows the state of the currently selected object.
- Double-clicking an object with the mouse opens the listbox in the same way as the button **Modify Current**.

## Mark

This button enables selection of a range in the timeline. If a range is selected, the **Modify All** button changes its display to **Modify Range**. All modifications are performed in the selected range only.

## Insert

Insert an object in a timeline. For details see below.

- **Current:** Inserts a keyframe with the actual settings
- **Stored:** Inserts a stored Snapshot or Sequence. Enter the desired number.
- **Wait:** Inserts a wait object GPI, User, TOD, Hold.
- **Trigger:** Inserts a trigger object GPO, DVE, Machine, Memo, MaKE, PBus.
- **Loop:** Inserts a loop object Begin, End

**Note** To insert a PBus Trigger/Register: Under Insert > Trigger > PBus, a **Trigger PBus** command or a **PBus Register** command can be inserted into the timeline.

## PBus Trigger:

The listbox represents the machines and the meaning of the trigger for the machines.

The first line in the listbox shows the numeric value of the trigger. All machines get the same trigger whose meaning, however, can be different for the individual machines. If the trigger is changed for one machine, in general, the display of the other machines is also changed as well as the numeric value of the trigger.

## PBus Register:

In the first line, that register can be selected which has to be recalled. It shows the machines. For each machine, it can be individually selected whether the recall has to be performed or not.

## Object Overview and Parameter Entry

The following section gives an overview of the objects with their parameters which can be inserted into a timeline.

### **Start:**

Object is always available. Cannot be erased or inserted.

### **Transition:**

Is automatically inserted before keyframe or snapshot.

### **Keyframe:**

When inserting, also the parameters of the associated transition can be indicated.

#### **Parameters:**

- Duration
- Transition Type (linear, s-linear)
- Hold time

### **External Snapshot:**

When inserting, also the parameters of the associated transition can be indicated.

#### **Parameters:**

- Snapshot No.
- Hold time

### **Timeline:**

**Parameter** - Timeline No.

### **Loop Begin:**

The loop can be changed on the Loop Begin as well as on the Loop End symbol.

**Parameter** - Loop count

### **Wait Frames**

**Parameter** - Frames

### **Wait GPI**

**Parameter** - GPI Number

**Loop End**

The loop can be changed on the Loop Begin as well as on the Loop End symbol.

**Parameter** - Loop count

**Wait User**

**Parameter** --

**Wait TOD**

**Parameter** -Time of Day

**Trigger GPO**

**Parameter** - GPIO Number

**Trigger DVE**

**Parameter** - Machine 1

**Commands** - Play, Stop, FFWD, FREW

**Trigger Machine MP**

**Parameter** - Machine 1

**Commands** - Play, Stop, FFWD, FREW, Cue In, Cue Out, Goto, Variable

**Variable Speed** - Only with command **Variable**

**Timecode** - Only with command **Goto**

**Trigger Memo**

**Parameter** - Machine

**Commands** - Play, Stop, FFWD, FREW, Goto, Variable

**Speed** - Only with command **Variable**

**Timecode** - Only with command **Goto**

**Default Register [yes/no]**

**Yes** means that the command is applied to the register just being selected in the EMEM control field. Register No [0 ... 99]

**No** means that the command is applied to the register indicated under the register no.

The parameter is already defined via the overlay menu.

Entry is possible only with certain commands.

**Trigger P-Bus Trigger**

**Parameter** - Trigger Number

**Machine 1** - Recall, No Recall

**Machine 24** - Recall, No Recall

**Trigger P-Bus Register**

**Parameter** - Register Number

**Machine 1** - Recall, No Recall

**Machine 24** - Recall, No Recall

**Trigger MaKE Memo**

**Parameter** - Memo Number

**End**

Object is always available. Cannot be erased or inserted.

Figure 434. EMEM Edit Display Mode Graphic



Figure 435. EMEM Edit Display Mode Mixed Modify Current





Figure 436. EMEM Edit Display Mode Mixed Modify Current Transition Duration

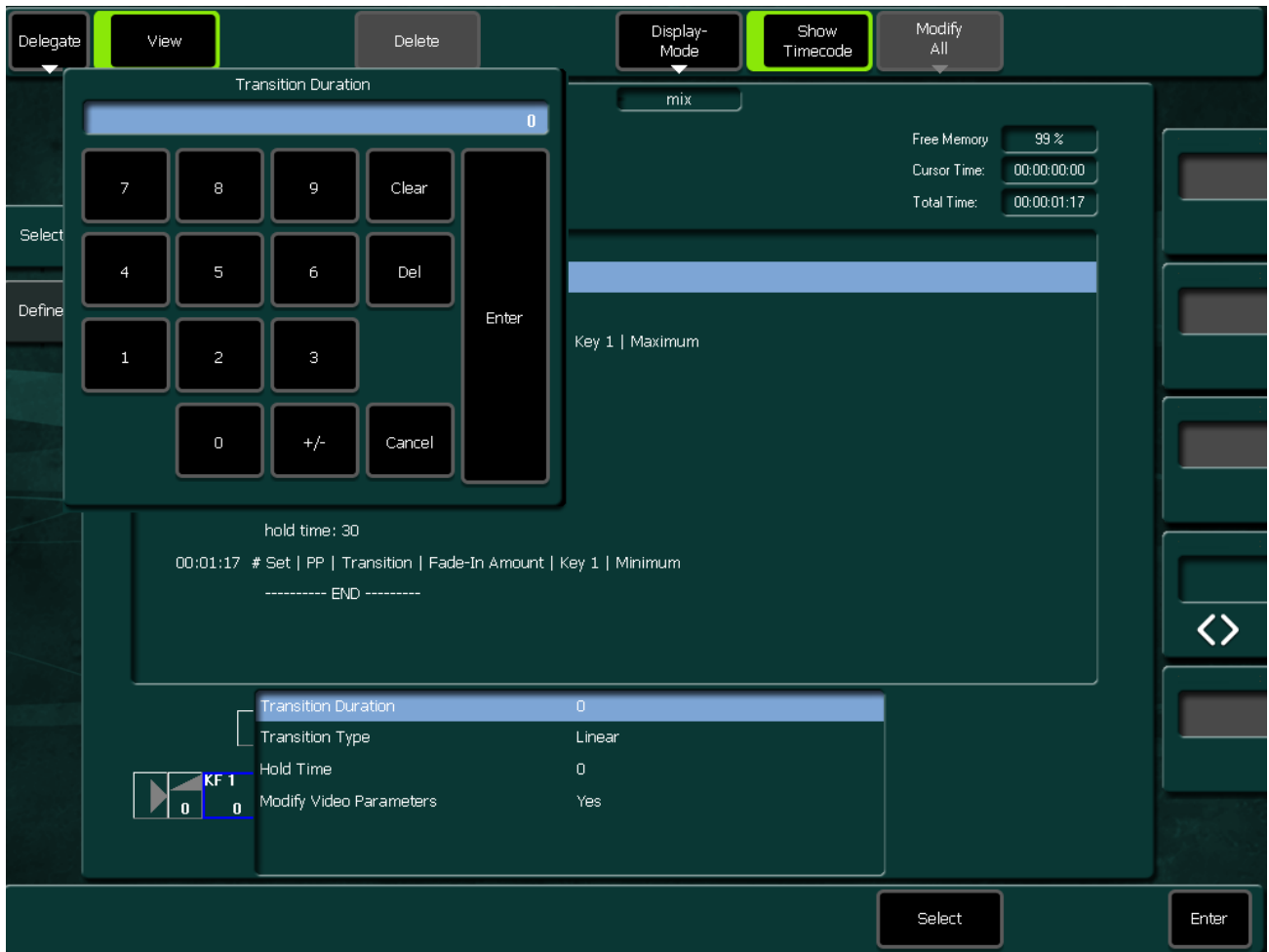


Figure 437. EMEM Edit Display Mode Mixed Modify Current Transition Type

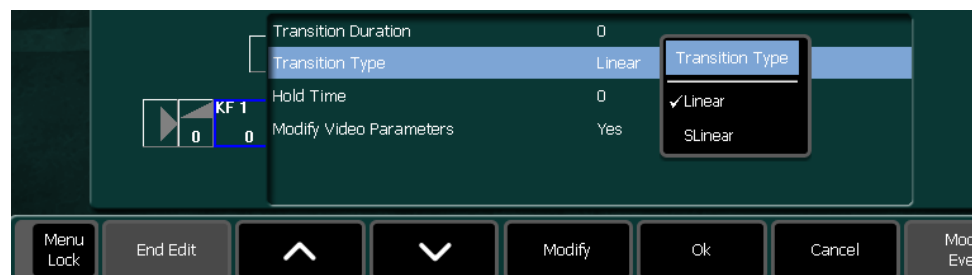


Figure 438. EMEM Edit Display Mode Mixed Modify Hold Time



Figure 439. EMEM Edit Display Mode Text



Figure 440. EMEM Edit Insert Loop



Figure 441. EMEM Edit Insert Loop Execution Count

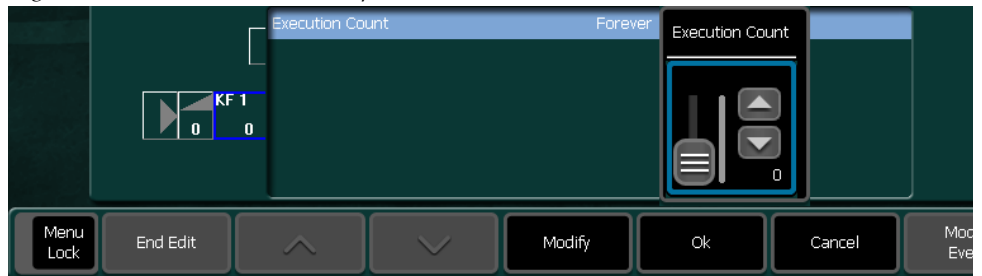


Figure 442. EMEM Edit Insert Stored



Figure 443. EMEM Edit Insert Trigger

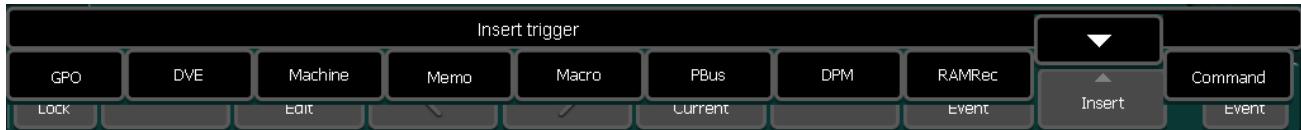


Figure 444. EMEM Edit Insert Trigger DPM

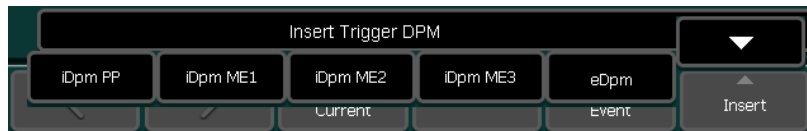


Figure 445. EMEM Edit Insert Trigger DPM Command



Figure 446. EMEM Edit Insert Trigger DVE



Figure 447. EMEM Edit Insert Trigger DVE Command



Figure 448. EMEM Edit Insert Trigger Event



Figure 449. EMEM Edit Insert Trigger GPO



Figure 450. EMEM Edit Insert Trigger Machine



Figure 451. EMEM Edit Insert Trigger Machine Command

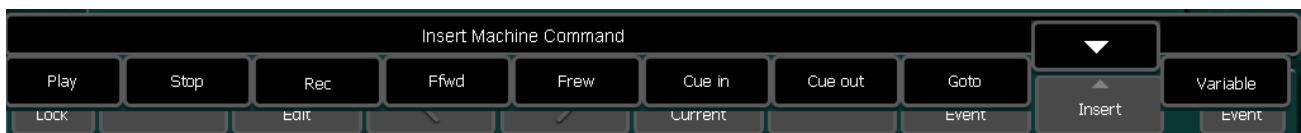


Figure 452. EMEM Edit Insert Trigger Macro



Figure 453. EMEM Edit Insert Trigger Macro Number





Figure 454. EMEM Edit Insert Trigger Make



Figure 455. EMEM Edit Insert Trigger Memo



Figure 456. EMEM Edit Insert Trigger Memo Command



Figure 457. EMEM Edit Insert Trigger Pbus

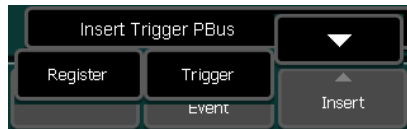


Figure 458. EMEM Edit Insert Trigger Pbus Register



Figure 459. EMEM Edit Insert Trigger Pbus Register



Figure 460. EMEM Edit Insert Trigger RAM Rec



Figure 461. EMEM Edit Insert Trigger RAM Rec Command

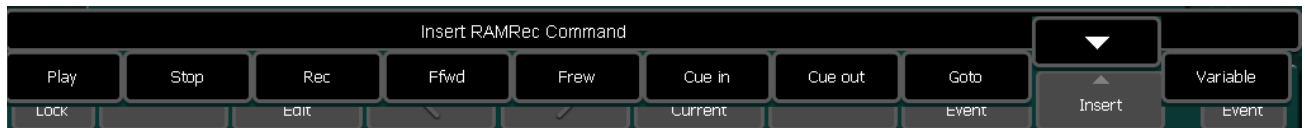


Figure 462. EMEM Edit Insert Wait



Figure 463. EMEM Edit Insert Modify All

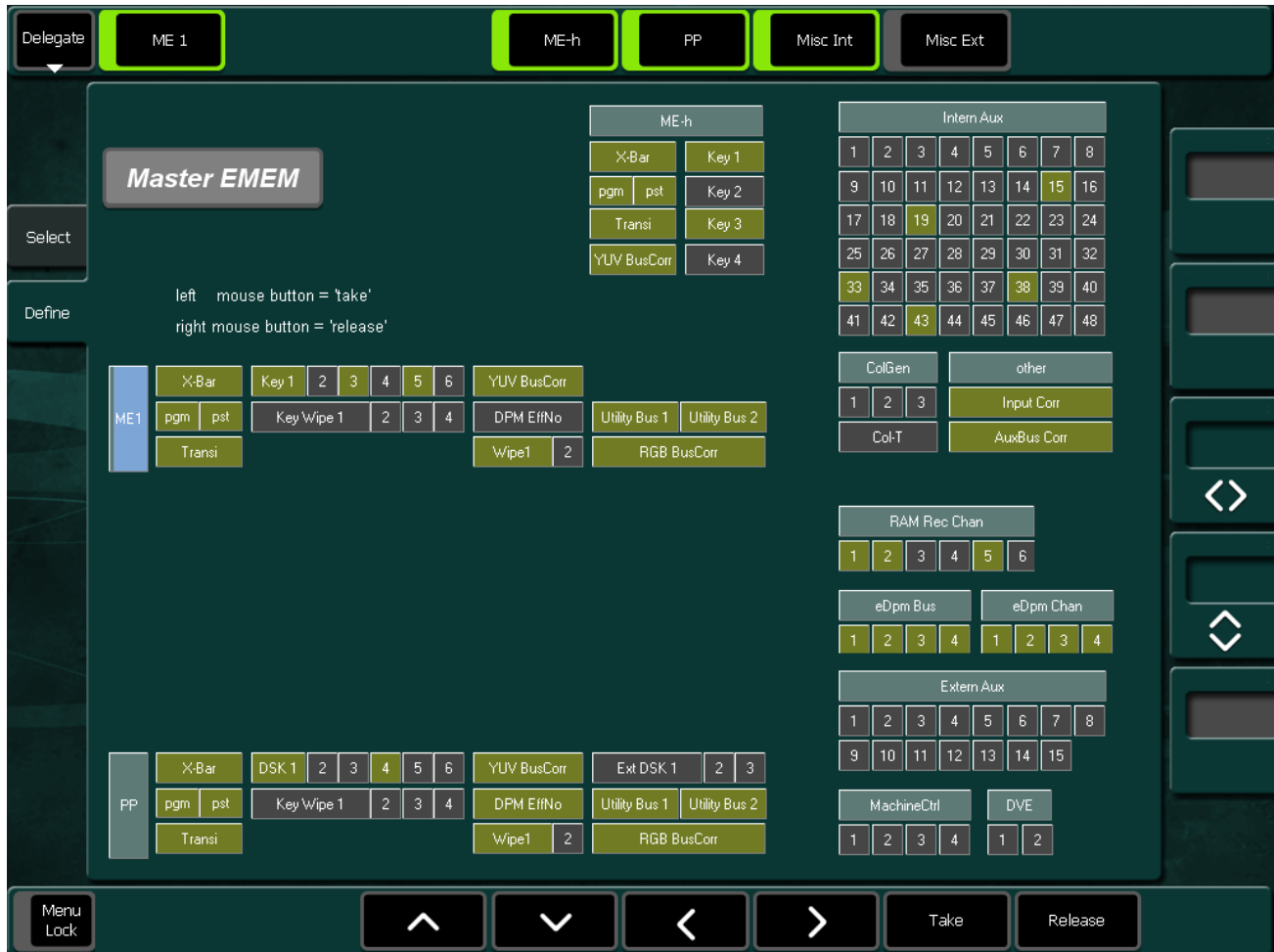


Figure 464. EMEM Edit Insert Modify All Advanced



## EMEM Define Submenu

Figure 465. EMEM Define



The menu indicates which switcher resources are stored in snapshots and timelines.

For this purpose, a symbolic representation of the switcher appears in the menu

- **Blue:** Cursor position
- **Yellow:** Selectable switcher functions
- **Green:** Selected Switcher functions

**Note** Resource conflicts are possible. In the Define Memo menus of the M/E1..3 EMEM all resources not belonging to that M/E are “released” for default.

The X-Bar object in the menu Define Memo got the sub-entries `pgm` and `pst`. Thus, PGM sources and PST sources can be selected individually. The states of both are stored but only the activated bus will be recalled.

Example:

If PGM is disabled during Recall, the PGM row of the selected M/E is not affected by the snapshot recall (or timeline).

It is not recommended to disable only one bus (PGM or PST) during Recall, in case of timelines that are including background transitions.

Figure 466. EMEM Define Delegate



# 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 the M/E 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 the M/E.

## 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 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 on page 583](#).

## 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 on page 581](#).

## 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 (Wipe1 + 2)

A wipe pattern generator with additional capabilities (for example, matrix wipes).

## Component Video

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 on page 583](#).

## Crosspoint

An electronic switch, usually controlled by a button on the panel, that enable video or audio to pass when the switch is closed.

## Cut

An instantaneous switch from one picture to another. Switching circuitry enable 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, Positioner) 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 on page 583](#).

## DPOP (Double Press Open)

Pressing a control panel button twice rapidly to open a related menu or submenu. This does not work if **Menu Lock** is turned on.

## 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 EMEM effects memory system.

## Effect Transition

Recalling an EMEM 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.

## EMEM Effects Memory

A feature that permits control panel setups to be stored for later recall.

## Engineering Setups (Installation)

On the Kayak HD system, a collection of settings that establishes an essential baseline for system operation and integrates the 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.

**Flip-Flop**

A transition where the sources selected on the background buses (for example, preset and program) of an M/E 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 (GP)**

An interface that enable limited remote control of some of a device's functions.

**GPI**

General Purpose Interface Input

**GPO**

General Purpose Interface Output

**General Purpose Interface (GPO)**

An interface that enable 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.

**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.

**Positioner**

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 enable use of a wipe pattern generator to prevent some undesirable portions of the key cut signal from cutting holes in the background video.

### **Key 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.

### **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. See [Snapshot on page 584](#).

### **Linear Key**

A Luminance key with a special parameter Setting: gain 100%, Clip 50%.

### **Look Ahead Preview**

Video that shows the result of the currently setup next transition.

### **Looping, Loop-Through**

An input that includes two connectors. One connector accepts the input signal, and the other connector is used as an output for connecting the input signal to another piece of equipment. On Kayenne XL Package , 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 on page 582](#).

### **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.

### **M/E**

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 related to the state of the control signal.

**Object**

An individual 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.

**Profile**

Model name of a Thomson Grass Valley 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 the M/E 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 on page 582](#).

**Program Bus**

A row of source buttons used to select the source for the current output of the M/E. 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.

**RamRecorder**

A device that captures, saves, and outputs a still video image or in some cases motion video clips. On the Kayak HD system the RamRecorder option can capture still images, motion video, and animation for playback. The RamRecorder is also referred to as a Still Store.

**Recall**

To restore a previous panel setup that has been learned using EMEM.

**Reclocking**

The process of clocking the data with a re-generated 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.

## Serial Digital Video

Passing video data bits in serial form (one bit after another), along a single wire.

## Serial Interface

An interface which enable 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.

## Snapshot

An EMEM with only one keyframe.

## 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.

## SPOP (Single Press Open)

Automatically opening a related menu when a control panel button is pressed.

## Stack

See [Key Priority](#) on page 582

## Still Store

A device that captures, saves, and outputs a still video image. On the Kayak HD system the RamRecorder option is a still store with additional capabilities, including animation.

## Store (Learn)

To save a panel setup using EMEM.

## 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.

**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.



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