

Reference

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KRYSTAL 4300
DIGITAL PICTURE MANIPULATOR

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Contents

Preface

About This Manual	xi
Documentation Set	xi
Conventions Used In This Manual	xii
Button References	xii
Menu Display References	xii

Section 1 — System Overview

General Description	1-1
Standard Option Package Features	1-1
Fully Optioned Channel Packages	1-2
Optional Features	1-3
Feature Packaging Changes	1-3
Physical Description	1-3
Major Components	1-3
System Control	1-8
Control Panel	1-8
Video Processor Frame	1-10
System Controller Frame	1-12
Large System Controller	1-12
Small System Controller	1-14
Module Descriptions	1-15
Module and Mezzanine Part Numbers	1-17
Facility Examples	1-18
Single Channel Krystal Facility	1-18
Two Channel, Two User Krystal Facility	1-20
Eight Channel Four User Krystal Facility	1-22
Integrated Model 2200-2i Switcher	1-23

Section 2 — Controls

Introduction	2-1
Control Panel	2-1
Upper Panel Area	2-2
Lower Panel Area	2-2
Menu Display	2-3
Soft Buttons	2-4
Exit Button	2-4
Soft Knob And Transfer Buttons	2-5

Illuminated Button Tally Information	2-5
Double-Press Functions	2-6
DPOP Functions	2-7
Top Menus	2-7
System Setup	2-7
User Tools	2-7
File Operations	2-8
Macro	2-8
Run Control	2-8
Picture	2-8
Picture Frame Menu	2-8
Key/Stencil Menu	2-8
View Menu	2-8
Input/Output Menu	2-8
User Assist Area	2-9
Macro/Enable/Deleg Area	2-10
Macro Buttons	2-10
Channel Enable Buttons	2-10
Channel Delegation Buttons	2-11
Clipboard Operations Area	2-11
Effect Edit Area	2-13
Keypad	2-15
Numeric Entry	2-15
Transfer Buttons	2-15
E-MEM Area	2-16
Mode Area	2-17
Override Area	2-17
Run Area	2-18
Lever Arm	2-18
Bar Graph Indicator	2-18
Transform Area	2-20
Joystick	2-22
Turbo Button	2-22
Floppy Disk Drive	2-25

Section 3 — System Setup Menu

Introduction	3-1
Resource Acquisition Menu	3-2
Effect Manager Resource Acquisition	3-2
Channel Resource Acquisition	3-3
External Control Preferences Menu	3-4
Serial Ports Preferences	3-4
GPI Preferences	3-5
Defaults Preferences	3-7
Run Preferences Menu	3-8
Panel Configuration Menu	3-9
System Configuration Menu	3-10

Section 4 — User Tools Menu

Introduction	4-1
--------------------	-----

Source Memory Menu	4-2
Work Buffer Preferences Menu	4-4
Display Options Menu	4-6
Panel Preferences Menu	4-7
Edit Enable Function.	4-8

Section 5 — File Operations/Macro Menus

Introduction	5-1
File Operations Menu	5-1
Saving and Loading Files	5-1
Disk Manager Menu	5-4
Register Operations Menu	5-5
Copy	5-5
Swap	5-6
Erase	5-6
Append	5-6
Move	5-7
Channel Operations Menu	5-8
Copy	5-8
Swap	5-9
Delete	5-10
Move	5-10
Name Effect	5-11
Macro Control Menu	5-12
Macro Record	5-12
Macro Play	5-13

Section 6 — Run Control Menu

Introduction	6-1
Path Control Menu	6-2
Transformation Path Control Menus	6-4
All Transform Paths Menu	6-6
Spin Path Control Menu	6-7
Non-Transformation Path Control Menus.	6-8
Matte Path Control Menus	6-9
Multiple Parameter Path Menus	6-10
Pause Control Menu	6-11
Loop Control Menu	6-12

Section 7 — Picture Menu

Introduction	7-1
Pseudo Color Menu	7-2
Color Correction	7-3
Posterization/Solarization Appearance.	7-5
Color Modulation/Appearance	7-6
Hue Modulation/Appearance.	7-7
Pseudo Color Mask	7-8
Pseudo Color Path Menu	7-9
Picture Opacity Menu.	7-10

Final Picture Opacity	7-10
Picture Opacity Path Menu	7-11
Defocus/Glow Menu	7-12
Defocus/Appearance	7-13
Defocus/NAM	7-14
Defocus/Boundary Replicate	7-15
Defocus/Key Adjust	7-16
Defocus/Mask	7-17
Glow/Appearance	7-18
Glow/Matte	7-19
Defocus/Glow Path Menu	7-20
Mosaic Menu	7-21
Mosaic Path Menu	7-22
Input Recursive Menu	7-23
Freeze/Appearance	7-24
Motion Decay/Appearance	7-25
Timing	7-26
Mask	7-27
Input Recursive Path Menu	7-27
Output Recursive Menu	7-28
Freeze/Appearance	7-29
Freeze/Timing	7-30
Motion Decay/Appearance	7-30
Motion Decay/Timing	7-30
Montage/Strobe	7-31
Montage/Appearance	7-32
Montage/Timing	7-33
Trails/Strobe	7-33
Trails/Appearance	7-34
Trails/Timing	7-35
Trails/Wind	7-35
Timing	7-36
Output Recursive Path Menu	7-37
Hard Freeze Menu	7-37

Section 8 — Picture Frame Menu

Introduction	8-1
Crop Menu	8-2
Box/Position	8-3
Box/Appearance	8-4
Box/Mix	8-5
Pattern/Selection	8-6
Pattern/Position	8-7
Pattern/Appearance	8-8
Pattern/Crop/Mix	8-9
Crop Path Menu	8-9
Border Menu	8-10
Box/Flat/Width	8-10
Box/Flat/Appearance	8-12
Box/Flat/Matte	8-13
Box/Flat/Mix	8-14
Box/Wash/Width	8-15

Box/Wash/Softness	8-16
Box/Wash/Appearance	8-17
Box/Wash In, Out/Matte	8-18
Box/Wash/Mix	8-19
Pattern/Flat/Pattern	8-21
Pattern/Flat/Appearance	8-22
Pattern/Flat/Matte	8-23
Pattern/Flat/Mix	8-23
Pattern/Wash	8-24
Border Path Menu	8-24
Kurl Menu	8-25
Page Turn	8-25
Page Roll	8-27
Ripple	8-28
Ripple Modulation	8-29
Ripple Position	8-30
Ripple Pattern	8-31
Slits	8-32
Slits Modulation	8-33
Slits Position	8-34
Slits Pattern	8-35
Sphere	8-36
Position Modulation	8-37
Pos Mod Horiz/Vert Position	8-37
Pos Mod Pattern	8-38
Size Modulation	8-39
Size Modulation Pattern	8-39
Rings	8-40
Rings Radius	8-40
Rings Position	8-41
Splash	8-42
Requirements	8-42
Functions	8-42
Kurl Path Menu	8-43
Splits Menu	8-44
Split Separation	8-44
Axis Position	8-45
Mirror	8-45
Corner Pinning Menu	8-46
Corner Pinning Path Menu	8-47

Section 9 — Key/Stencil Menu

Introduction	9-1
Keyer Setup Menu	9-2
External Keyer Appearance	9-3
External Keyer Key Mix	9-4
Self Key Appearance	9-5
Self Key Mix	9-6
Keyer Path Menu	9-7
Coring Menu	9-8
Coring Path Menu	9-9
Adjust Mask Menu	9-10

Internal Mask Pattern	9-10
Internal Mask Position	9-11
Internal Mask Appearance	9-12
Internal Mask, Mask Mix	9-13
External Mask Appearance	9-14
External Mask Mix	9-15
Mask Path Menus	9-16
Drop Shadow Menu	9-17
Appearance	9-17
Matte	9-18
Drop Shadow Path Menu	9-19
Emboss Menu	9-20
Appearance	9-20
Matte	9-21
Emboss Matte Mono	9-21
Emboss Matte Outline	9-22
Emboss Adjustable Matte	9-23
Emboss Path Menu	9-24

Section 10 — View Menu

Introduction	10-1
Lighting Menu	10-2
Highlight	10-3
Shade 2	10-5
Shade 1	10-7
Matte	10-7
Lighting Path Menu	10-9
Perspective Enhance Menu	10-10
Dim and Fade	10-10
Perspective Enhance Path Menu	10-11
Perspective Blur Menu	10-12
Perspective Blur Path Menu	10-13
Perspective Clip Menu	10-14
Axis Lock Menu	10-15
Easy Cube Menu	10-16
Using Easy Cube	10-16
Easy Cube Invert and Horiz/Vert Reverse	10-17

Section 11 — Input/Output Menu

Introduction	11-1
Source Select Menu	11-3
Delegating the Front and Back Sides	11-4
Switcher Effects Send and Krystal Source Selection	11-5
Matte Fill Menu	11-6
Matte Fill Path Menu	11-7
Horiz/Vert Reverse Menu	11-8
Motion Detection Menu	11-9
Enhanced Video Option	11-12
Output Control Menu	11-13
Global Assignment Menu	11-14

Background Menu	11-15
Wash Matte 1 and Matte 2	11-16
Wash Background Path Menu	11-16
Combiner Menus	11-17
4 Channel Combiner Control Menu	11-17
Combining	11-18
Channel	11-20
Outputs	11-21
Input	11-23
2 x 2 Combiner Menu	11-24
Combiner Background Menu	11-28
4 Channel Combiner Background	11-28
2 x 2 Combiner Background	11-29
Combiner Path Menus	11-30
4 Channel Combiner Path	11-30
2 x 2 Combiner Path	11-31
Combiner Background Path Menus	11-31
4 Channel Combiner Background Path	11-32
2 x 2 Combiner Background Path	11-32

Section 12 — User Assist Menus

Introduction	12-1
Timeline	12-1
Master Timeline	12-2
Independent Timelines	12-5
Transform	12-7
Clipboard Display	12-8
Graphic Display	12-9

Section 13 — Menu Trees

Introduction	13-1
Control Panel Buttons	13-1
Soft Buttons	13-1
System Setup	13-2
System Configuration Menu	13-3
Suite Configuration Menu	13-4
User Tools	13-5
File Operations	13-6
Macro	13-7
Run Control	13-7
Picture	13-8
Pseudo Color, Picture Opacity Menus	13-8
Defocus/Glow Menu	13-9
Mosaic, Hard Freeze Menus	13-10
Input Recursive Menu	13-11
Output Recursive Menu	13-12
Picture Frame	13-13
Crop Menu	13-13
Border Menus, Flat Matte	13-14
Border Menus, Wash Matte	13-15

- Kurl Menu 13-16
- Splits, Corner Pinning Menus 13-17
- Key /Stencil 13-18
 - Keyer Setup, Coring, Adjust Mask Menus 13-18
 - Drop Shadow, Emboss Menus 13-19
- View 13-20
- Input/Output 13-21
 - Source Select – Global Assign Menus 13-21
 - Background, Combiner Background Menus 13-22
 - Combiner Control Menus 13-23
- Path..... 13-24
 - Path Control Menu 13-24
 - Path Function Menus 13-25

Glossary

Index

Preface

About This Manual

This *Krystal 4300 Reference Manual* provides concise, comprehensive information for operating the Grass Valley Model 4300 Krystal Digital Picture Manipulator (DPM). This manual is useful to both the beginning and advanced user.

Documentation Set

The standard Krystal DPM user documentation set consists of:

- Reference Manual
- User Manual
- Installation and Service Manual
- Release Notes

The *Krystal 4300 Reference Manual* lists and briefly describes all the Krystal Control Panel functions and menu selections. Use this manual for reference if you have questions about system operation.

The *Krystal User Manual* contains background information about the Krystal DPM system, and describes procedures for some commonly encountered operating tasks. This manual can be used when first learning about the Krystal system, and for enhancing your basic knowledge of the system.

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

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

Conventions Used In This Manual

The following graphical and typestyle conventions are used throughout this manual.

Button References



Control Panel buttons are illustrated as shown.

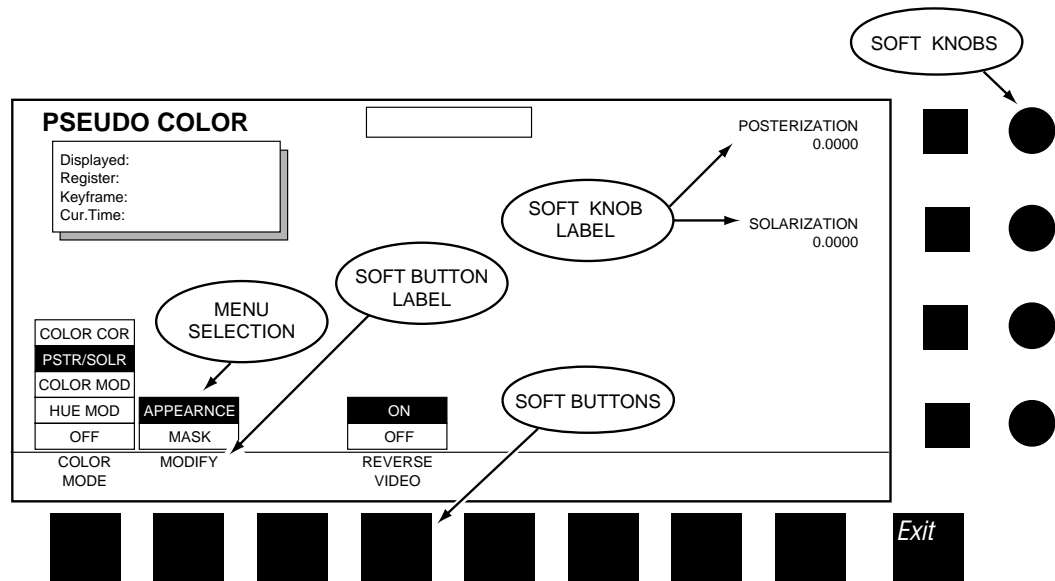
In the text, Control Panel buttons are shown in the following type:

- The **System Setup** top menu button.

Menu Display References

Many Krystal features may be accessed via the menu display and its associated “soft” buttons and “soft” knobs. The term “soft” merely means that the function of the button or knob is temporary, being assigned via the menu display.

When a function is assigned to a soft button or soft knob, it appears in the menu display area (as shown on the illustration below).



Menu selections and the use of soft buttons and soft knobs are shown in text in the following type:

- Select the **APPEARANCE** menu item with the **MODIFY** soft button, then adjust the image with the **POSTERIZATION** and **SOLARIZATION** soft knobs.

System Overview

General Description

The Krystal DPM is an advanced technology digital video effects system. Ten-bit serial digital inputs and outputs, frame-based digital signal processing techniques, independent function timeline key framing, and refined control architecture deliver unparalleled video quality. The ergonomic control panel draws on Grass Valley's tradition of user-friendly, logically intuitive design.

The Krystal DPM is available in single and multiple channel systems to meet a wide variety of facility requirements. Krystal systems support a "pooled" architecture, where one user can acquire and use more than one channel, or more than one user can acquire separate channels for concurrent use. The Krystal system is also designed for tight integration with peripherals such as production switchers, video editors, and routing switchers.

Standard Option Package Features

- Support for multi-user, multi-channel configurations
- 10-bit image processing, using RISC technology and bicubic interpolation
- Frame-Based Picture Translation, Scaling, Variable Perspective 3D Rotation, and Adaptive Motion Detection
- 525 or 625 line, 4:3 or 16:9 Aspect Ratio at 13.5 MHz (switchable on a session-by-session basis)
- Keypad, Joystick or Panel Knob interfaces
- Independent Function Timeline Keyframing
- Macro capability for automation of frequently used sequences
- Two Global Channels and a Camera Channel
- Input and Output Recursive

- Defocus with Glow in either video, key
- Graphics display for wire-frame channel representation with axis and source indicators
- Image manipulation in Source or Target space
- Separate Crop and Mask pattern with mix capability
- Mixed internal and external key processing
- Emboss, Blur and Modulated Mattes
- Wipe Pattern Multipliers
- Perspective Fade, Blur, and Dim
- Multiple, independently variable Motion Paths
- Posterization, Solarization, and Color Modification
- Drop Shadow with Variable Opacity
- Corner Pinning
- Enhanced Image Fidelity
- Internal Front/Back source selection, A/B Input Routing source selection, or separate video, key, and mask inputs
- Key Output With Embedded Depth Information
- Serial Editor, Switcher and Router Control, General Purpose Interface (GPI) Inputs, and Tally Inputs and Outputs
- Floppy Disk Drive for Effect, Macro, and Configuration file storage, and software updates
- Qwerty keyboard for data entry file management

Fully Optioned Channel Packages

Single and multi-channel Krystal packages are available, loaded with all channel options. This includes all features of the Standard Option Package above plus the following:

- Kurl with Splash non-linear effects
- Light source provides two independent light sources per channel, positionable in 3D space

Optional Features

- Kurl with Splash, plus dual light source for upgrades from standard to full option packages
- 4x1 combiner for four channels over a background video, with secondary combiner output
- Simultaneous control and combiner outputs for up to four users
- Up to eight channels pooled for control by up to four simultaneous users combining up to four channels
- Additional Krystal Control Panels and Video Processor Channels can be added to existing systems.

Feature Packaging Changes

The following features that were previously available as Krystal options have been re-packaged:

Table 1-1. Repackaged Features

Optional Features Now Standard	Optional Features in Full Option Upgrade
Enhanced Image Fidelity	Kurl
Effect Manager Memory Expansion	Splash
Input Recursive Memory	Light Sources
Output Recursive Memory	
Defocus	
Graphics Display	
Qwerty Keyboard	

Physical Description

Major Components

The major components of a Krystal system are the Video Processor frame, Control Panel, and — in multi-channel applications — a Small or Large System Controller frame.

Krystal systems can be supplied in a wide variety of configurations, several of which are shown in the following illustrations.

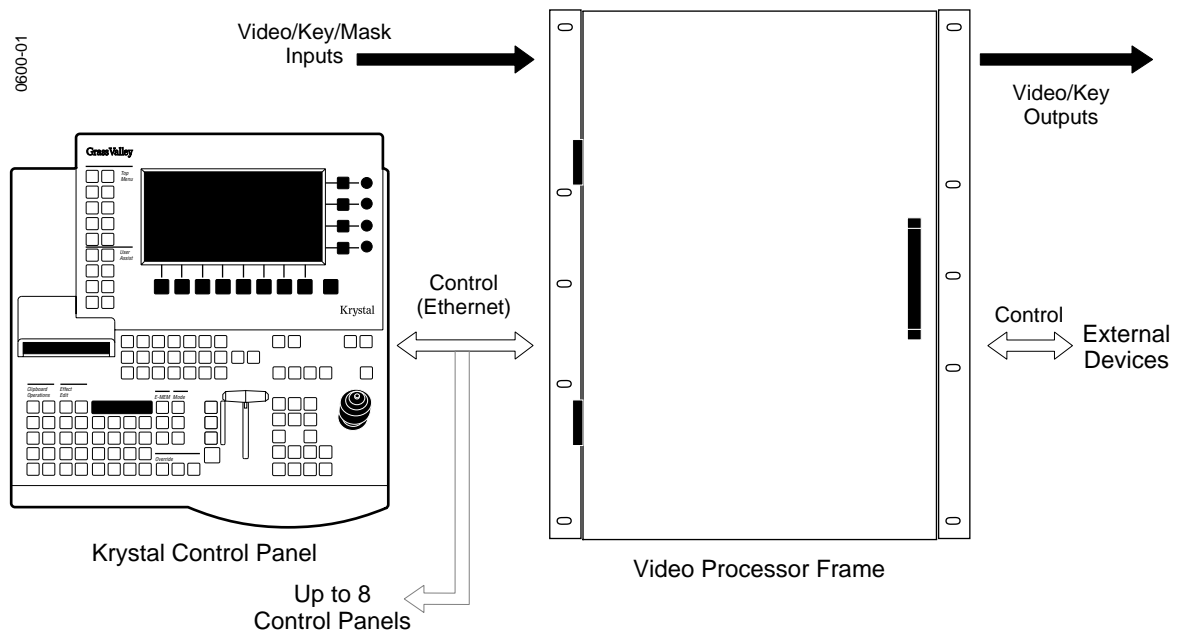


Figure 1-1. Krystal Single Channel System

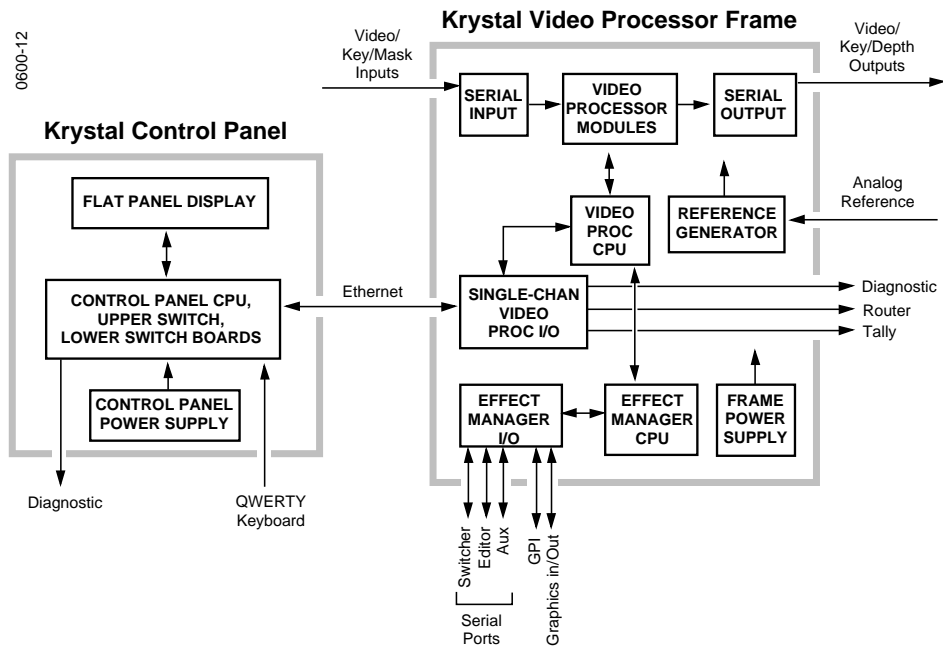


Figure 1-2. Krystal Single Channel System Simplified Block Diagram

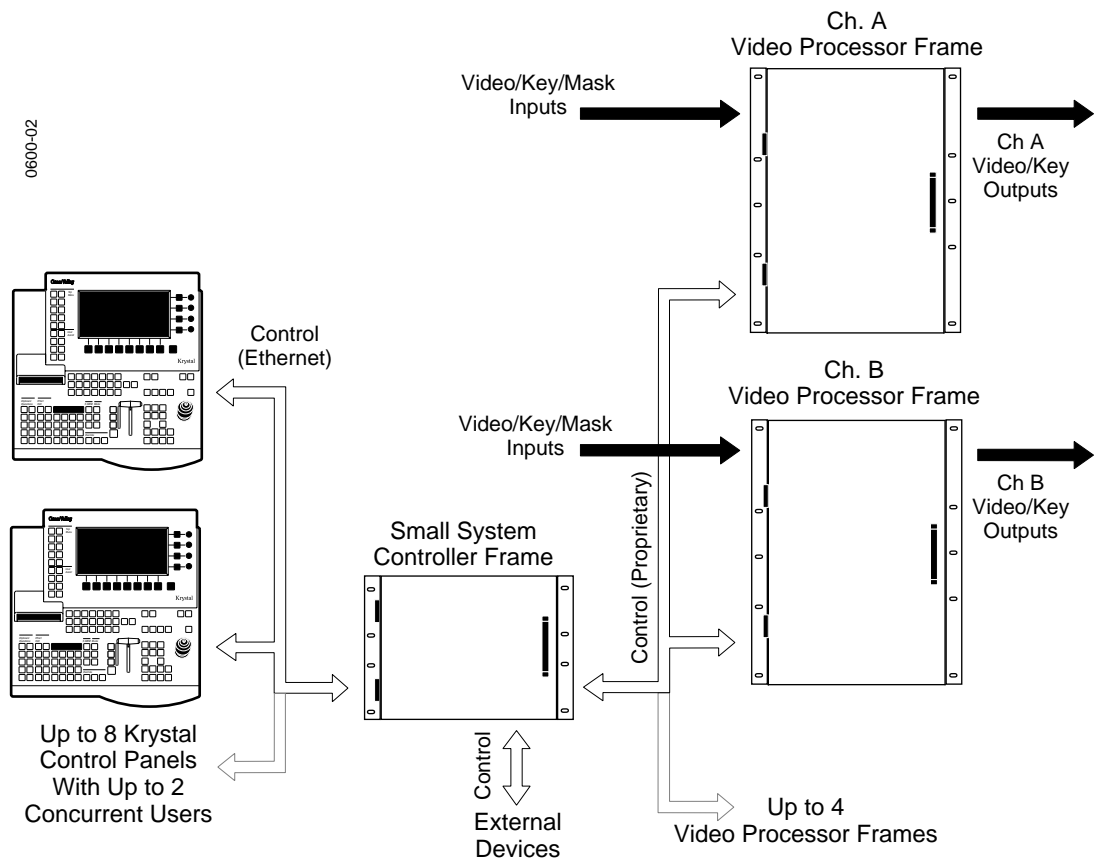


Figure 1-3. Krystal Multi-Channel System, Small System Controller

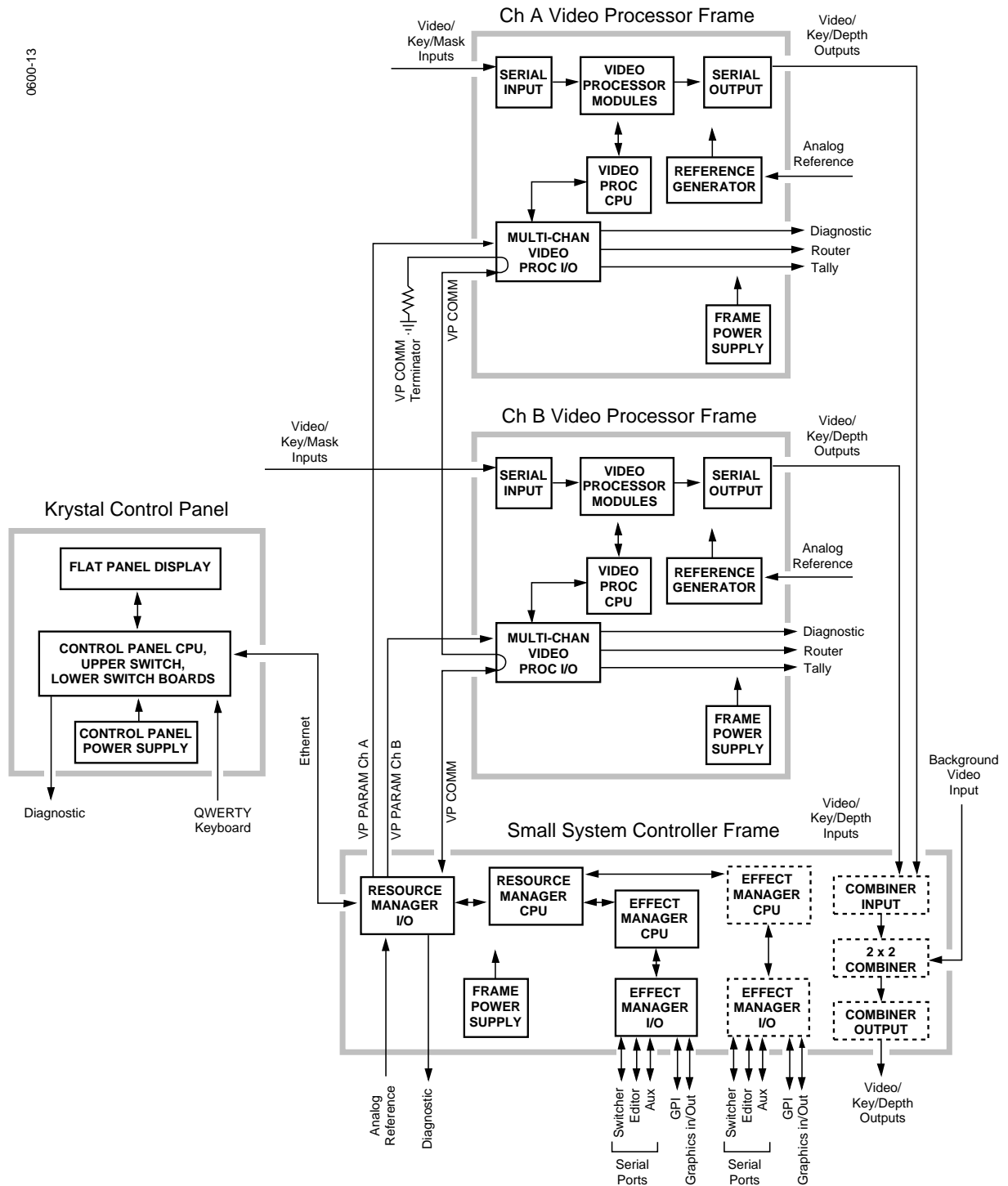


Figure 1-4. Krystal Dual Channel System Simplified Block Diagram

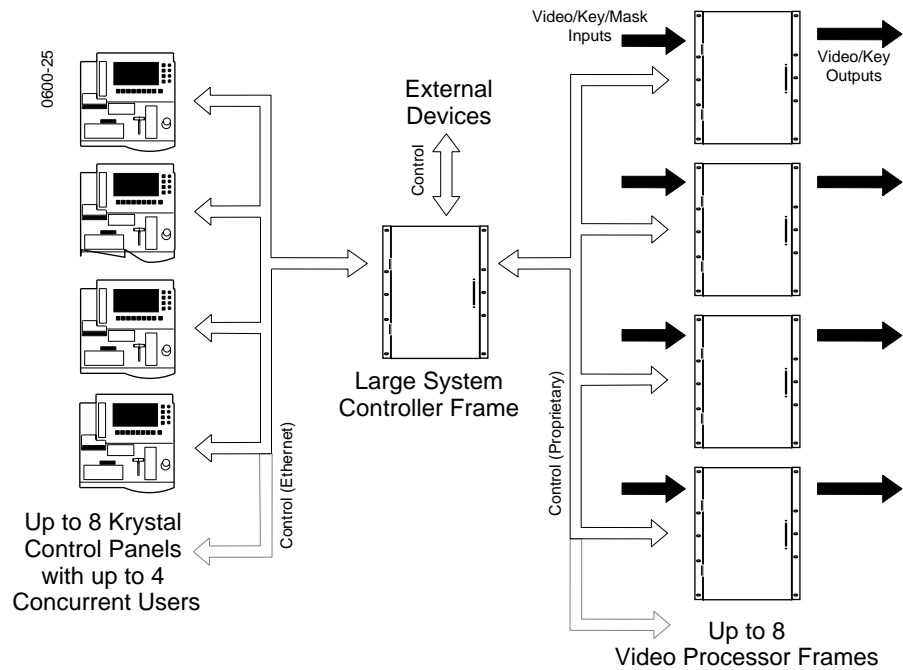


Figure 1-5. Krystal Multi-Channel System, Large System Controller

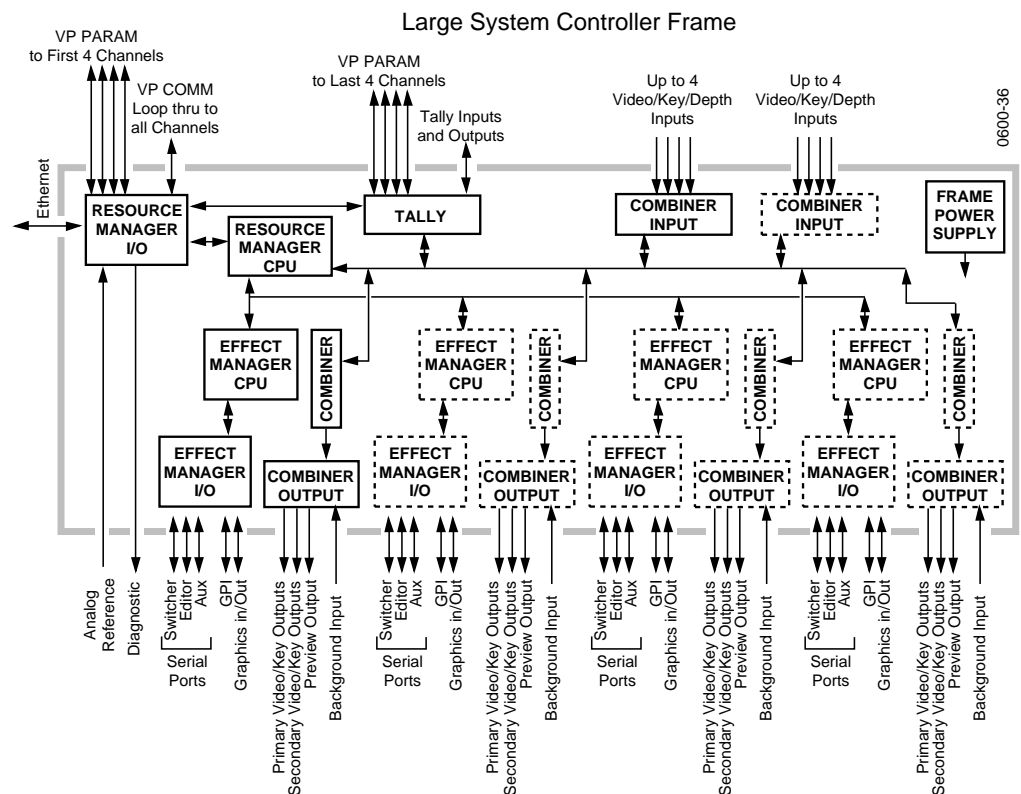


Figure 1-6. Large System Controller Simplified Block Diagram

System Control

In all Krystal systems, each operator uses a Control Panel to acquire an Effect Manager. The Effect Manager, in turn, acquires the Video Processor channel(s) it will use to create and run digital video effects. When the operator acquires an Effect Manager in a single channel system, it automatically acquires the single channel, if available. In a multi-channel system, each operator acquires a different Effect Manager, and each operator selects which of the available Video Processor channels to use. A Resource Manager module is included in multi-channel systems to handle internal system communications between the Krystal components.

Control Panel

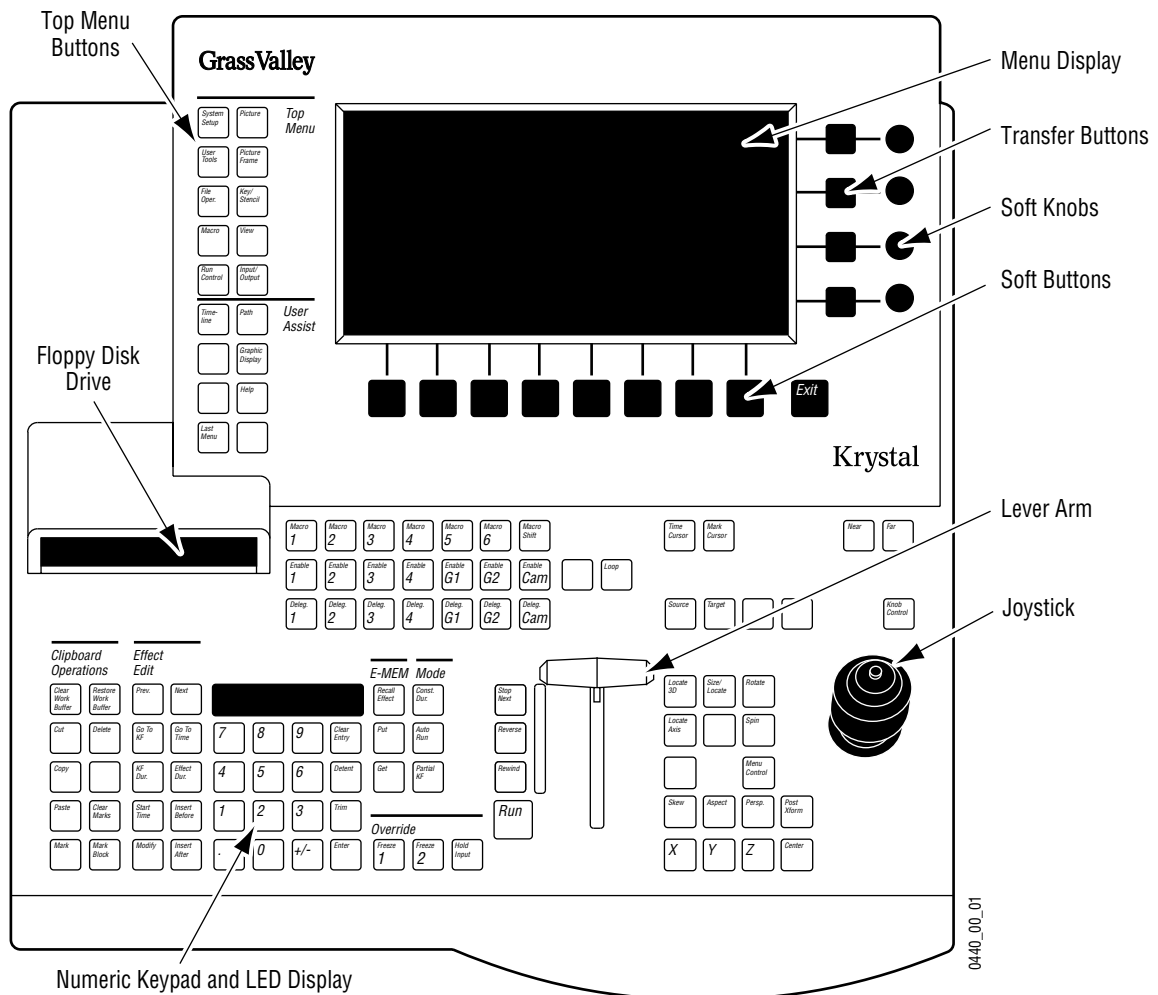


Figure 1-7. Krystal Control Panel

The Krystal Control Panel is easy to learn and provides a comprehensive artistic tool kit for effects generation. Each panel includes a floppy disk drive for loading and storing effects, system configuration files, and user preferences.

Krystal Control Panels communicate with the Video Processor frame (single channel system) or the System Controller frame (multi-channel system) via a dedicated Local Area Network (LAN). The LAN cable may be a customer supplied 50Ω coax, or an optional LAN Cable Kit may be ordered from Tektronix/Grass Valley Products. Up to eight Control Panels may be connected to the network.

The Krystal Control Panel is divided into upper and lower panel areas (Figure 1-7). The upper panel contains the flat panel menu display and various knobs and buttons for making menu selections and adjusting video parameters. The lower panel contains the controls for picture transformation, effect editing and running, and has a keypad, joystick, and lever arm.

A diagnostic port, a connector for an optional QWERTY keyboard, the CP COMM Ethernet connector, and the AC power connector are located on the rear of the panel (Figure 1-8).

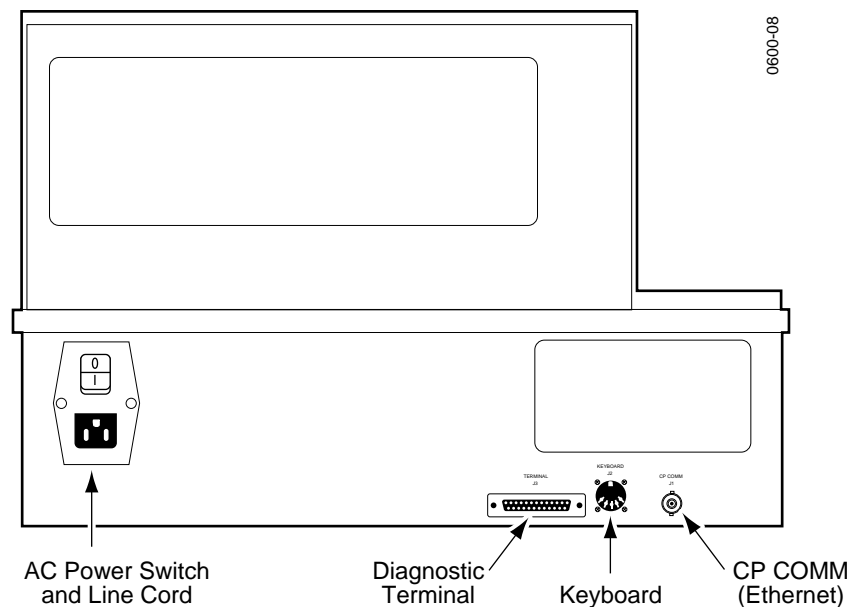


Figure 1-8. Krystal Control Panel, Rear View

Video Processor Frame

The Krystal Video Processor frame contains modules that receive the incoming video and key signals, performs the actual video manipulations, and outputs the processed video. On single channel Krystal systems the Video Processor frame also holds the Effect Manager modules that communicate with the Control Panel and direct the video processing activity. On multi-channel systems some of these communications and control modules are located in the System Controller frame.

The Video Processor frame is a 13 rack unit frame that mounts in a standard 19-inch equipment rack. The frame holds large modules installed from the front ([Figure 1-9](#)), and smaller I/O modules installed from the back ([Figure 1-10](#)). Some of the front loaded modules are options, and some modules may have standard or optional mezzanines (daughter boards).

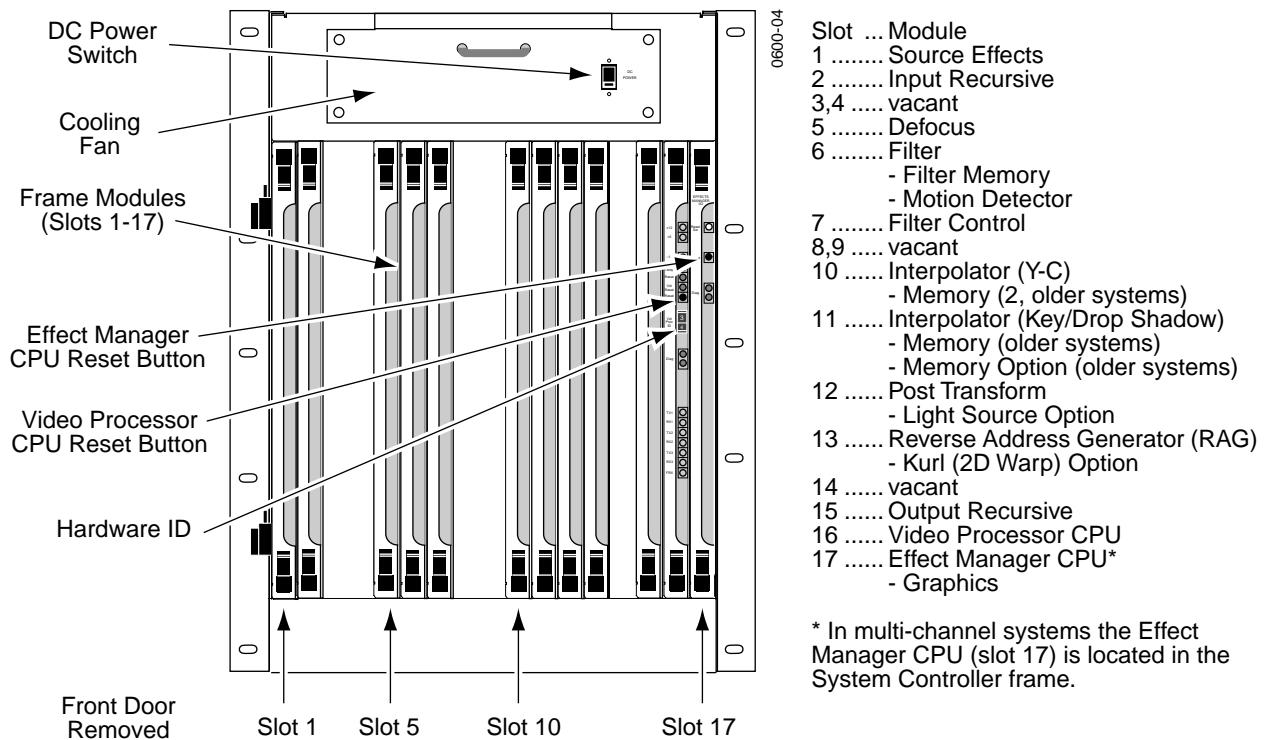


Figure 1-9. Video Processor Frame, Front View

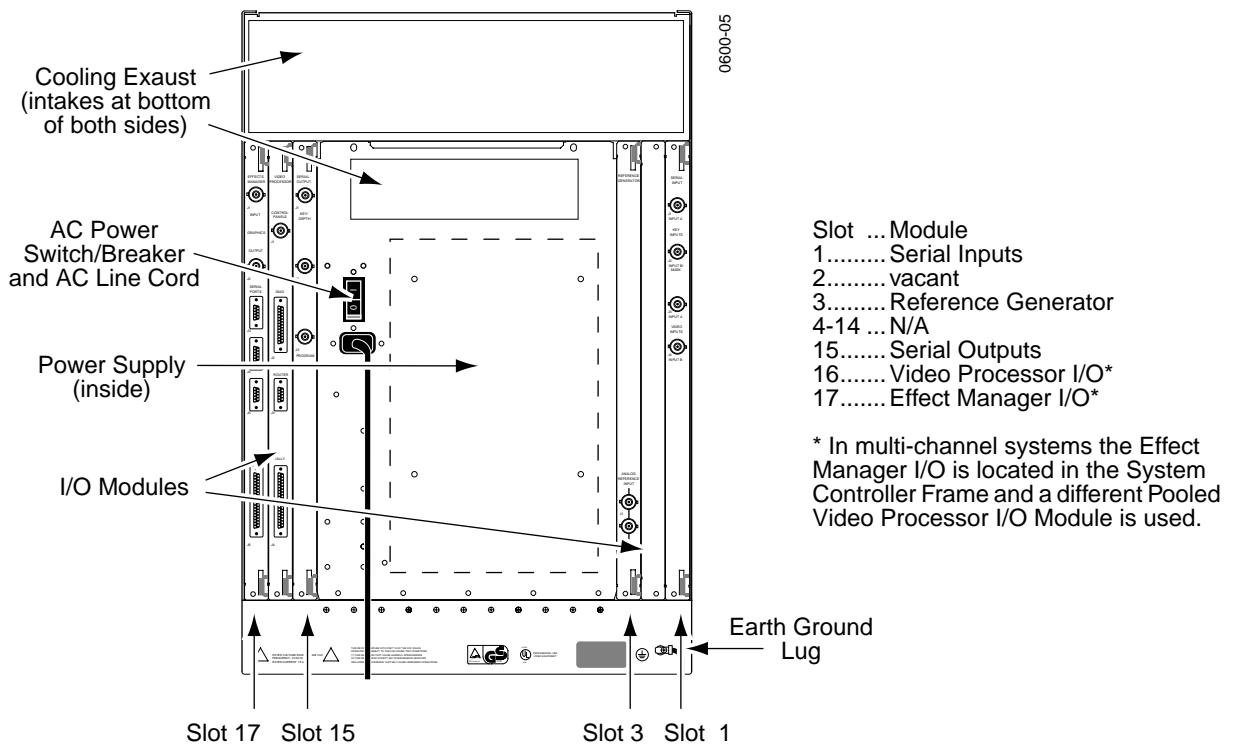


Figure 1-10. Video Processor Frame, Rear View

System Controller Frame

Large System Controller

The Krystal Large System Controller frame is available for larger multi-channel Krystal systems of up to eight channels and up to four users. The Large System Controller frame contains control modules used to manage the resources in the pool, and can contain optional combiner modules used to join four channels of processed video into combined video/key output streams.

On Large System Controllers with combining capabilities, any Krystal Channel can be used by any single user at any time. These sources can be combined by any user in a variety of ways. Complete input source routing is incorporated into the unit. On these systems each Combiner Output module is dedicated to a specific Effect Manager.

The Large System Controller frame is a 13 rack unit frame that mounts in a standard 19-inch equipment rack ([Figure 1-11](#) and [Figure 1-12](#)).

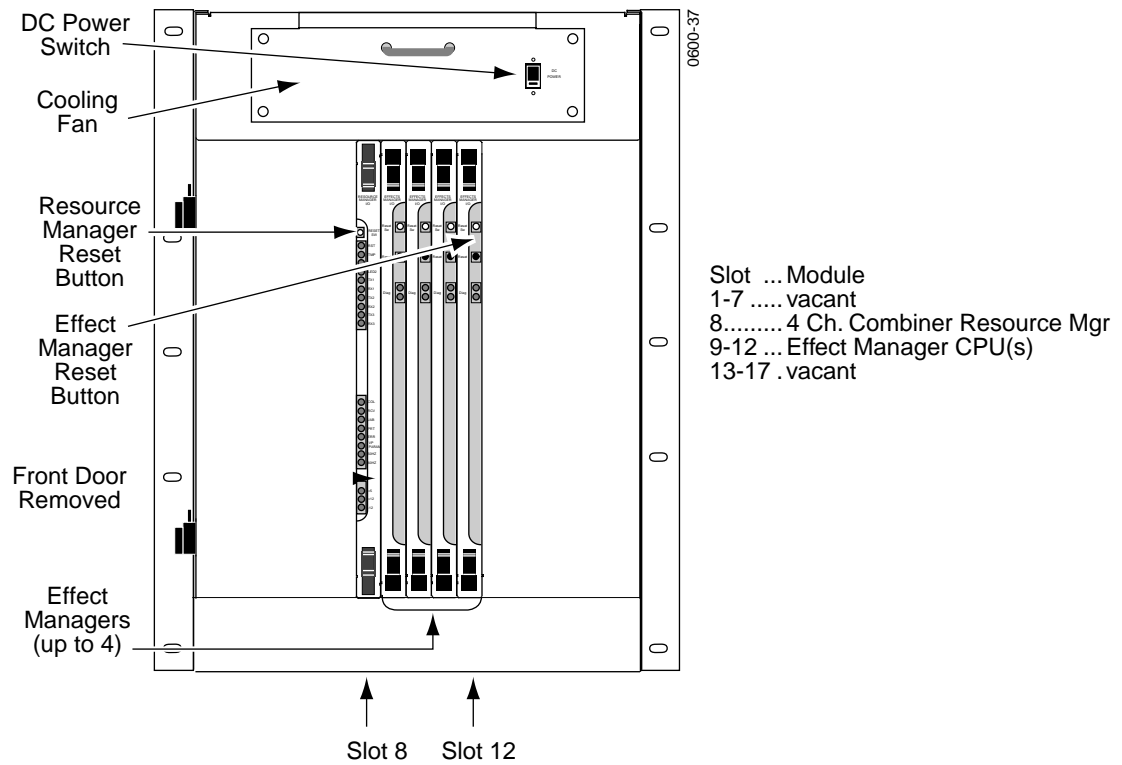


Figure 1-11. Large System Controller Frame, Front View

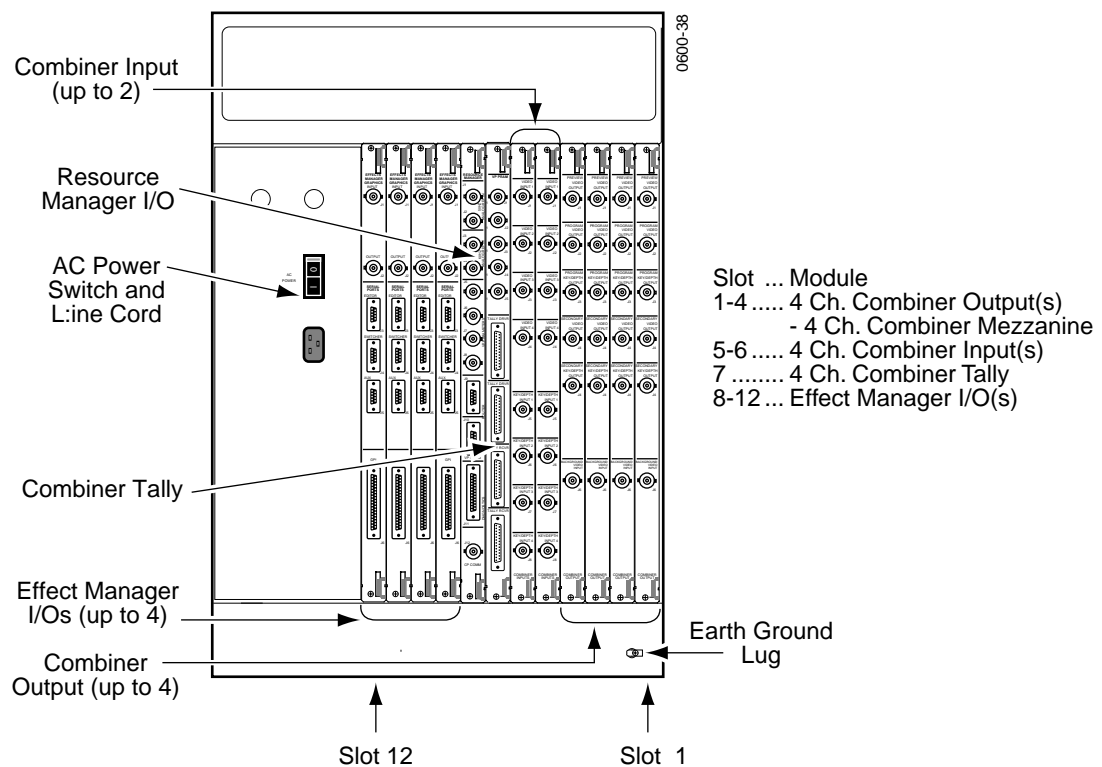


Figure 1-12. Large System Controller Frame, Rear View

Small System Controller

Older Krystal systems may have been configured with a Small System Controller frame.

The Krystal Small System Controller frame is for multi-channel Krystal systems of up to four channels. The Small System Controller frame contains control modules used to manage the resources in the pool, and can contain optional combiner modules used to join two channels of processed video into a single video/key output stream.

The Small System Controller is a seven rack unit frame intended to be mounted in a standard 19 inch equipment rack. The frame holds large modules installed horizontally from the front (Figure 1-14), and smaller I/O modules installed horizontally from the back (Figure 1-13).

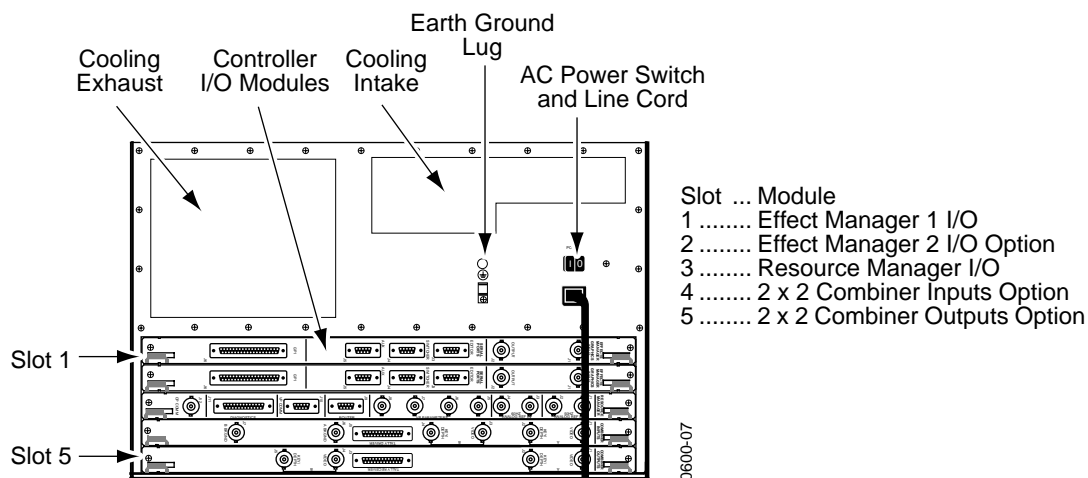


Figure 1-13. Small System Controller Frame, Rear View

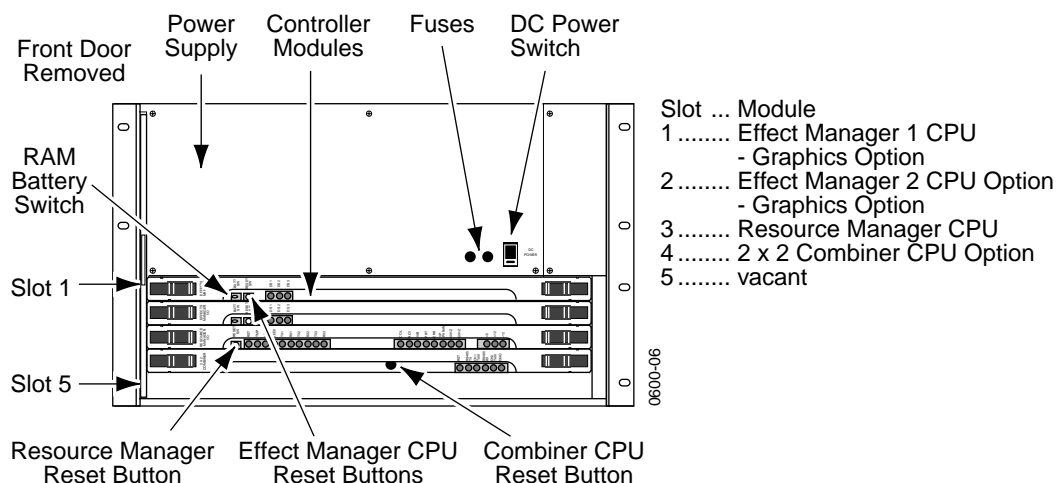


Figure 1-14. Small System Controller Frame, Front View

Module Descriptions

CAUTION Modules in Krystal systems cannot be hot-swapped safely. Always power down Krystal frames before removing or inserting Krystal modules.

- Serial Input and Output I/O modules — Serial Input modules convert incoming serial digital component video signals to parallel format for internal processing by the Video Processor frame. The Serial Output modules convert parallel video back to serial digital format.
- Effect Manager CPU and I/O modules — The Effect Manager module calculates the parameters required, and stores these effects parameters. It passes these parameters to the Video Processor CPU which uses them to control the video processing electronics. Multi-channel systems use a different type of Effect Manager, and in these systems the Effect Managers are located in the System Controller frame.
- Video Processor CPU and I/O modules — Each Video Processor CPU module controls the operation of the modules and options installed in a single Video Processor frame. It receives the parameters to produce an effect from the Effect Manager and passes them to the video modules in that frame. Two different Video Processor I/O modules are available, one for single channel Krystal systems and one for pooled Krystal systems.
- Reverse Address Generator (RAG) module — This module continually calculates the source pixel address for each output pixel in the transformed video.
- Post Transform module — Using addresses from the RAG module, this module generates offset addresses for key and video drop shadows. It also generates perspective fade, blur, and dim effects.
- Interpolator modules — Using addresses generated by the RAG and Post Transform modules, these modules look at the source video and determine the pixel values to be used in the transformed video output.
- Filter Control module — This module uses transform information to set up filter control factors (for each input pixel) to control the Filter module.
- Filter module — This module provides anti-aliasing filtering for effects. It also provides motion detect functions, an embossed video function, and a key processor for mixing video with defocused video and/or mattes.
- Source Effects module — This module provides a number of functions, including external mask processing, mask pattern generation, self and external key processing, rectangular and pattern crops, coring, video bitmap, hue rotation, and picture border generation.
- Reference Generator module — This module generates internal syncs and clocks from the facility reference (color black).

- Resource Manager CPU and I/O modules — The Resource Manager CPU module is the center of systems communication between the Control Panel, Video Processors, and System Controller frame in multi-channel systems. Two different types of Resource Manager CPUs exist, one used for the Small System Controller and one for the Large System Controller. The Resource Manager I/O module interfaces between the Resource Manager CPU module and the rest of the Krystal system.
- Input Recursive module — This module allows the processing of incoming video for freeze, mosaic, and motion decay effects that appear within the incoming video raster.
- Output Recursive module — This module allows the processing of output (post transform) video for freeze, motion decay, montage, and trail effects that can appear outside and inside the raster of the incoming video.
- Defocus module — This module permits altering the sharpness of video and key signals, for defocus and glow effects.
- 2 x 2 Combiner module — This module provides mixing and keying circuitry for combining two foreground video and key inputs and a background matte or video input in various ways.
- 2 x 2 Combiner Input and Output modules — The 2 x 2 Combiner Input module convert incoming serial digital component video signals to parallel format and routes them to the Combiner for processing. The 2 x 2 Combiner Output module receives the processed signals from the Combiner, converts the parallel video back to serial digital format, and routes the video to its output connectors.
- Four Channel Combiner Input and Output modules — The Four Channel Combiner groups four sets of serial digital inputs on each input module. Each Effect Manager has a single dedicated Four Channel Combiner Output module, which produces a set of serial digital combined output signals. Each Output module also has a background video input.
- Four Channel Combiner Tally — This module has tally input and output connectors and system control ports for Krystal Channels 5-8.

Additional options are available that consist of mezzanine boards that are installed onto some of the Krystal modules.

Module and Mezzanine Part Numbers

Table 1-2. Krystal Module and Mezzanine Part Numbers

Module Name	P/N	Location, Mezzanines (M), Notes
Source Effects	066211-00	(VP front) Located in Video Processor front bay
Input Recursive	066212-00	(VP front)
Defocus	066216-00 - 066242-00	(VP front) (M) Filter Memory (required)
Filter	066215-00 - 066242-00 - 066243-00	(VP front) (M) Filter Memory (required) (M) Motion Detector (required)
Filter Control	066217-00	(VP front)
Y/C K/DS Interpolator (Newer Systems)	966250-50	(VP front)
Y/C Interpolator (Older Systems)	066213-00 - 066235-00	(VP front) (M) Interpolator Memory (2) (required)
K/DS Interpolator (Older Systems)	066261-00 - 066235-00	(VP front) (M) Interpolator Memory (2) (1 required, 1 optional)
Post Transform	066222-01 - 066236-00	(VP front) (M) Light Source (optional)
Reverse Address Generator (RAG)	066220-01 - 066221-10	(VP front) (M) Kurl (2-D Warp) - Splash PLD 152169-00 (optional)
Output Recursive	066258-00	(VP front)
Video Processor CPU	066223-00	(VP front)
Effect Manager CPU	066224-00 - 066239-00	(VP front) Single Channel Systems (SC front) Multi-Channel Systems (M) Graphics (optional)
Serial Inputs	066229-00	(VP back)
Serial Outputs (Older Systems)	066227-00	(VP back) Single Output Connectors
Serial Outputs (Newer Systems)	066227-01	(VP back) Dual Output Connectors
Video Processor I/O (single)	066226-00	(VP back) Single Channel systems only
Video Processor I/O (pooled)	066237-00	(SC back) Multi-Channel systems only
Effect Manager I/O	066225-00	(VP back) Single Channel Systems (SC back) Multi-Channel Systems
Resource Manager I/O	066231-00	(SC back) Large and Small System Controllers
4 Ch. Comb. Resource Manager	066295-00	(SC front) Large System Controller only
4 Ch. Comb. Input	066293-00	(SC back) Large System Controller only
4 Ch. Comb. Output	066294-00 - 066297-00	(SC back) Large System Controller only (M) 4 Ch. Combiner (required)
4 Ch. Comb. Tally	066298-00	(SC back) Large System Controller only
Resource Manager	066230-00	(SC front) Small System Controller only
2 x 2 Combiner CPU	066240-00	(SC front) Small System Controller only
2 x 2 Combiner Input	066204-00	(SC rear) Small System Controller only
2 x 2 Combiner Output	066205-00	(SC rear) Small System Controller only

Facility Examples

Examples of some typical facilities are included here to give you a sense of the variety of configurations possible. More detailed information about system installation and configuration is presented later in this manual.

Single Channel Krystal Facility

Figure 1-15 and Figure 1-16 depict how a single channel Krystal system may be incorporated into a post-production editing suite.

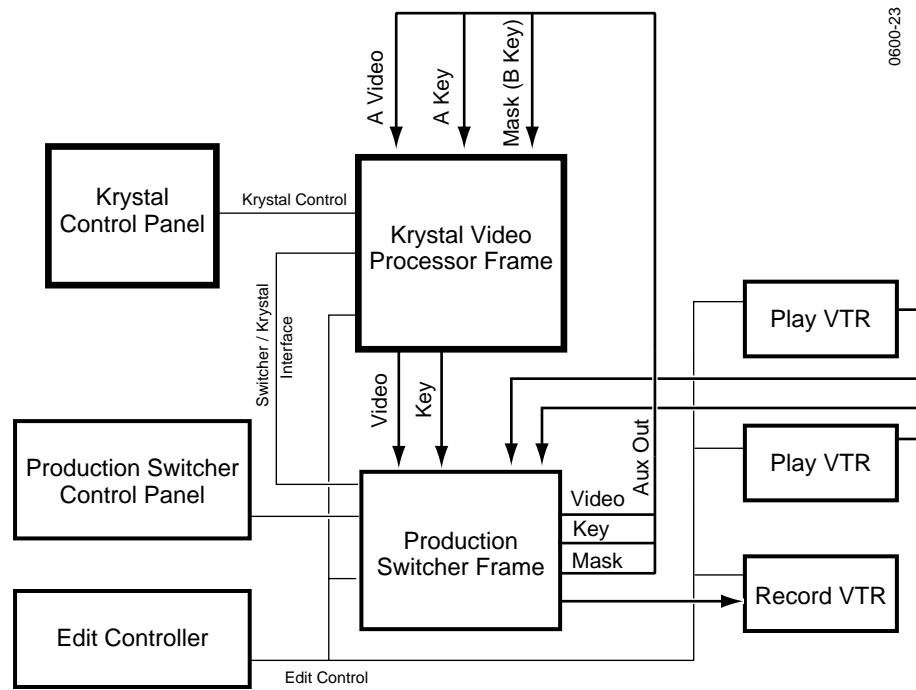


Figure 1-15. Single Channel Krystal Edit Facility, External Routing

Figure 1-15 illustrates a system in which the Krystal system is configured to control the Switcher as a source selector. The Krystal DPM is configured for separate Video, Key, and external Mask inputs. Both the Switcher and Krystal systems are also under editing system control.

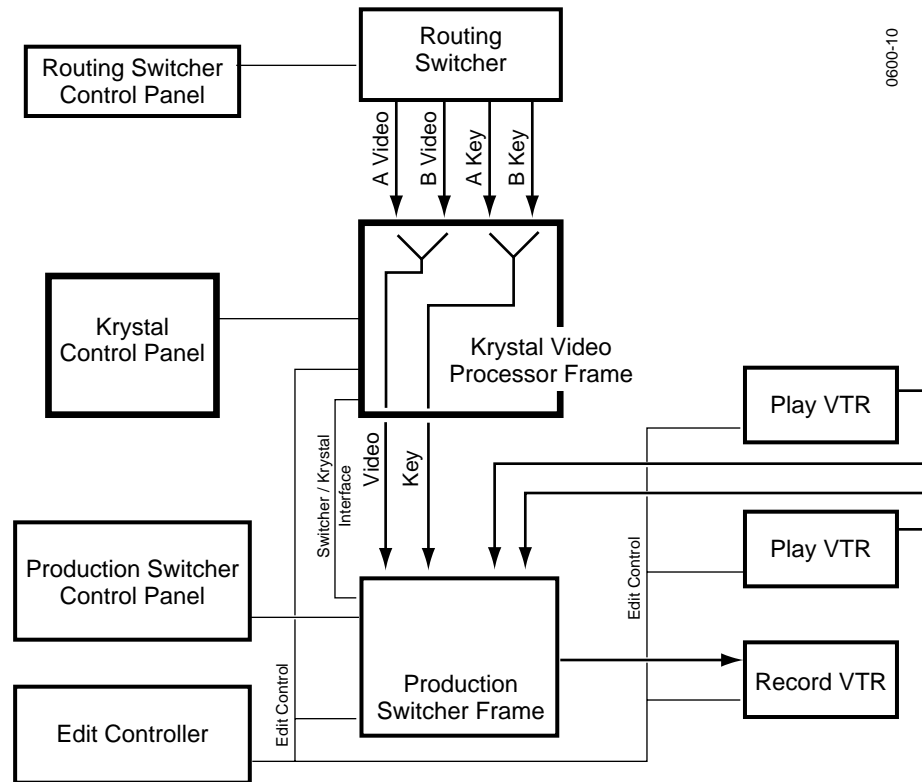


Figure 1-16. Single Channel Krystal Edit Facility, Internal Switching

Figure 1-16 illustrates internal source switching, with the A and B Krystal inputs fed via an external routing switcher. The routing switcher is controlled manually. The Krystal system in this example does *not* control the routing or production switchers. One set of router outputs feeds the Krystal A channel inputs, and the other the B inputs. This Krystal system can automatically switch between the currently selected router inputs when the manipulated image rotates edge on within an effect. Both the Switcher and Krystal systems are also under editing system control.

Two Channel, Two User Krystal Facility

In [Figure 1-17](#) two Krystal Video Processor channels and two Krystal Control Panels are incorporated into a facility that has separate editing and control rooms. The Krystal system is configured to use the auxiliary busses on the switchers as input source selectors. This lets the Krystal system to command the switcher to select different Aux bus crosspoints during an effect.

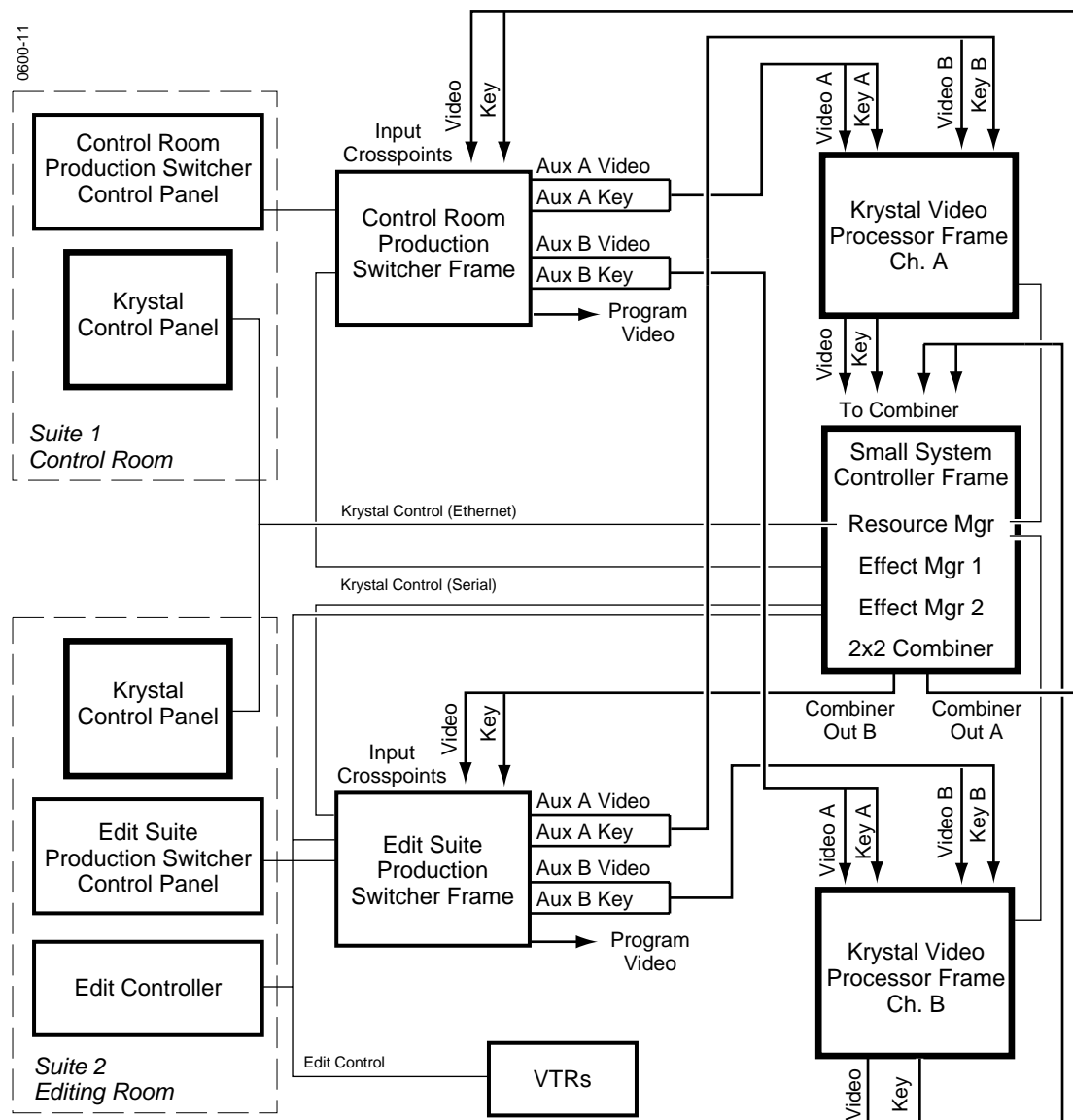


Figure 1-17. Two User Dual-Channel Krystal Facility Example

This installation allows a user in either location to acquire one or both Krystal channels. The Krystal channels in both rooms are configured for A/B Input routing. When suite 1 is controlling both Krystal channels, the A video and key inputs on those channels are automatically selected for use.

When suite 2 is controlling the channels the B video and key inputs on those channels are selected. The operator in each suite must acquire the correct Effect Manager to control that suite's Switcher Aux bus selections.

This facility is also equipped with a 2 x 2 Combiner that allows the user to combine both Krystal channels, and have the combined video and key return to crosspoints on the switchers.

Eight Channel Four User Krystal Facility

In [Figure 1-18](#) eight Krystal Video Processor channels and four Krystal Control Panels are incorporated into a large facility.

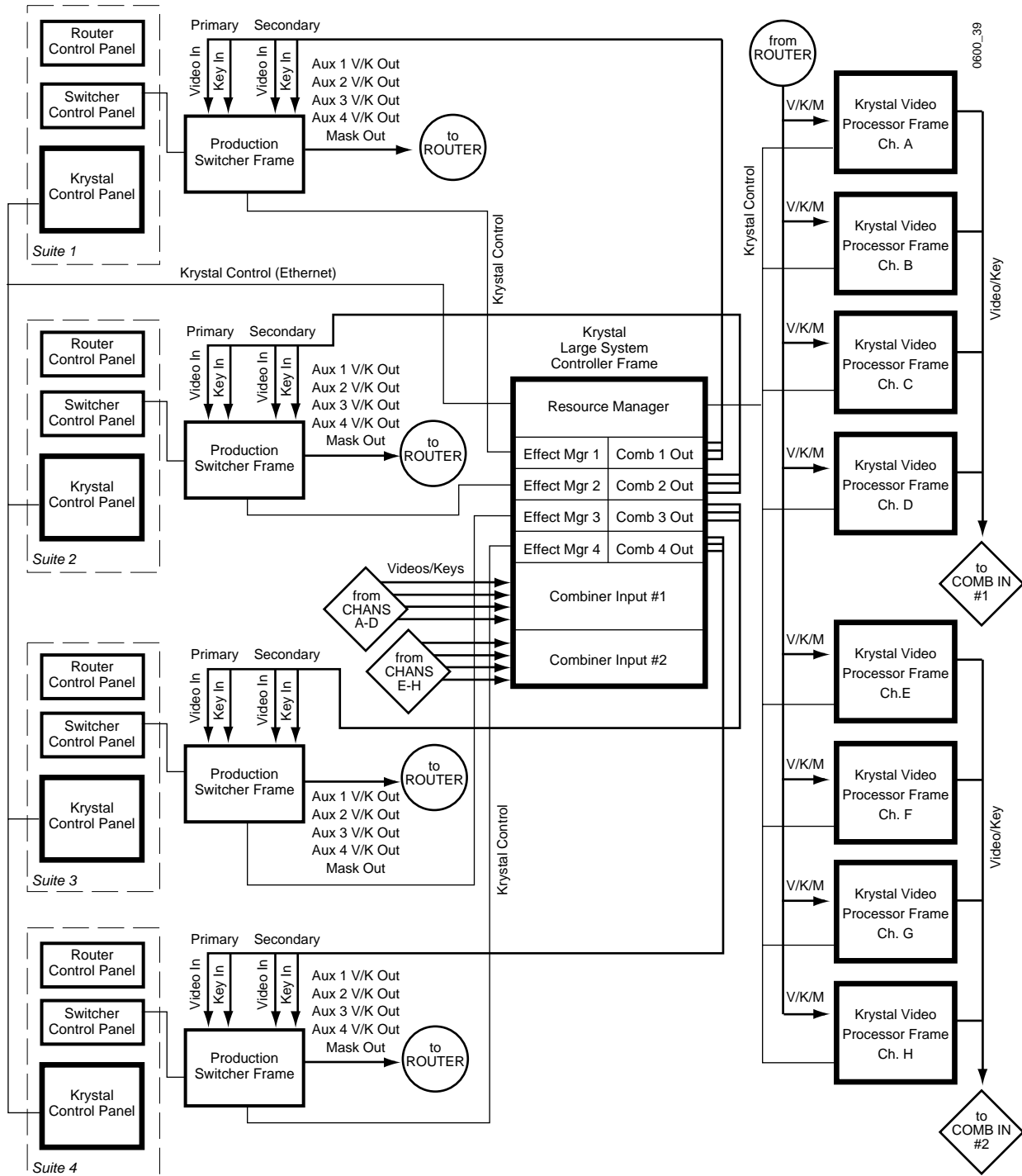


Figure 1-18. Eight Channel, Four User Krystal Facility Example

In this example the Krystal system is configured to allow four users to use any of the eight Krystal channels, and for each user to combine any four of these channels from their suite location. Each suite uses the auxiliary busses on the switchers as input source selectors. These outputs are connected to a routing system, which permits the operator to manually select which aux bus output goes to which Krystal channel. This makes any Krystal channel in the facility instantly available for use by any operator, with full Krystal system control of switcher crosspoint selection.

Integrated Model 2200-2i Switcher

The Model 2200-2i Switcher from Tektronix/Grass Valley Products is a component digital switcher that supports integrated 1 or 2 channel Krystal DPM operation. Incorporated into the Switcher control panel are Krystal controls allowing the creation, running, and editing of digital effects from the Switcher panel, without the need for a stand-alone Krystal Control Panel.

See the Model 2200-2i documentation set more information.

Controls

Introduction

This section describes the basic functions of the buttons, knobs, and other controls on the Krystal Control Panel. Layouts of some typical menus displayed on the Control Panel are also described in this section. Detailed information for each of the menus is presented later in this manual.

Control Panel

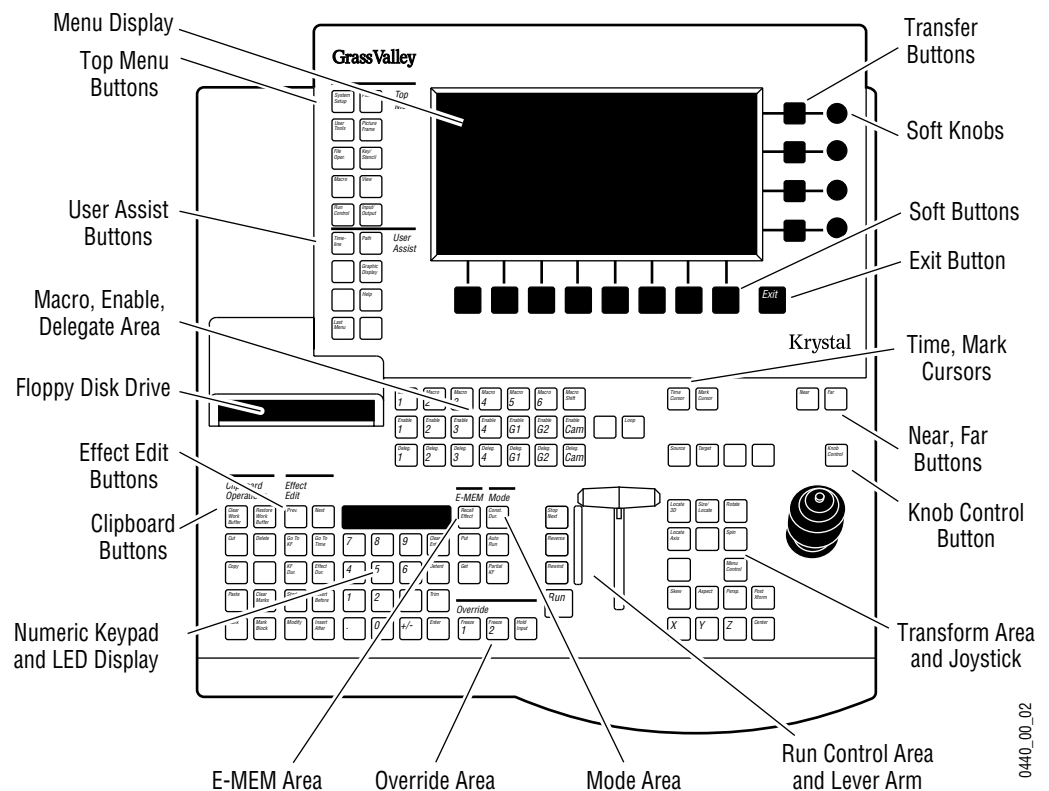


Figure 2-1. Krystal Control Panel

The Control Panel is physically divided into two areas referred to as the “upper” and “lower” panels. These upper and lower panels are in turn divided into smaller functional areas.

Upper Panel Area

The upper panel area contains the menu buttons and knobs used for making menu display selections and for adjusting video parameters. Descriptions in this section are arranged in the following sequence:

- Menu Display ([page 2-3](#))
- Soft Buttons ([page 2-4](#))
- Soft Knobs ([page 2-5](#))
- Transfer Buttons ([page 2-5](#))
- Top Menu Area ([page 2-7](#))
- User Assist Area ([page 2-9](#))

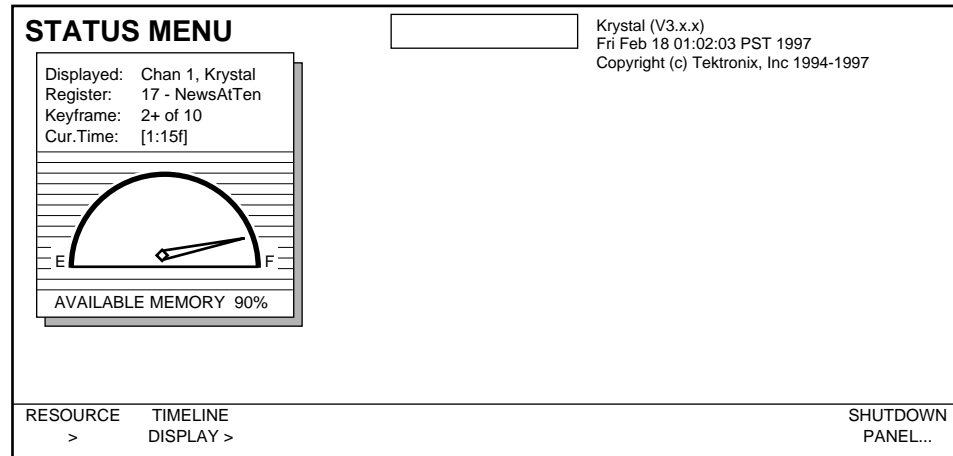
Lower Panel Area

The lower panel area contains most of the controls for picture transformation, effects editing, running an effect, and for entering numeric values. Descriptions in this section are arranged in the following sequence:

- Macro/Enable/Delegate Area ([page 2-10](#))
- Clipboard Operations Area ([page 2-11](#))
- Effect Edit Area ([page 2-13](#))
- Keypad ([page 2-15](#))
- E-MEM Area ([page 2-16](#))
- Mode Area ([page 2-17](#))
- Override Area ([page 2-17](#))
- Run Area ([page 2-18](#))
- Transform Area ([page 2-20](#))
- Floppy Disk Drive ([page 2-25](#))

Menu Display

The menu display provides information about the current menu. When the system is first powered up, the Status menu shows information about the system.



Copyright and version information is displayed in the upper right corner of the screen. The date and time identifies when the software was created by Tektronix/Grass Valley Products.

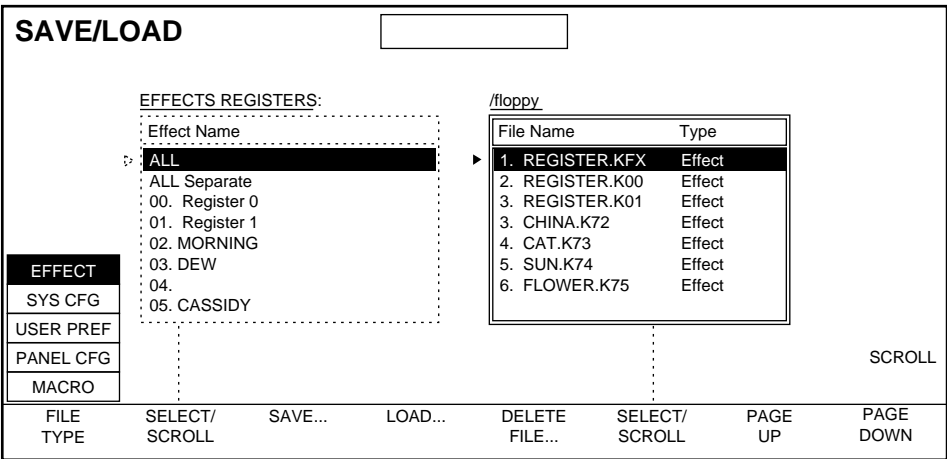
The available Effect Manager memory is displayed on this menu as a gauge indicating **E** (empty — 0%) to **F** (Full — 100%).

The following effect information is also shown in the upper-left portion of most menus:

- **Displayed** — The Menu Display shows values for one channel at a time, depending on the channel delegation buttons.
- **Register** — The current effect register is listed along with the name of the effect.
- **Keyframe** — The current keyframe and number of keyframes in the current effect are listed below the effect register number. In the example above, there are 10 keyframes in the effect and the current time is past the second keyframe (which is why there is a plus after the number 2).
- **Cur.Time** — The current time in the effect is shown below the current keyframe. Time is shown in seconds, followed by frames, followed by “f” to indicate field two.

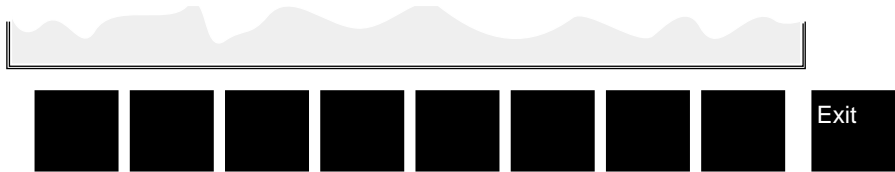
The Menu Display shows the controls for the current menu function. The example screen below contains a “stack” of parameter selections controlled by a soft button (**FILE TYPE**), and two windows controllable with the **SELECT/SCROLL** soft buttons and/or the **SCROLL** soft knob.

When multiple scrolling windows are available, only one can be active at a time. The active window has solid lines, while the inactive window has dotted lines. Pressing the **SELECT/SCROLL** soft button makes that associated scroll window active.



Soft Buttons

The functions of these eight soft buttons, running horizontally across the bottom of the Menu Display, vary with the menu currently being displayed.



- Pressing a **SELECT/SCROLL** soft button scrolls through the selection window above that soft button.

Exit Button

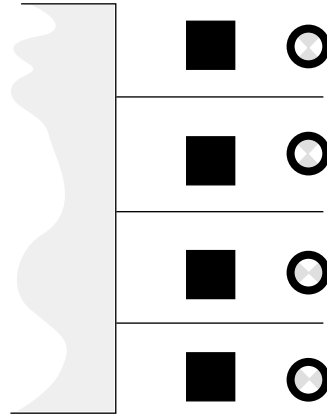


Press **Exit** to exit the current menu and move upward one level in the menu tree. Pressing this button while in a top level menu closes the top level menu and displays the System Status menu.

Holding down the **Exit** button while pressing a soft button reverses the direction of item selection or window scrolling for that button. The Exit button is also used to assign DPOP functions to the top menu buttons (see *DPOP Functions* on page 2-7 for more information).

Soft Knob And Transfer Buttons

The four knobs to the right of the menu display are primarily used to adjust video function parameters.



When a parameter name and associated value appears next to a soft knob in the menu display, turning the soft knob will adjust the value of that parameter.

Transfer buttons are located between the menu display and the soft knobs. Press one of the four transfer buttons to copy the parameter from the adjacent soft knob to the Keypad. From the Keypad you can enter an exact number for a soft knob parameter.

You can also assign the scroll knob to the Keypad to select items from numbered lists. Then typing the number and pressing **Enter** selects that listed item.

Display Information — When a Transfer button has been pressed and the adjacent knob parameter is assigned to the Keypad, the knob parameter's name will be highlighted in the Menu Display and the transferred parameter's name will show in the Keypad display.

Pressing the transfer button a second time, returns parameter control to the soft knob only.

Illuminated Button Tally Information

Most of the buttons on the Control Panel can be illuminated to three states

- High Tally, the button is fully illuminated
- Low Tally, the button is dimly illuminated
- Off, no illumination

In general, a button goes high tally when it is fully active. Examples include the **Picture** top menu button being lit when that display menu has been selected, and the **Run** button being lit while an effect is actively running.

A button goes low tally when is not active, but is available for use in conjunction with the currently active function. For example, the **Path** button is low tally when the **Picture** top menu button is high tally, because path control functions are available for Picture menus. Pressing the **Path** button when it is low tally activates the path control for the selected Picture menu function. After pressing the **Path** button it will go high tally (it is active), and the **Picture** button will go low tally (it is inactive but can be used to return to the Picture menu functions). The **Run** button is low tally when an effect containing keyframes is idle. Pressing the Run while in this state will run the effect.

A button goes off when it is cannot be used with the currently selected Krystal DPM function. For example, the **Run** button is off when there are no keyframes in the current effect, because this effect cannot be run.

Special cases of button tallies are described with each button.

Double-Press Functions

Several Control Panel buttons on Krystal perform another function when you double press that button.

Table 2-1. Double Presses

Button Double Pressed:	Result
Clear Work Buffer (Single press clears Transforms.)	Clears Entire Work Buffer
Modify (Single press modifies Keyframe or marked Keyframes)	Modifies All Keyframes or all marked Keyframes.
Center (Single press applies closest detent value)	Centers to system default.
Delete (Single press deletes keyframe or marked Keyframes)	Deletes Effect

DPOP Functions

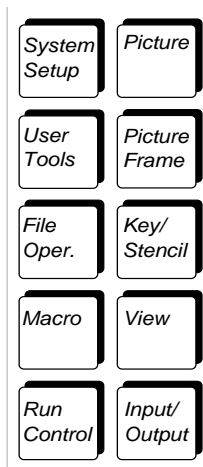
The double-press function called DPOPs (double press opens) automatically opens a menu on a double press.

Table 2-2. DPOPs

Button Double Pressed:	Pops to New Menu:
Top Menu Button	Any Assigned Menu
Auto Run	Output Control Menu
Any Transform Button	Path Menu for that Transform
Locate Axis	Axis Lock Menu

To select a menu for a top menu button DPOP, make the desired menu active, hold down the **Exit** button, press the desired top menu button, and then release both buttons. Double pressing that top menu button will now display the selected menu.

Top Menus



Top menus are accessed via the ten buttons to the left of the menu display. Pressing a top menu button calls up the first menu of the menu tree associated with that button. Generally, the five buttons on the right side of this area control functions that can be keyframed. The five buttons on the left side are used to set up operations, some of which can be keyframed.

DPOP functions can also be assigned to any of the top ten menu buttons to open any menu (see above).

The menus available via these top menu buttons are discussed in detail elsewhere in this manual.

System Setup



Press **System Setup** to access the menus used for system setup, connecting the panel with the Krystal system, and connecting the Krystal system with external controls.

User Tools



Press **User Tools** to access the menus used for setting system operating preferences, including Panel Prefs, Work Buf Prefs, and Source Memory.

File Operations



Press **File Oper.** to access the menus used for effects and file storage and retrieval operations, and channel and register operations.

Macro



Press **Macro** to access the menus used to define sequences of button pushes that may then be recalled via a single button.

Run Control



Press **Run Control** to access the Run Control menu. The tools in this menu assist you in establishing the behavior of an effect over time.

Picture



Press the **Picture** button to access the picture menus. Picture menu functions operate on the source image (the picture's surface), independent of the position of the image or other channels.

Picture Frame Menu



Press **Picture Frame** to access the Picture Frame menus. Picture frame tools manipulate the edges and "shape" applied to the picture, and may include Kurl and Corner Pinning functions.

Key/Stencil Menu



Press **Key/Stencil** to access the Key/Stencil menus. These tools allow you to control keying (inserting part of one picture into another to create a composite picture), and stenciling or masking operations (selecting a portion of a picture for special processing).

View Menu



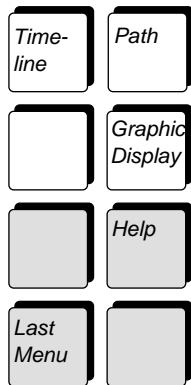
Press **View** to access the menus used to control lighting and perspective effects, and the Axis Lock feature.

Input/Output Menu



Press **Input/Output** to access the menus used to set the behavior of different sources entering and leaving the Krystal system, including control of Background, Combiner, and other functions.

User Assist Area



The user assist area consists of eight buttons which provide detailed views of the effect, control of panel operations, and video parameters.

See *Section 12-User Assist Menus* for more detailed information.



Press the **Timeline** button to cycle through various views of the effect on the Menu Display including: the Master Timeline, Independent Timeline, Transform, and Clipboard.

Tally Information — Pressing **Timeline** turns off any lit top menu button.



Press the **Last Menu** button when in a function menu to return to the last active menu.



Press the **Path** button when it is low tally (in a function menu that supports path) to set the way that function will be interpolated across the effect. Press the **Path** button when tally is off (not in a function menu that supports path) to bring up the Path Control menu. Double pressing the **Path** button at any time takes you directly to the Path Control menu.

Tally Information — Pressing **Path** turns off any lit top menu button.



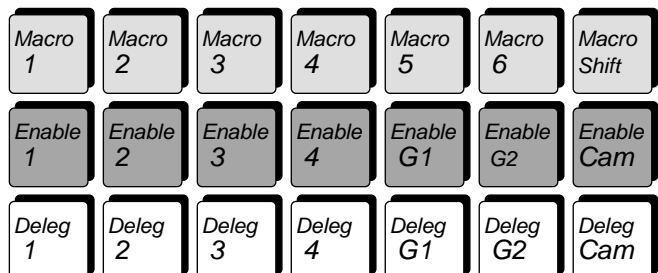
Press **Graphics Display** to access the Graphics menu. If the graphics option is installed, the tools in this menu assist you in establishing the behavior of an object as it is manipulated in space.



Pressing the **Help** button activates and deactivates the help mode. While in this mode, pressing any button will bring up a dialogue box describing that button's function.

Macro/Enable/Deleg Area

This area consists of three rows of buttons: Macro, Channel Enable, and Channel Delegate.



Macro Buttons



The yellow Macro buttons let you record up to 12 sets (Macro 1 through 6 and Macro Shift 1 through 6) of Control Panel button pushes, with each macro allowing up to 50 steps. Access the macro menu by pressing the white **Macro** User Assist button to name and store those button sequences for later recall.

Channel Enable Buttons

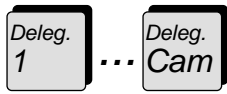


The Channel Enable buttons on Krystal determine which channels are part of the “current effect.” Channels must be acquired before they can be enabled (including wireframe channels). When an Enable button is turned off, it means that channel is no longer active in the current effect—it will not respond to run messages, even if it has keyframes. If a channel is running an effect when its enable button is extinguished, the effect continues to run but that channel’s workbuffer will not be updated. If an effect is running and an enable button is turned on, that channel will pop to the current effect and time.

Tally Information — The Enable buttons are toggles: high tally means acquired and enabled, low tally means acquired but not enabled, tally off means not acquired.

Delegation affects enables — Delegating a channel automatically enables that channel. The channel remains enabled until toggled off with its Enable button.

Channel Delegation Buttons



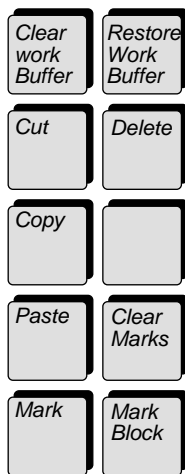
The seven Channel Delegation buttons (Channels 1-4, Globals 1 and 2, and Camera) define which logical channels the Control Panel will control. Channels must be acquired before they can be delegated (including wire-frame channels).

The first channel button pressed becomes the “display channel.” Although all seven channels may be delegated to the Control Panel, on most menus only one channel’s information may be shown at a time. The display channel’s data will be displayed.

Tally Information — The Delegate buttons are *not* toggles. Pressing one or more delegation buttons selects those channels and deselects the others. The Channel Delegation buttons have three states: off, indicating the channel is not acquired; low tally, indicating the channel is acquired but not delegated; and high tally, indicating the channel is acquired and delegated.

Delegation affects enables — Delegating a channel automatically enables that channel. The channel remains enabled until toggled off with its Enable button.

Clipboard Operations Area

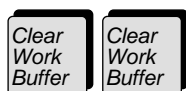


The Clipboard Operations area consists of ten buttons (including one blank) and provides functions which allow you to select, cut, copy, and paste portions of an effect, and let you clear and restore the work buffer.

The following provides a brief description of each button in this area.



Pressing **Clear Work Buffer** once resets only the transformation parameters in the Current Work buffer to their Unity KF values. (Holding down the **Near** and/or **Far** button while pressing the **Clear Work Buffer** button returns the source memory to the user default values for the delegated channels and delegated sides.)



Press **Clear Work Buffer** twice to reset ALL parameters in the Current Working Buffer to their unity settings.



Pressing the **Cut** button makes an exact copy of the current timeline or the selected portion of that timeline, places it in the Clipboard, then deletes the selected keyframes and their durations from the effect. Note that keyframe durations are not deleted when the **Const. Dur.** button, located in the Mode area, is ON.



Pressing the **Copy** button makes an exact copy of the current timeline or the selected portion of that timeline. It does not delete keyframes or time from the timeline. This copy may be pasted into the current effect, or another effect at a later time.



The **Paste** button is used to move information from the clipboard back into the effect. Information is either pasted at the location of the active cursor (mark cursor or time cursor), or is pasted into a selected portion of the effect. When pasting into a marked block, the paste operation replaces that marked block.



Press the **Mark** button to mark a single keyframe or point in time. The position of the mark is determined by the location of the active Mark Cursor or Time Cursor.



Pressing the **Restore Work Buffer** restores the values in the Restore Buffer to the current work buffer. New Restore Buffer values saved when a keyframe is deleted, when the **Clear Work Buffer** button is pressed, when a different register is recalled, and when the Store Work Buffer function is used.



Pressing the **Delete** button deletes selected keyframes and their durations from the effect. Note that keyframe durations are not cleared when the **Const. Dur.** button, located in the Mode area, is ON. Delete does not affect the clipboard buffer.



Double pressing the **Delete** button will bring up a dialog box asking if you want to delete the entire effect. Selecting OK will delete the entire current effect regardless of selected keyframes. Selecting CANCEL will leave everything the way it was.



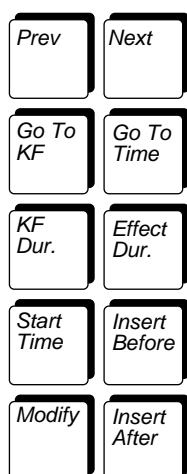
The **Clear Marks** button is used to clear any marked blocks (selected portions of the effect) that have been set on the effect timeline.



The **Mark Block** button is used to mark a block of time on the effect timeline. The position of the end point is determined by the location of the active cursor. When the mark block is active, the area between the end point and

the active cursor will be shown as highlighted. Pressing **Mark Block** again will define the other end of the interval (at the current cursor position) and turn off the mark block mode.

Effect Edit Area



The Effect Edit Area consists of ten buttons and provides functions which allow effects to be created and edited.



Pressing the **Prev.** button steps the active cursor backward to the previous keyframe on the effect timeline. The button lamp is off when parked on the first keyframe.



Pressing the **Next** button steps the active cursor forward to the next keyframe on the effect timeline. The button lamp is off when parked on the last keyframe.



When selected, the **Go To KF** button delegates the keypad for entry of a keyframe number which changes the position of the active cursor. If the time cursor is active, then the current time of the effect will be changed to the time of the indicated keyframe. If the mark cursor is active, then only its position is changed, which means the current time in the effect remains the same.



When selected, the **Go To Time** button delegates the Keypad for entry of a new time or time trim which changes the position of the active cursor. If the time cursor is active, then the current time of the effect will be changed to the new time entered, thereby updating the work buffer. If the mark cursor is active, then only its position is changed, which means the current time in the effect remains the same, without affecting the work buffer.



Pressing **KF Dur.** allows you to use the keypad to enter a duration in the work buffer that can be used to modify the current keyframe selected on the effect timeline. After typing the new duration, press **Enter** to specify that value on the keypad. You can then insert a new keyframe or modify the selected keyframe with the new duration value.



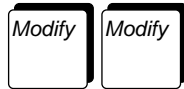
Pressing **Effect Dur.** allows you to scale the length of an effect by using the keypad to enter a new effect duration. To restore the original duration of the effect, press **Effect Dur.**, • followed by the **Enter** button, both located on the Keypad.



When selected, the **Start Time** button delegates the keypad for entry of an amount of time to move the delegated channel and all of its Independent Timelines off of time zero.



The **Modify** button causes the contents of the working buffer to be applied as a change to the current keyframe or selected set of keyframes. Modify is only active when a keyframe is included in the selected portion of the effect. If a function is not present in the effect, and this function is changed in the working buffer, pressing **Modify** will add an independent timeline for that function to the effect, and it will add a keyframe with that function's workbuffer value to that timeline location. In non-partial keyframe mode, it will also add factory default value keyframes for the new function to the rest of the effect (front and back fill).



Pressing the modify button twice applies any modified function (in the work buffer) that has been made on a delegated channel, to all keyframes across that function's independent timeline. If a block is marked, only the keyframes within the marked block will be modified.



The **Insert Before** button places a new keyframe in the effect at the location of the active cursor if not on a keyframe. If on a keyframe, then it inserts before the current keyframe. The new keyframe is given the duration of the current keyframe, unless a new keyframe duration has been specified.



Use the **Insert After** button to place a new keyframe in the effect at the location of the active cursor if the cursor is not on a keyframe. If it is on a keyframe, then the new keyframe is inserted after the end of the current keyframe's duration. The new keyframe is given the duration of the current keyframe, unless a new keyframe duration has been specified.

Keypad



The Keypad is used for entering or trimming numeric information; recalling effects; entering keyframe numbers; entering or trimming times, effect durations, and keyframe durations.

Numeric Entry

The system expects a numeric entry any time the following buttons are pressed:

Table 2-3. Numeric Entry

Effect Edit Area	E-MEM Area	Transform Area	Mode Area
Effect Dur.	Recall Effect	X	Auto Run
KF Dur.	Put	Y	
Go To KF	Get	Z	
Go To Time			
Start Time			

Transfer Buttons

When there is a value associated with one of the four transfer buttons to the right of the menu display, pressing that button causes the function name to be highlighted. At the same time the keypad will show the name of the operation and the current value of the parameter the operation adjusts. As soon as a numeric button is pressed, the value is cleared from the display and the new entry is shown.



The • button is used to enter fractional values. It is also used to represent a colon (:) when entering times. A parameter assigned to the keypad may be set to its defined unity by pressing the • button, followed by **Enter**. In the Auto Run mode, • allows “bank” selection for recall of effects.



Pressing the +/- button changes the sign of the value being displayed in the keypad.



The **Enter** button is used to complete a numeric entry. When **Enter** is pressed, the numeric value in the display replaces the value in the working buffer (except KF Dur). Note that the Enter function is different from the Trim function which modifies rather than replaces the value in the working buffer (see Trim button).



The **Trim** button is used to change a displayed parameter by a specific value. Enter the trim value first, followed by pressing **Trim**. If a negative trim value is desired, press the +/- button, enter the trim value, followed by **Trim**. Since the last trim value is retained in memory, repeatedly pressing **Trim** will repeatedly apply the value (there is no auto-repeat). You may change the sign of the retained trim value by pressing the +/- button followed by **Trim**.



Pressing **Detent** will trim the current parameter assigned to the Keypad to its nearest detent value. Detents are system defined position, size, angle of rotation or amount of perspective. Some parameters do not have detent values (like Recall), so the panel will beep to indicate the operation is undefined.



Pressing **Clear Entry** will clear an incomplete entry and display the current value of the parameter assigned to the Keypad.

E-MEM Area

The E-MEM Area consists of three E-MEM operation buttons.



Pressing the **Recall Effect** button, followed by the desired effect number and then **Enter**, calls up an effect register. Once the effect has been recalled, the Keypad becomes undelegated to prevent unwanted or accidental recall. The Current effect number is assigned to the Keypad in its place.



Recalling the Next Available Register—The next empty effect register may be recalled by pressing **Recall Effect**, **•**, then **Enter**.



Press the **Put** button to copy timeline information from all (or the selected) timelines in the delegated channels in the current effect to a new effect register number entered from the Keypad.



Press the **Get** button followed by an effect register number entered from the Keypad to copy timeline information from that effect register to the delegated channels of the current effect. If timelines have been selected in the current register, only those timelines will be pulled from the effect register.

Mode Area

The Mode Area consists of three mode buttons which affect editing, run, and E-MEM operations.



Press the **Const. Dur.** button to turn the Constant Duration editing mode ON or OFF. Constant duration maintains the effect duration while editing functions are performed on the timeline.



Selecting the **Auto Run** button places the system in a mode which treats the Keypad like a shot-box where effect registers are recalled and run as soon as a single digit number is pressed on the Keypad. To run registers higher than 9, press • (N) to go to register bank (N). For example, register #10 is bank 1, register 0.



Pressing the **Partial KF** button places the system in a mode that places keyframe flags on the timeline **ONLY** for changed functions. This mode permits finer control of effect creation and edit processing on a function-by-function basis. When this button is deselected, Krystal operates in a mode that places keyframe flags onto the timeline for **ALL** active functions, not just those that have changed.

Override Area



The Override Area consists of three control buttons that allow you to override elements of a running effect.

Note All override functions maintain their status until turned off by the user. Pressing the **Clear Work Buffer** button or loading a new register will *not* clear any override settings in force.



Select the **Freeze 1** button to apply a Freeze Override to the current effect. The first (#1) to two alternate sets of parameters for the Input Recursive and Motion Detection menus are imposed on all delegated channels. This Freeze Override set of parameters can be defined by pressing the **Freeze 1** button so it is lit, and then going to these two menus and changing the parameters. If the system does not have the Input Recursive option, this button works as a hard freeze using the transform memories.

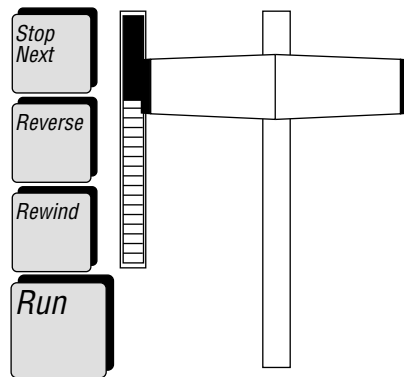
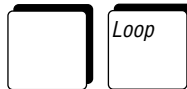


Select the **Freeze 2** button to apply the second (#2) of two alternate sets of parameters for the Input Recursive and Motion Detection menus on all delegated channels. This set of Freeze Override parameters can be defined by pressing the **Freeze 2** button so it is lit, and then changing the menu parameters. This button is not operational if the Input Recursive option is not installed.



The **Hold Input** button allows you to override keyframe selection of video inputs and source memory parameter settings for delegated channels during an effect run. This allows manual selection of sources for each delegated channel.

Run Area



The Run area consists of a Lever Arm, a bar graph indicator, and five control buttons.

Lever Arm

The Lever Arm can be used to manually run an effect. The direction the effect runs is affected by the state of the **Reverse** button.

If an effect is positioned at some point after the beginning but before the end, it is possible to reverse the direction of the effect by moving the Lever Arm in the other direction.

Bar Graph Indicator

The Bar graph indicator gives a visual indication of the approximate position of the effect with respect to the beginning and end.



When selected, the **Stop Next** button causes an effect to stop at the next master timeline keyframe when the **Run** button is pressed.



Pressing the **Reverse** button causes the effect to run backwards. It may be pressed before or during the effect run. If the **Reverse** button is pressed while the effect is running, the effect will immediately change directions.



Pressing the **Rewind** button positions the effect at either the beginning or end of the effect depending on the status of the reverse button. If an effect is running when this button is pressed, the effect run stops and the effect returns to the beginning or end.



Pressing the **Run** button causes the effect to be run in its entirety (provided the Stop Next button is not on and there are no effect pauses). Successive presses of the **Run** button may be used to stop and re-start the effect during the run.

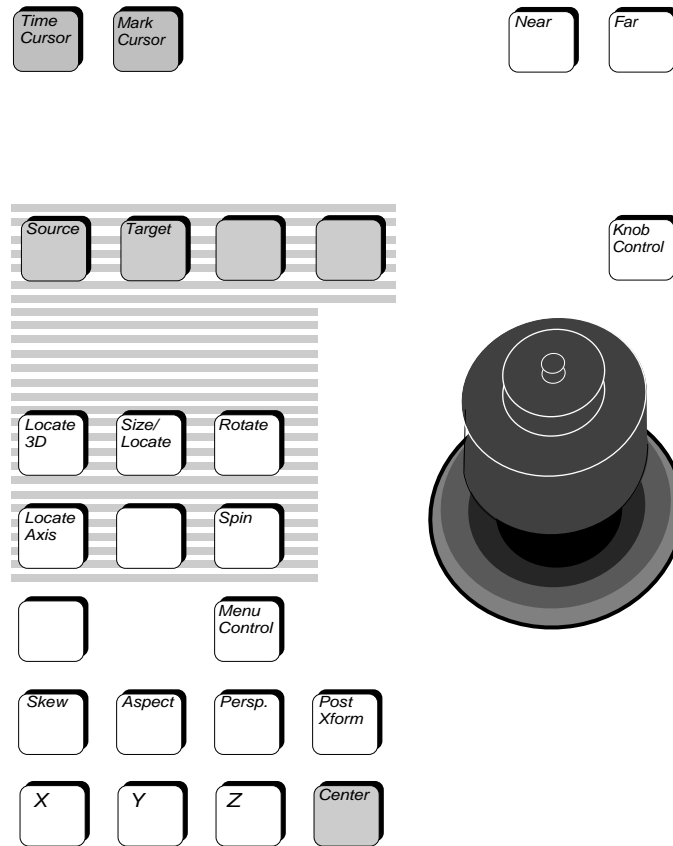
Tally Information — **Run** has three states. While the effect is running, the button is high tally. When the effect is idle and the current effect has keyframes, it is low tally. When the effect is idle and the current effect does not have any keyframes, **Run** is off.



Pressing the **Loop** button toggles the Loop Control function off if it is currently on, and on if it is currently off. This is equivalent to going to the Loop Control Menu and pushing the **LOOP ENABLED** soft button.

Tally Information — The **Loop** button is high tally when the Loop Control function is ON, and is off when the Loop Control function is off.

Transform Area



The Transform area contains the controls used for transforming video images when building an effect. This area of the panel consists of four logical parts:

- Time and Mark Cursor buttons; Near and Far buttons
- Buttons that assign different parameters to Joystick control
- Buttons that determine how parameters are displayed and how Joystick input is constrained and sent to the system
- Reference axes buttons.
- Knob Control and Menu Control buttons



Pressing the **Time Cursor** button activates the Time Cursor in the timeline display. Krystal has two cursors that may be used to reference times on the effect timeline—the Mark Cursor and the Time Cursor. The Lever Arm moves whichever cursor is active along the effect. The position of the Time Cursor determines the current time in the effect. When the Time Cursor is moved, the working buffer changes to reflect effect values at the current time.

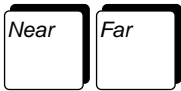
Tally Information — **Time Cursor** and **Mark Cursor** are mutually exclusive.



Pressing the **Mark Cursor** button activates the Mark Cursor in the timeline display. Like the Time Cursor, the Mark Cursor is moved along the effect timeline using the Lever Arm, **Go To KF Go To Time Next** or **Prev.** buttons. The difference is that moving the Mark Cursor does not change the current time of the effect, so the working buffer is not updated. The Mark Cursor is used to reference parts of the effect for editing without changing the current time location of the effect (or changing the Working Buffer).

Tally Information — **Mark Cursor** and **Time Cursor** are mutually exclusive.

Note Run functions update the effect time location and work buffer no matter which cursor is active.



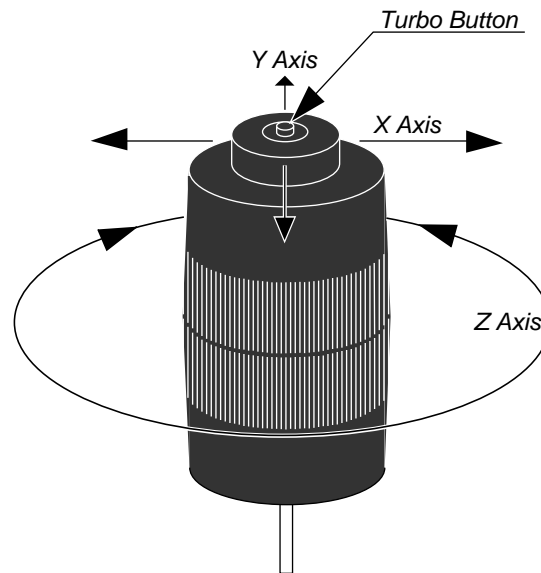
The **Near** or **Far** buttons, located on the lower Control Panel in the transform area, are used to delegate the sides of the picture. The **Near** button delegates the visible side of the picture, and its parameters will appear on the Menu Screen. The **Far** button delegates the back (non-visible) side of the picture, and parameters for this side will appear on the Menu Screen. Source memory parameters can also be assigned with these buttons.

(Holding down the **Near** and /or **Far** button while pressing **Clear Work Buffer** will load the user unity values for source memory into the delegated side of the delegated channels.)

Tally Information—The **Near** and **Far** buttons have three states: off, indicating that side will not be effected by changes to source memory parameters; and high and low tally, indicating that changes made to source parameters will be applied. Holding down one button while pressing the other delegates both sides. The first side pressed will be high tally, and the other will be low tally. In this state, source selection and changes to source related parameters will apply to both sides at the same time.

Joystick

The Joystick is a precision three-axis device. Moving the Joystick towards or away from you controls the Y-axis, left and right movement controls the X-axis, and rotation of the Joystick controls the Z-axis.



Turbo Button

The turbo button on the top of the Joystick can be used to accelerate transform offsets to allow quicker placement of the transformed pictures.



Holding down a button (or buttons) constrains the movement to the direction(s) of the buttons pressed. For example, if the **X** button is held down while the Joystick is moved, then only the X-axis deflection is performed.

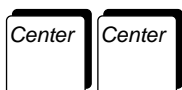
When one of these buttons is pressed, the parameter corresponding to the axis of the button pushed (for example, Locate X for the **X** button) is assigned to the Keypad and/or Joystick. The keypad may then be used to enter an exact value for the parameter. More than one transform parameter may be assigned to the Keypad by holding down multiple axis buttons. A plus (+) sign shows in the Keypad display to indicate multiple selections. The first button pressed is the parameter that gets displayed in the Keypad, but values entered from the Keypad will be applied to each assigned parameter.



When the **Knob Control** button is pressed on (lit), the current parameters assigned to the X, Y, and Z axes are copied to the top three soft knobs. Adjusting the soft knobs allows finer control of transform parameters. When **Knob Control** is turned off (unlit), any parameters that were previously assigned to the soft knobs are restored.



Press the **Center** button once to go to the nearest detent for the current transformation parameter (X-axis, Size, etc.). For example, size detents occur every 0.25 units. If you use the Joystick to scale the video image somewhere nearer 0.25 than 0.5 in size, pressing **Center** once will snap the image back to the 0.25 detent. Normally, all three of the parameter's axis values are affected by the detent; however, if an axis button (**X**, **Y**, or **Z**) is pressed and held down before **Center** is pressed, the centering function will be limited to the selected axis.



Press **Center** twice to set the current transformation parameter to its system default. Again, holding down one or more axis buttons will restrict this operation to the selected axes.



Pressing the **Source** button allows all transformations to be made relative to a channel's own axes. Each channel has its own Source reference (including the Global and Camera channels).

Tally Information — **Source** is either off or high tally. **Source** and **Target** are mutually exclusive—when one is high tally, the other is off.



Pressing the **Target** button allows all channel transformations to be made relative to the channel's assigned global. If a channel is not assigned to a global, then transformations are made relative to the Camera reference axis.

Tally Information — **Target** is either off or high tally. **Target** and **Source** are mutually exclusive—when one is high tally, the other is off.



The **Locate 3D** button assigns the Joystick to control the movement of an image along the X, Y, and Z axes of either the Target Reference or the Source Reference of the delegated channel.

Tally Information — All transform function buttons are mutually exclusive—turning one on turns another off.



The **Size/Locate** button assigns the Joystick to image positioning and sizing moves. Joystick deflection along the X and Y axes locates the image in the same way as the Locate 3D function. As with Locate 3D, position control is different for Target and Source modes. Deflecting the Joystick along the Z-Axis scales the picture about its center. The axis of rotation tracks the picture proportionally.

Tally Information — All transform function buttons are mutually exclusive—turning one on turns another off.



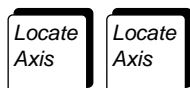
The **Rotate** button assigns the Joystick to control the rotation of the image around the X,Y, and Z axis. Control is different for Target and Source modes. This button permits you to rotate only ± 180 degrees between key-frames. Rotations are in revolutions (1.0 = turn around one complete time = 360 deg.)

Tally Information — All transform function buttons are mutually exclusive—turning one on turns another off.



The **Locate Axis** button assigns the axes of rotation of an image source or target. The Joystick is then used to locate the axes anywhere on or off the screen. The direction the axis moves depends on which reference axis is selected. Unlike the Locate 3D function which moves both the picture of the image and the axis of rotation at the same time, **Locate Axis** moves only the axis of rotation. The picture is not moved.

Tally Information — All transform function buttons are mutually exclusive—turning one on turns another off.



Press twice to jump to the Axis Lock menu located in the **View** Top Menu. This lets you lock (or unlock) the axis to the picture so that when you perform a transform the axis keeps the same spatial relationship to the picture.



The **Spin** button lets you to program multiple rotations about an axis. **Spin** assigns the Joystick to control the X, Y, and Z spin of the image. Control is different for Target and Source modes. The spin number is the number of rotations.

Tally Information — All transform function buttons are mutually exclusive—turning one on turns another off.



The **Menu Control** button assigns the Joystick to control parameters in the current menu. Moving the Joystick left and right (X axis) changes the first (top) soft knob parameter. Moving the Joystick forward and backward (Y axis) changes the second soft knob parameter. Rotating the Joystick (Z axis) controls the third soft knob parameter.

Tally Information — **Menu Control** has two states: off, meaning the Joystick is controlling transforms; and high tally, which indicates the Joystick has been delegated to the current menu.



The **Skew** button assigns the Joystick to control the skew of the image in X and Y. The Z-axis is disabled in skew.



The **Aspect** button assigns the Joystick to control the scale of the image in X, Y and Z. The Z-Axis control duplicates the Z control of the **Size/Locate** button. When scaling any component of the picture, the center of rotation maintains its proportion to the picture.



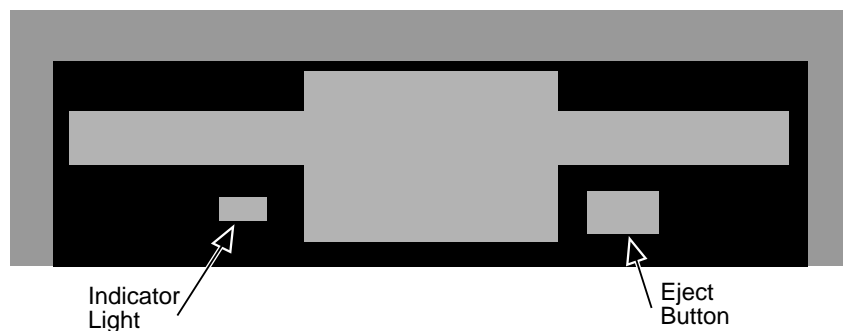
The **Persp.** button assigns the Joystick to control an image's perspective, in the X, Y, and Z axes.



Pressing **Post Xform** assigns the Joystick to control the movement of an image along the X and Y axes of two-dimensional screen space (this appears to move over a flat space and perspective changes do not occur). Deflecting the Joystick along the Z-Axis will scale the image in 2D (post scale).

Tally Information — When the **Post Xform** button is high tally, the Source and Target button tallies go off. Post transform moves are always in relation to the monitor screen. When Post Xform is off, the previously selected Source or Target button will return to high tally.

Floppy Disk Drive



The 3.5 inch floppy disk drive is located on the left side of the lower Control Panel. Floppies can be formatted for High (1.44 MB) density using the **DISK MANAGER** menu function located in the **File Oper.** Top Menu. Effects, system and panel configuration data, user preferences and macros can be saved to and loaded from a disk using this drive.

Insert the floppy disk into the drive until it is "locked" into place. To eject the disk, press the black eject button located on the front of the drive unit. A small light located on the bottom left of the drive illuminates to indicate drive activity.

System Setup Menu

Introduction

The System Setup Menu allows you to customize the operating parameters of the Krystal system to suit your particular operating style, and to match the configuration of your facility.

SYSTEM SETUP

Displayed:
 Register:
 Keyframe:
 Cur. Time:

RESOURCE
>
EXT CNTRL
PREFS >
RUN
PREFS >
PANEL
CONFIG >
SYSTEM
CONFIG >

The top level System Setup menu includes the following lower level menus:

RESOURCE> — accesses the Resource Acquisition menu to acquire or release channels entering the Krystal system through the Effect Manager.

EXT CNTRL PREFS> — enables and disables external ports and GPIs.

RUN PREFS> — sets the run starting field—Any Field, Odd, or Even.

PANEL CONFIG> — used to assign the panel to a suite, set the IP address and is a gateway to the panel diagnostics and calibration.

SYSTEM CONFIG> — accesses tools used to configure the Krystal DPM into its operating environment.

Note The System Configuration menus are covered in detail in the separate Krystal Installation and Service Manual.

Resource Acquisition Menu

To bring up the following menu, press the **System Setup** Top Menu button, then press **RESOURCE>**.

Effect Manager Resource Acquisition

Use this menu to acquire or release a Krystal Effect Manager.

RESOURCE ACQUISITION

EFFECT MANAGER POOL:

Name	Suite	Type
EM 2	Suite 2	Single

CURRENT EFFECT MANAGER:

Name	Suite
EM 1	Suite 1

Available Memory: 100%

EFF MGR

CHANNEL

PUBLIC

PRIVATE

SCROLL

RESOURCE

SELECT/SCROLL

GET INFO...

ACQUIRE

SESSION MODE

RELEASE EFFMGR...

To acquire or release Effect Managers, use the following Effect Manager Acquisition menu functions:

SELECT/SCROLL — use the select/scroll soft button to scroll through the Effect Managers listed in the Effect Manager Pool dialog box shown above in the menu display. When this button has been depressed you may also use the **SCROLL** soft knob to scroll through the Effect Manager pool selections. The highlighted Effect manager selection can then be acquired using the **ACQUIRE** soft button.

GET INFO — this soft button brings up information about the selected Effect Manager and displays that information in the menu display.

ACQUIRE — press this soft button to acquire the Effect Manager selected with the select/scroll knob. The Effect Manager you acquire will be added to the “Current Effect Manager” dialog box shown above in the menu display.

SESSION MODE — determines whether your session will be **PUBLIC** or **PRIVATE**. This is only operational when a channel has been acquired.

PUBLIC — allows the Effect Manager to be acquired from any control panel (access is not restricted).

PRIVATE — prohibits further acquisition of the Effect Manager by other control panels. This mode would be used primarily in a live environment where it must be ensured that the Effect Manager is not accidentally acquired and controlled during a live broadcast.

RELEASE EFFMGR... — to release the selected Effect Manager, press this soft button when the Current Effect manager you have chosen with the select/scroll button is highlighted.

Channel Resource Acquisition

Use this menu to acquire or release Krystal channels.

The diagram illustrates the Resource Acquisition process. It starts with a **CHANNEL POOL** containing a table with columns **Name**, **Type**, and **Suite**. The first entry is **CH 2**, **Krystal**, **Suite 1**. A dashed line connects this entry to the **CHANNEL** section of the **EFF MGR** block. Below the **CHANNEL POOL** is a table with columns **RESOURCE**, **SELECT/SCROLL**, **GET INFO...**, **ACQUIRE**, **SELECT/SCROLL**, **RELEASE**, and **RELEASE ALL...**. The **ACQUIRE** step is highlighted. A dashed line connects the **ACQUIRE** step to the **ACQUIRED CHANNELS** section. The **ACQUIRED CHANNELS** section contains a table with columns **Name** and **Type**, with the first entry being **CH 1** and **Krystal**. A dashed line connects this entry to the **SCROLL** step in the bottom table.

RESOURCE ACQUISITION

CHANNEL POOL:

Name	Type	Suite
CH 2	Krystal	Suite 1

ACQUIRED CHANNELS:

Name	Type
CH 1	Krystal

EFF MGR

CHANNEL

RESOURCE **SELECT/SCROLL** **GET INFO...** **ACQUIRE** **SELECT/SCROLL** **RELEASE** **RELEASE ALL...**

SCROLL

To acquire or release channels use the following Channel Resource Acquisition menu functions:

SELECT/SCROLL — use the first select/scroll soft button to scroll through the channels listed in the Channel Pool dialog box shown above in the menu display. When this button has been depressed you may also use the **(SCROLL)** soft knob to scroll through the channel pool selections. The highlighted channel selection can then be acquired using the **ACQUIRE** soft button.

GET INFO — this soft button brings up information about the selected channel and displays that information in the menu display.

ACQUIRE — press this soft button to acquire the channel selected with the select/scroll button or scroll knob. The channel you acquire will be added to the “Acquired Channels” dialog box shown above in the menu display.

SELECT/SCROLL — use the second select/scroll soft button to scroll through the Acquired Channels list. The highlighted Acquired Channel can then be released using the **RELEASE** soft button.

RELEASE — to release a selected channel, press this soft button when the acquired channel you have chosen is highlighted.

RELEASE ALL — press to release ALL acquired channels at once.

External Control Preferences Menu

Press the **System Setup** top menu button then press **EXTERNAL CNTRL PREFS>** to bring up the following menu.

Serial Ports Preferences

Use this menu to enable/disable each of the serial ports on the Effect Manager I/O module (Editor, Switcher, Aux).

EXT CONTROL PREFS

Displayed:
Register:
Keyframe:
Cur.Time:

PORTS

GPI INPUTS

DEFAULTS

ENABLE

DISABLE

ENABLE

DISABLE

ENABLE

DISABLE

MODIFY

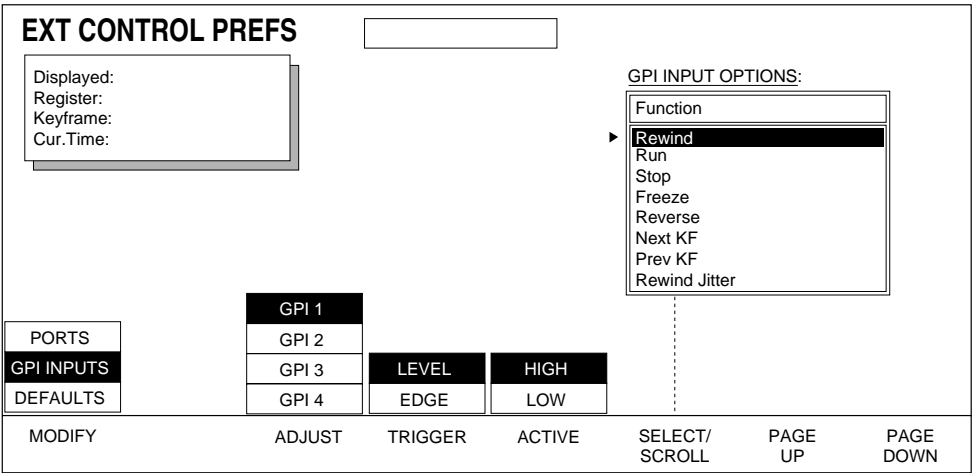
EDITOR
PORT

SWITCHER
PORT

AUX
PORT

GPI Preferences

Use this menu to select a GPI and a function to cause that function to occur when the selected GPI is activated. Select OFF in the GPI Input Options box to disable a GPI.



GPI Preferences menu functions:

ADJUST — lets you choose each GPI (1 - 4) you will be assigning triggering parameters.

TRIGGER — use to set whether the GPI trigger closure is determined by **LEVEL** or **EDGE**.

LEVEL — triggers the GPI closure when level is set high (in active-high) or set low (in active-low). When **LEVEL** is selected the pulse must have a duration of at least 2 fields.

EDGE — triggers the GPI closure when a rising edge is detected. Only a rising edge will cause GPI closure.

ACTIVE — this mode is only available when **LEVEL** has been selected as trigger parameter. You choose whether the GPI triggers closure when it is **HIGH** or **LOW**.

SCROLL/SELECT — use to scroll through and select GPI Input Options you want to assign to a particular GPI. The following is a list of those options. You can also use the **SCROLL** soft knob to scroll through the list then select that function using the **SCROLL/SELECT** soft button.

- Rewind
- Run
- Stop
- Freeze
- Reverse
- Next KF
- Prev KF
- Rewind Jitter
- Step Jitter
- Fade
- Advance Frame
- Reverse Frame
- Advance Field
- Reverse Field
- Off — disables GPI

PAGE UP, PAGE DOWN — use these two soft buttons to scroll to option choices out of view in the scroll pane.

Defaults Preferences

Use this menu to define how your external control preferences are defined and recalled.

EXT CONTROL PREFS

Displayed:
Register:
Keyframe:
Cur.Time:

PORTS

GPI INPUTS

DEFAULTS

MODIFY

DEFINE
XTL PREFS...

RECALL
XTL PREFS...

RECALL GVG
DEFAULTS...

Defaults preferences menu functions:

DEFINE XTL PREFS... —saves your current external default preferences as your user defaults.

RECALL XTL PREFS... — recalls you user external defaults to your current preferences.

RECALL GVG DEFAULTS... — recalls GVG’s factory defaults to your current preferences.

Run Preferences Menu

Press the **System Setup** top menu button then press **RUN PREFS>** to bring up the following menu.

Use this menu to access controls that set the run starting field (Any Field, Odd, or Even). Normally, effects are started at the beginning of any field. However, it may be desirable to delay the start of the effect until the next occurrence of an **ODD** or **EVEN** field. Pressing **STARTING FIELD** allows you to specify the field where the start of an effect will occur.

Run Preferences menu functions:

STARTING FIELD — effect may start at:

ANY FIELD allows effect to start at any field.

ODD allows effect to start on the next ODD field.

EVEN allows effect to start on the next EVEN field.

DEFINE RUN PREFS... — saves your current run preferences as your user defaults.

RECALL RUN PREFS... — recalls user defaults to your current run preferences.

RECALL GVG DEFAULTS... — recalls factory defaults to your current run preferences.

Panel Configuration Menu

Use this menu to assign the panel to a suite, set the IP and subnet mask addresses and as access to the panel diagnostics and calibrate mode.

PANEL CONFIGURATION

Displayed:
Register:
Keyframe:
Cur. Time:

SUITE ASSIGN...	IP ADDRESS...	SUBNET MASK...	DIAGS >	CALIBRATE >	RECALL NV RAM...	RECALL GVG DEFAULTS...
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SUITE ASSIGN — Assigns the panel to one of the four suites.

IP ADDRESS — This is a system administration function, please see the Krystal Installation and Service manual for information on this function.

SUBNET MASK — This is a system administration function, please see the Krystal Installation and Service manual for information on this function.

DIAGS — This is a system administration function, please see the Krystal Installation and Service manual for information on this function.

CALIBRATE — This is a system administration function, please see the Krystal Installation and Service manual for information on this function.

RECALL NV RAM... — This function recalls the last user-defined panel configuration settings.

RECALL GVG DEFAULT — Recalls GVG default panel configuration.

System Configuration Menu

The System Configuration menus contain tools that are generally only used during initial system installation, when the system hardware or software is being modified or upgraded, or when the system is being maintained. The following warning appears when you select **SYSTEM CONFIG>** :

CAUTION Improper use of system administration tools may drastically inhibit Krystal's functionality.

System Configuration menus include:

- Channel Configuration
- Effect Manager Configuration
- Source Select Device Manager
- Suite Configuration
- Network Configuration
- Save/Load

These menus are covered in detail in the separate Krystal Installation and Service Manual.

User Tools Menu

Introduction

The User Tools Menu lets you customize the operating parameters of the Krystal system to suit your particular operating style including: Source Memory, Work Buffer Preferences, Display Options (including Screen Saver), and the Edit Enable function.

Press the **User Tools** Top Menu button to bring up the following menu.

USER TOOLS

Displayed:
 Register:
 Keyframe:
 Cur.Time:

ON
 OFF

SOURCE
MEMORY >

WORK BUF
PREFS >

DISPLAY
OPTIONS >

PANEL
PREFS >

EDIT
ENABLE

Lower level menus included in this menu include:

SOURCE MEMORY> — this menu determines the relationship of source-related parameters with a source. You can lock or unlock source-related parameters to their sources.

WORK BUF PREFS> — this menu allows you to define the Krystal Unity KF, (user defined default effect parameter values), and recall GVG default effect parameter values.

DISPLAY OPTIONS> — this menu determines which timeline displays are cycled through on the Panel's Menu Display when you press the **Timeline** top menu button. The Screen Saver function is enabled and disabled from this menu.

PANEL PREFS> — this menu sets up the panel warnings, lamp intensity, joystick deadzone, and clip options. It also allows you to set the panel to GVG default values for these parameters.

EDIT ENABLE — enables or disables the panel buttons used to edit effects.

Each menu is discussed in detail on the following pages.

Source Memory Menu

The Source Memory menu determines the relationship of source memory parameters with a source. Source memory parameters include:

- Video Source Selection with associated Key and/or Mask Selection
- All Key Settings (External, Self, or Off, Clip Low, Clip High, Offsets)
- All Mask Settings (Internal, External, Pattern Selection)
- Coring
- Motion Detection
- H/V Reverse
- Matte Fill
- Input Video Shaping
- Enhanced Image Fidelity Option (On or Off)

Source memory parameters and source selections are keyframable and appear on the source memory timeline. All source memory parameters follow the video source selection if source memory is locked.

Source memory parameters follow both the channel delegation and the Near/Far delegation. This makes it possible to apply different source memories to the front and back sides of the manipulated picture.

Press the **User Tools** Top Menu button and then press **SOURCE MEMORY >** to bring up the following menu.

SOURCE MEMORY		FRONT SIDE		back side	
Displayed:		Video:	1	Video:	2
Register:		Key:	1	Key:	2
Keyframe:		Mask:	1	Mask:	2
Cur.Time:					
<div>Near</div> <div>Far</div>					
<div>ON</div> <div>OFF</div>		<div>CURRENT</div> <div>ALL</div>			
SRC MEM LOCKED		DEFINE EFF SEND...		SRC MEM UNITY	
				DEFINE UNITY...	
				RECALL UNITY...	
				RECALL GVG DEFAULTS...	

Source Memory menu functions:

SRC MEM LOCKED — ON or OFF.

ON — locks source memory parameters to their sources. This is the normal mode of operation for source memories. In this mode, when a new video source is selected for an input (for example, assigning Source 1 to Channel 1's video input), the source memory associated with the new video source will become the current active source memory for Channel 1, meaning that the source memory for Source 1 will be copied into Channel 1's work buffer.

OFF — unlocks source memory parameters from their source. Choose **OFF** when you do not want the source memory to update automatically. For example, you may want to try various sources with a given set of source parameters. Now different sources may be selected either manually from a control point or by pulling them from keyframes, without changing the active source memory.

DEFINE EFF SEND... — will copy the source memory settings for the delegated side of the display channel to the Effects Send source memory. When the Switcher is in Effects Send mode, the switcher performs all source selection and the Krystal Effects Send source memory parameters will be used for all the selected sources. When in Effects Send mode, the Front/ Back Side text at the top of the Krystal display indicates this mode is activated for the delegated channels.

SRC MEM UNITY — the **CURRENT** or **ALL** settings affect the operation of **DEFINE UNITY**, **RECALL UNITY**, and **RECALL GVG DEFAULTS** as follows:

Current — If the near side and far side have different sources, **DEFINE UNITY** will copy the source memory settings for each delegated side of the display channel to the unities of these sources. If the same source is on both the near and far side, then settings of the display side will be copied to that source's unity. (If both sides are delegated, the one pushed first is the display side.) **RECALL UNITY** will copy the unity(ies) for the delegated channels for the sources on the delegated sides to the source memories for those sources. **RECALL GVG DEFAULTS** will copy the factory default settings to the source memories for the delegated channels and the delegated sides.

All — **DEFINE UNITY** will copy all source memory settings for the display channel to the respective source memory unities. **RECALL UNITY** will copy all the unities to all the source memories of the delegated channels. **RECALL GVG DEFAULTS** will copy the factory default source memory to all the source memories of the delegated channels.

Work Buffer Preferences Menu

Press the **User Tools** Top Menu button then press **WORK BUF PREFS>** to bring up the following menu. Use this menu to set how Krystal uses information in the current work buffer.

WORK BUFFER PREFS	
<div> <div>Displayed:</div> <div>Register:</div> <div>Keyframe:</div> <div>Cur.Time:</div> </div>	
<div> <div>STORE WORK BUFFER...</div> <div>DEFINE UNITY KF...</div> <div>RECALL UNITY KF...</div> <div>RECALL GVG DEFAULT...</div> </div>	

Work Buffer Preferences menu functions:

STORE WORK BUFFER... — stores the current work buffer for further use. Works with the **Restore Workbuffer** Control Panel button.

DEFINE UNITY KF... — stores the current work buffer settings for the display channel (indicated in the top left corner of the screen) to the Unity KF for use by the logical, global, and camera channels. Different Unity KF settings are saved under the following conditions:

- If a logical channel (1-4) is the display channel, all the display channel's settings (including transforms) will be saved to the Unity KF.
- If a global channel is the display channel, only the global channel's transform settings will be copied to the Unity KF. Other existing Unity KF parameters (borders, crops, etc.) will be retained.
- If only the camera channel is delegated (and so is the display channel), only the camera channel's transform and combiner parameters (on systems equipped with a combiner) will be copied to the Unity KF. This is the only case where camera channel transforms are saved to the Unity KF.
- If the camera channel and one or more other channels are delegated, and the camera channel is the display channel, the current combiner parameters will be copied to the Unity KF, but transform settings will be copied from the lowest numbered delegated logical channel or global channel.

Note Unity KF values are applied to all channels, including Global and Camera channels. Transform values should be default when the Unity KF is defined, to prevent multiple application of transforms when the Unity KF is invoked.

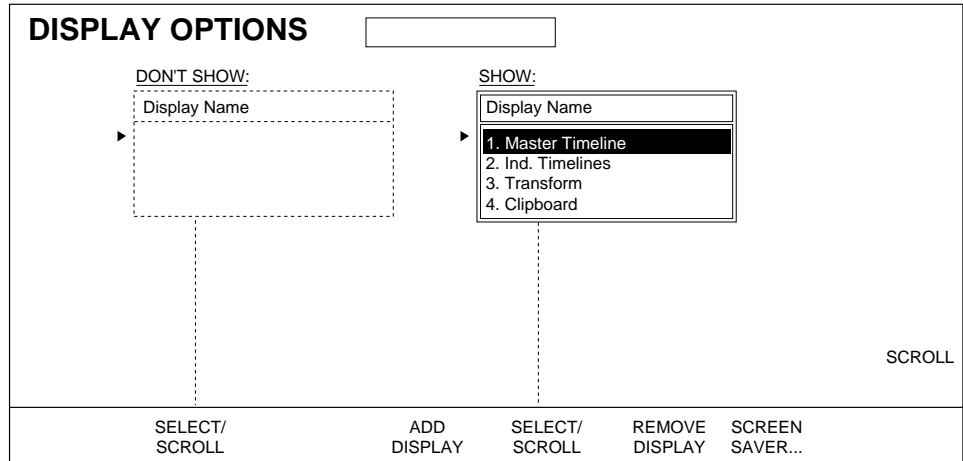
RECALL UNITY KF... — copies the stored Unity KF settings into the work buffer(s) of all delegated channels.

RECALL GVG DEFAULTS... — copies factory defaults into the work buffer(s) of all delegated channels.

Display Options Menu

Use this menu to set which timeline displays are cycled through on the Panel's Menu Display when you press the **Timeline** top menu button. The displays include: Master Timeline, Independent Timeline, Transform, and Clipboard. You can also use this menu to enable or disable the Screen Saver.

Press the **User Tools** top menu button then select the **DISPLAY OPTIONS>** submenu to bring up the following menu.



SCREEN SAVER... — to activate the screen saver press this button. To deactivate, simply press any button or move any knob on the Control Panel.

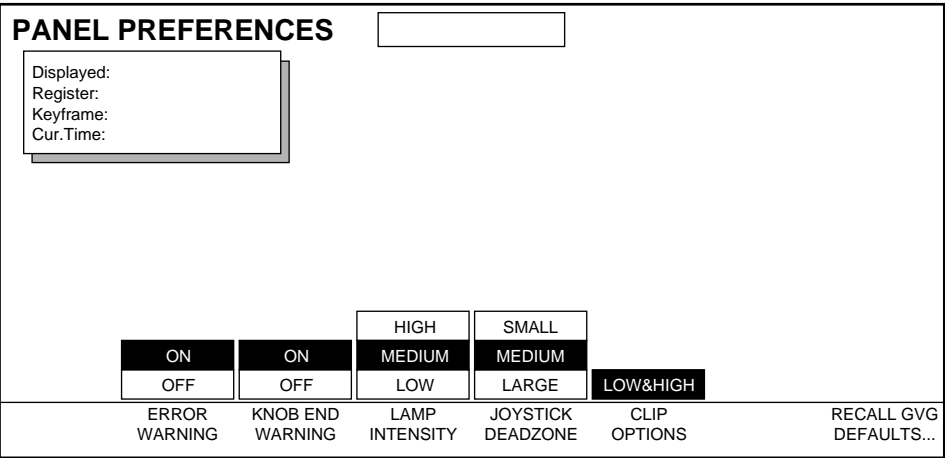
Follow these steps to choose which timelines display in the **Timeline** menu display.

1. Using the **SELECT/SCROLL** button or (**SCROLL**) Soft Knob, scroll to the Display Name you wish to remove from the SHOW box.
2. Press **REMOVE DISPLAY** to take this selection out of the SHOW box and place it into the DON'T SHOW box.
3. To add the selection back into the SHOW box, press **ADD DISPLAY**. All the selections showing in the SHOW box will then be displayed in the **Timeline** top menu.

Panel Preferences Menu

Use this menu to set up specific panel preferences.

Press the User Tools top menu button then press **PANEL PREFS>** to bring up the following menu.



Panel Preferences menu functions:

The following functions are all saved in Panel NV RAM. You cannot save them to disk.

ERROR WARNING — turns **ON** or **OFF** the warning beep that an erroneous entry has been made with the keypad or an inactive button has been pressed. Krystal must be expecting an entry from the keypad for the warning to sound.

KNOB END WARNING — turns **ON** or **OFF** the warning beep that one of the four knobs to the right of the display or the joystick has gone to one of its limits.

LAMP INTENSITY — sets the intensity of the panel lamps (**HIGH**, **MEDIUM**, **LOW**).

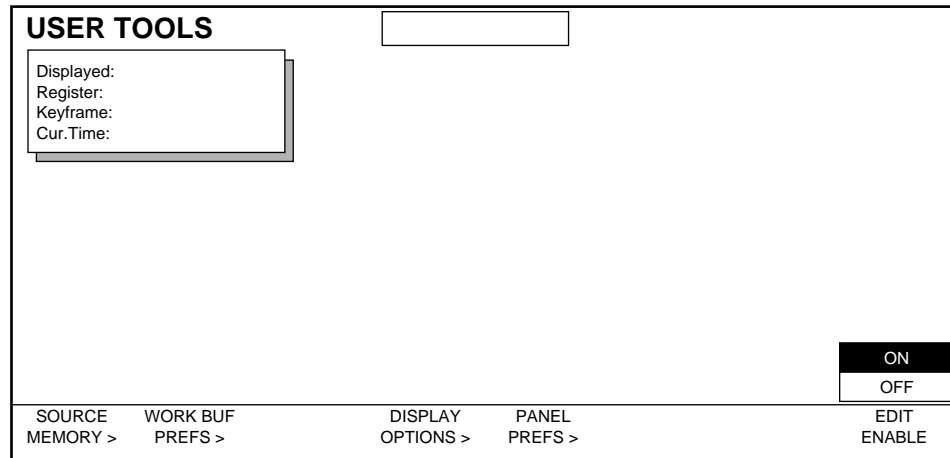
JOYSTICK DEADZONE — This feature is not currently implemented

CLIP OPTIONS — This feature is not currently implemented

RECALL GVG DEFAULTS — causes the factory default panel preferences settings to become the active settings. These parameters were set at the factory and are not changeable.

Edit Enable Function

The **EDIT ENABLE** mode located in the **User Tools** Top Menu shown below, is where you enable or disable the Krystal Control Panel buttons used in effects editing.



The Krystal panel is always in one of two Edit Enable Modes:

- **ON** — when selected, operations are allowed to create and modify effects. The Control Panel buttons associated with editing go low tally when on.
- **OFF** — when off, this setting protects effects from accidental modification (which could spell disaster during a live production). You cannot perform any edit operations in the OFF mode. All edit button tally lights will be off.

File Operations/Macro Menus

Introduction

The Krystal system includes a file manager for saving and loading system data to and from floppy disks. This section describes how to use the Krystal file manager. Macro operations are also described in this section.

File Operations Menu

The File Operations menu is accessed by pressing the **File Oper.** top menu button to bring up the menu shown below:

FILE OPERATIONS				
<div> <div>Displayed:</div> <div>Register:</div> <div>Keyframe:</div> <div>Cur.Time:</div> </div>				
SAVE/ LOAD >	DISK MANAGER >	REGISTER OPER. >	CHANNEL OPER. >	NAME EFFECT...

Saving and Loading Files

Effects, system configuration, and macro data can be saved to and loaded from a floppy disk. Effects may be saved as single entities or as a combined file. Macros can also be saved individually or combined.

Press **SAVE/LOAD** from the File Operations menu to display a Save/Load menu similar to that shown below:

Save/Load menu functions include:

FILE TYPE allows you to select the type of files you plan to save or load.

EFFECT — sets the current list of effect registers to be displayed on the left side of the SAVE/LOAD menu. Empty registers are displayed as blank in the scroll pane.

- An individual effect register or file can be selected to be saved or loaded by choosing the effect or file name in the scroll panes.
- All the Krystal registers can be saved and loaded as a combined file (.KFX extension) by selecting **ALL** in the EFFECTS REGISTERS scroll pane.
- All the Krystal registers can be saved and loaded as individual files by selecting **ALL Separate** in the EFFECTS REGISTERS scroll pane.

SYS CFG — sets the current list of system configuration categories to be displayed on the left side of the SAVE/LOAD menu. Different types of configuration data can be saved individually, or this data can be saved and loaded as a combined file.

CAUTION The “NETWORK” and “ALL” configuration data selections contain network IP address information. Loading these configuration files will make the entire Krystal system reset, which will affect any current Krystal operations. The “ALL SYSTEM DATA” selection does not contain network data and so will not cause a system reset when loaded.

USER PREF — sets up the user preferences to be saved or loaded.

PANEL CFG— sets up the panel config parameters to be saved or loaded.

MACRO— sets up the macros to be saved or loaded.

SELECT/SCROLL button is used to scroll to and select an item in the active scroll list.

SCROLL soft knob is used to scroll to and select an item in the active scroll list.

SAVE... is used to save the selected item to floppy disk. You will be prompted for a file name of up to 8 characters. An effect's current name will be displayed as the default name for the file. The default file name will be truncated to 8 characters, invalid DOS characters will be removed, and reserved DOS words (i.e. PRN, AUX, CON will be changed to "EFFECT"). The item is saved as an ASCII file. If a file with the same name already exists, you will be asked to verify the command.

LOAD... is used to load the selected item from floppy disk to the Krystal system. You will be prompted to verify the action. Previous contents of the destination being loaded to will be overwritten. Reloaded register files display their complete effect names even if the file name was truncated when saved. When loading individual register files, be sure to select the desired Krystal register in the EFFECTS REGISTERS list before you load the selected file from disk. Register files can be saved to any register number. A single register file can be loaded to the register it came from by selecting the individual effect file in the right scroll pane and selecting **ALL** in the EFFECTS REGISTERS list before loading the file from disk. When loading **ALL** or **ALL Separate**, Krystal registers not represented on the floppy disk are not overwritten.

DELETE FILE... is used to delete an individual file selected in the right scroll pane from the floppy disk.

Disk Manager Menu

Use the Disk Manager Menu to format floppy disks. Press the **File Oper.** top menu then press the **DISK MANAGER >** menu button to bring up the following menu:

DISK MANAGER		
<div> <div>Displayed:</div> <div>Register:</div> <div>Keyframe:</div> <div>Cur.Time:</div> </div>		
<div>1.44 MB</div>		
DISK TYPE	FORMAT DISK...	SAVE ERR LOG...

Disk Manager menu functions:

DISK TYPE — 1.44 MB density is the only selection.

FORMAT DISK... — Press this soft button to format a floppy disk. A dialogue box will appear. You can then press CANCEL to get out of the formatting loop or you can press OK to proceed with the formatting operation.

SAVE ERR LOG... — This function lets you dump a log of system errors (plain ASCII text in MS-DOS format) onto a disk for print out on your pc. A dialogue box will appear. You can press CANCEL to get out of this operation or you can press OK to proceed with the Save Error Log operation.

Register Operations Menu

Register Operations allow you to move Krystal keyframe data from one register to another, and permits you to delete data from Krystal registers. Register operations require that an Effect Manager be acquired and on-line. If an Effect Manager is not acquired or on-line, registers operations will not occur and no message will be displayed.

The Register Operations menu is accessed by pressing the **File Oper.** top menu button, and then pressing the **REGISTER OPER.>** soft button.

REGISTER OPERATIONS

Displayed:
Register:
Keyframe:
Cur.Time:

To Copy register 1 to register 2, press Copy.

Effect Name	Channels Used	Effect Duration
00. Register 0	1 . . . G1 C	3:00
01. Jack	1 2 3 4 G1 C	5:00
02. Straw	1 2 3 . C	2.15
03. Wichitah	1 2 3 4 G1 G2 C	1:00
04. Other 1	1 . . . G1 C	2:00
05. Playing	2 . . . G2 C	3:00
06. In Band	3 . . . C	4:00
07.	0:00
08.	0:00
09.	0:00

SCROLL

COPY

SWAP

ERASE

APPEND

MOVE

BLOCK

SINGLE

OPERATION
AFFECTED
REGISTERS
KEYPAD
ENTRY
PAGE
UP
PAGE
DOWN
COPY...

The register scroll pane is for display of register data only. No selections can be made in the scroll pane. Instead register numbers are entered using the Krystal Control Panel keypad.

The **KEYPAD ENTRY** soft button readies the keypad for entry of a “from” register number.

Copy, Swap, Erase, Append, and Move register operations are supported.

Copy

The Copy function copies keyframe data from one register or block of registers to another register or block of registers. The original data remains unaffected. To copy register data from the Register Operations menu:

1. Select **COPY** with the **OPERATION** soft button.
2. Select whether you want to copy a **SINGLE** register or a **BLOCK** of registers with the **AFFECTED REGISTERS** soft button.
3. Enter the register(s) to copy from by pressing the register number in the keypad followed by the **Enter** button. Enter the register to copy to (or, in the case of copy block, the first register number to copy to) in a similar manner.

4. Execute the function by pressing **COPY**.... After the function completes, a message appears at the top of the screen indicating whether the operation was successful.

A "." may be entered for the "to" register. This will effectively enter the number of the next empty register.

When a copy block is requested, the operation will not be performed if the "to" block does not have enough registers to fit all of the "from" block nor if the "to" and "from" blocks overlap. In these cases an error message will be displayed.

If the register numbers for the "from" block are entered in descending order, the registers will copy in reverse order. For example, if the request is made to copy registers 5 through 1 to register 10, register 5 will be copied to register 10, register 4 to 11, etc. When the operation has completed, the message "REVERSE OP DONE" will display.

If the register(s) being copied "to" are not empty, a warning message will display that requires an OK/Cancel response. If OK is chosen, the register(s) being copied "to" will be deleted, and the "from" register(s) will be copied to the "to" registers.

Swap

The Swap function exchanges keyframe data between two registers. The data being exchanged is removed from its source register and is copied to its destination register. To swap register data, use the same procedure as the Copy function, except select **SWAP**. The operation is similar to Copy, except no query is done if there are non-empty registers involved in the operation.

Erase

The Erase function removes keyframe data from a single register, a block of registers, all registers, or the current register. To erase register data, use the same procedure as the Copy function, except select **ERASE**, and then select either **SINGLE**, **BLOCK**, **ALL**, or **CURRENT** affected registers.

When an Erase operation has been requested, a warning message will display and will require an OK/Cancel response.

Append

The Append function adds keyframe data from one register to the end of the effect in another. To append register data, use the same procedure as the Copy function, except select **APPEND**.

Requesting an append from an empty register has no effect. Requesting an append to an empty register will do a Copy register operation.

Move

The Move function moves keyframe data from one register to another. To move register data, use the same procedure as the Copy function, except select **MOVE**.

Warnings and errors are the same as in the Copy operation.

Channel Operations Menu

The Channel Operations feature allows the user to move keyframe data from one channel (or wireframe) to another in the current effect, and remove data from a channel. Copy, Swap, Delete, and Move channel operation functions are supported.

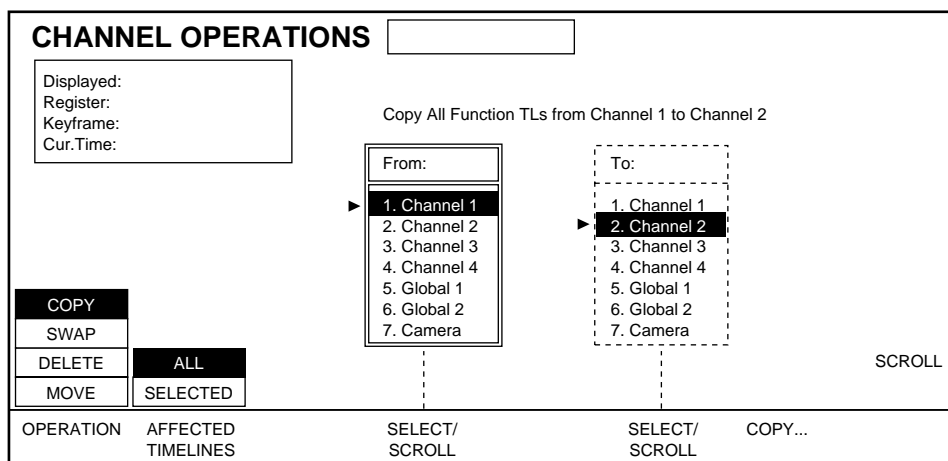
When data from a physical or wireframe channel is copied, swapped, or moved to a Global or Camera channel, any non-transform data that may exist will not be transferred. If the operation will result in the loss of this data, the system will ask if the user wants to continue before it performs this operation.

Illogical channel operations (for example, copying the same information to and from the same channel) will be ignored.

Channel operations require that an Effect Manager be acquired and on-line. If an Effect Manager is not acquired or on-line, channel operations will not occur and no message will be displayed.

Undo is not supported at this time. However, the clipboard is not affected by channel operations. You can copy and paste channel information to the clipboard, perform your channel operation, and recover the original clipboard data if necessary.

The Channel Operations menu is accessed by pressing the **File Oper.** top menu button, and then pressing the **CHANNEL OPER. >** soft button.



Copy

The copy function copies keyframe data from one channel to another channel in the current effect. The data in the original channel remains unaffected.

To copy channel data from the Channel Operations menu:

1. Select **COPY** with the **OPERATION** soft button.
2. Select whether you want to copy **ALL** or only the **SELECTED** timelines with the **AFFECTED TIMELINES** soft button.
3. Select the channel to copy “From:” using the **SELECT/SCROLL** soft button and/or the **SCROLL** soft knob, and select the channel to copy “To:” in a similar manner.
4. Execute the function by pressing **COPY...** . After the function completes, a message will appear at the top of the screen to notify the user whether or not the operation was successful.

When a copy channel operation is executed with ALL Affected Timelines chosen, all function timelines in the channel being copied to are deleted. All active function timelines are then copied between the chosen channels. If there are no active function timelines in the “From:” channel, no action is performed and a message is displayed.

When a copy channel operation is executed with SELECTED Affected Timelines chosen, any function timelines in the channel being copied to that are same as those currently selected in the other channel are deleted. The selected timelines in the channel being copied from are then copied to the other channel. Note that any selected function timelines on the channel being copied to are ignored. If there are no selected function timelines in the “From:” channel no action will be performed and a message is displayed.

Swap

The swap function exchanges keyframe data between two channels in the current effect.

To swap channel data, use the same procedure as the copy function except select the SWAP operation. The left channel selection scroll pane will indicate “Swap:”, and the right pane will indicate “With:”.

If you use SELECTED Affected Timelines for a swap operation, you can select the timelines on either channel involved in the swap. Data will be exchanged if an active function is selected on only one of the channels. Also, if a timeline selected for swapping on one channel is not present on the other channel, a Move of that timeline data will be performed. The data will be copied to a new timeline for that channel and the original channel’s timeline data will be removed. If no data is selected on either channel an error message will be displayed.

When a swap channel operation is executed, the data being exchanged is removed from its source channel and copied to its destination channel.

Delete

The delete function removes keyframe data from a channel in the current effect. No message will be displayed indicating data will be lost.

To delete channel data, use the same procedure as the copy function except select the DELETE operation. The left channel selection scroll pane will indicate "From:" and the right selection scroll pane does not appear. If you use SELECTED Affected Timelines for a delete operation, only the selected timelines on that channel will be deleted.

Move

The move function moves keyframe data from one channel to another in the current effect.

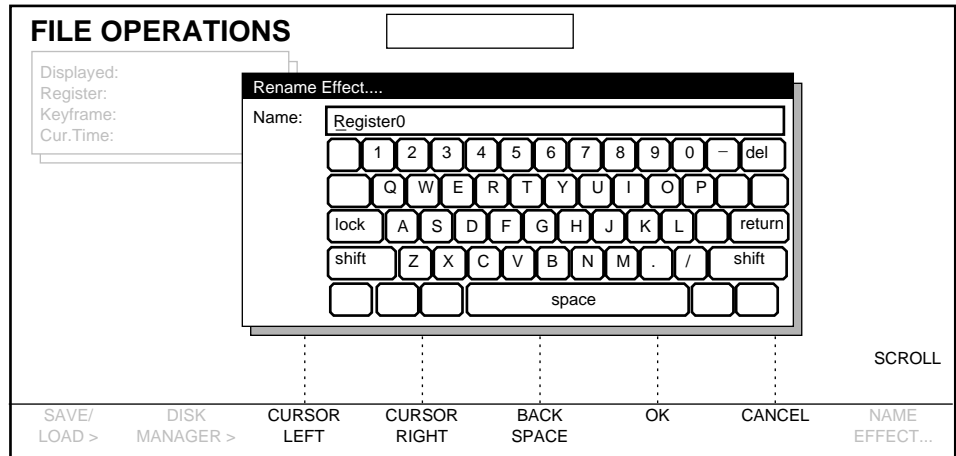
Timeline data will be lost from the channel that data is being moved to if ALL is chosen. Timeline data will also be lost if SELECTED is chosen and the incoming data includes timelines present in the channel the data is being moved to.

To move channel data, use the same procedure as the copy function except select the MOVE operation. Note that any selected function timelines on the "To:" channel are ignored. If there are no selected function timelines in the "From:" channel no action will be performed and a message is displayed.

When a move channel operation is executed, the timelines involved in the action are deleted from the "To:" channel, the timelines in the "From:" channel are copied to the "To:" channel, and then the original timelines in the "From:" channel are deleted.

Name Effect

To name or rename an effect, press the **NAME EFFECT...** button from the File Operations menu. Since every register has a default name, you will be prompted to edit the name of the current effect register.



Keep in mind that effects saved to files on disk are limited to 8 characters for a file name. However, when calling up existing effect register names, they will show in their entirety up to 32 characters.

Macro Control Menu

Krystal lets you record up the 12 Macros (Macro 1-6 and Macro Shift 1-6). Each macro can contain up to 100 steps. These macros can then be saved to/from disk using the **SAVE/LOAD** menu located in the **File Operations** Top Menu.

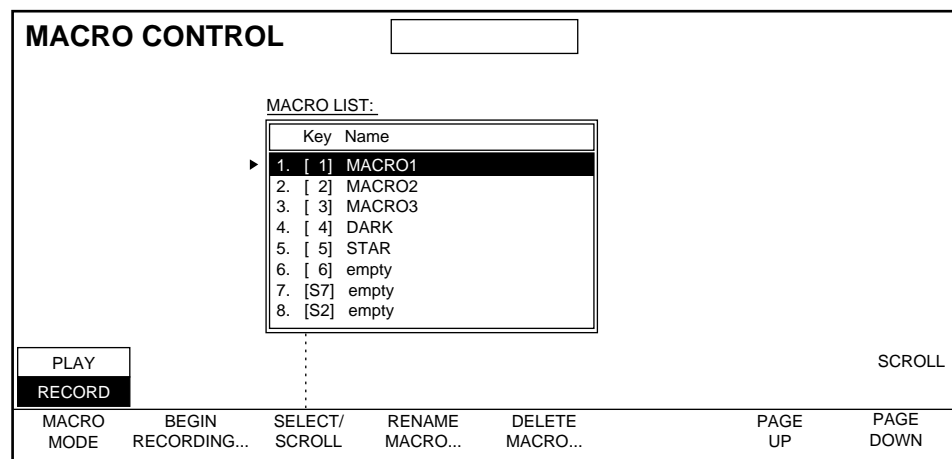
You can save and load macros to and from floppy disk when the Panel is not connected to an Effect Manager.

Press the **Macro** Top Menu button to bring up the menus shown below. The Record menu is used for creating new macros. The Play menu is used for menu driven playback of macros. Either menu can be used to delete and rename macros.

To delete a macro, scroll to the desired macro you wish to delete until highlighted then press the **DELETE MACRO...** soft button to delete the selected macro.

To Rename a selected macro, press the **RENAME MACRO...** soft button to bring up the keyboard dialogue box, with which you can enter the new name.

Macro Record



Perform the following steps to record a marco:

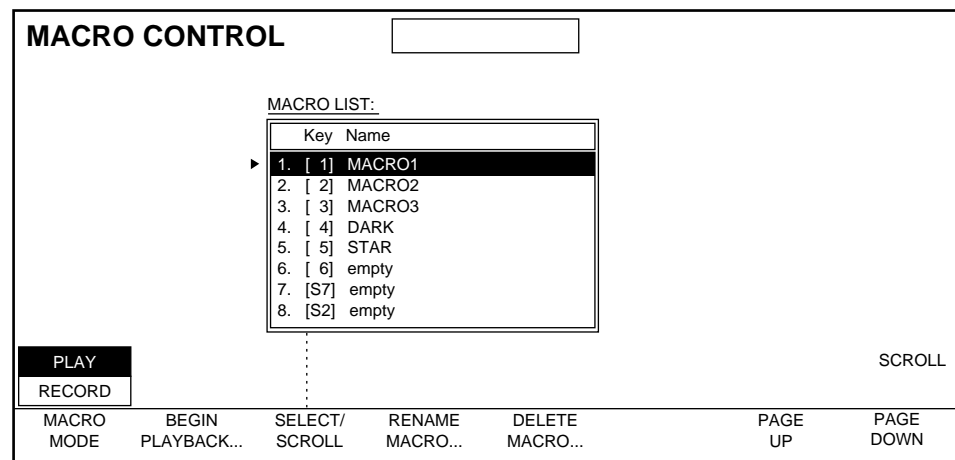
1. Highlight **RECORD** by pressing the **MACRO MODE** soft button.
2. Use the **SELECT/SCROLL** soft button to choose which macro in the Macro List you wish to record into. The Macro List box shows up to 8 macros at a time. The downward arrow indicates more choices are available out of view. Use the **PAGE UP** and **PAGE DOWN** soft buttons to bring more selections into and out of view. Use can also use the **SCROLL** soft knob to scroll through the macro list.

3. Press the **BEGIN RECORDING** soft button which will bring up a keyboard dialogue box in the menu display. You use this to name your macro. You can use up to 15 characters for the macro name. Press OK when finished naming the macro.
4. The **Macro** top menu button will flash while recording is taking place and a dialogue box appearing in the menu display area will prompt you to "Press the **Macro** button again to stop recording". After you have pressed this button as directed, your macro will be completed and the **Macro** button will stop flashing and return to high tally.

Macro Play

To playback a macro from the Krystal Control Panel, simply press the yellow numbered **Macro** button used to create the macro. Use the Macro shift button to access macros 7-12.

You can also play a macro from a Qwerty Keyboard by pressing CTRL plus one of the twelve function keys that map to the 12 macros (Macro 1-6 and Macro Shift 1-6). For example CTRL, F1 plays Macro 1.



To playback a macro using the Krystal Macro Control menu, perform the following steps:

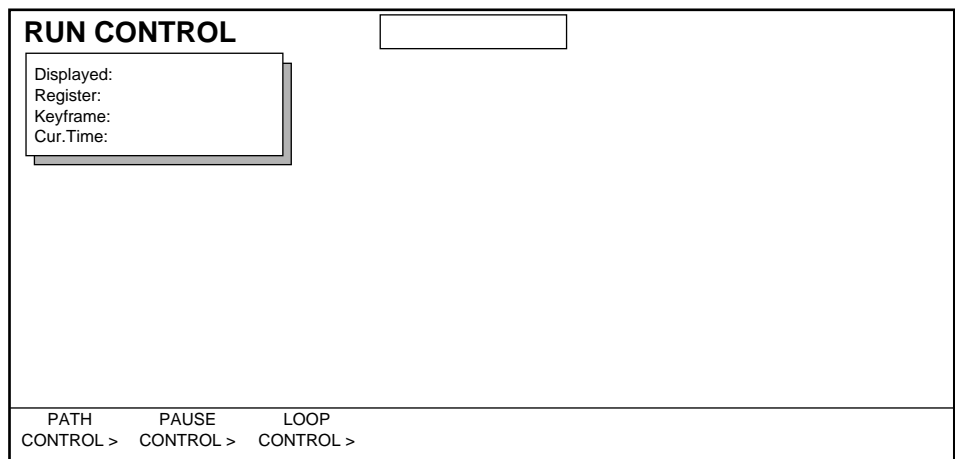
1. Toggle to the **PLAY** mode using the **MACRO MODE** soft button.
2. Scroll to the desired macro shown in the Macro List box.
3. Press the **BEGIN PLAYBACK** soft button to play the macro. The small box at the top center of the menu display will say "Macro Complete" when playback is finished.

Run Control Menu

Introduction

From the Run Control menu you can set pauses for running effects. From this menu can also access the Path Control menus, where you can control the path behavior of effects.

Press **Run Control** to bring up the following menu.



Run Control menu functions:

PATH CONTROL — controls the trajectory and rate of change of effect parameters between keyframes.

PAUSE CONTROL — pauses an effect at a specific time in the effect.

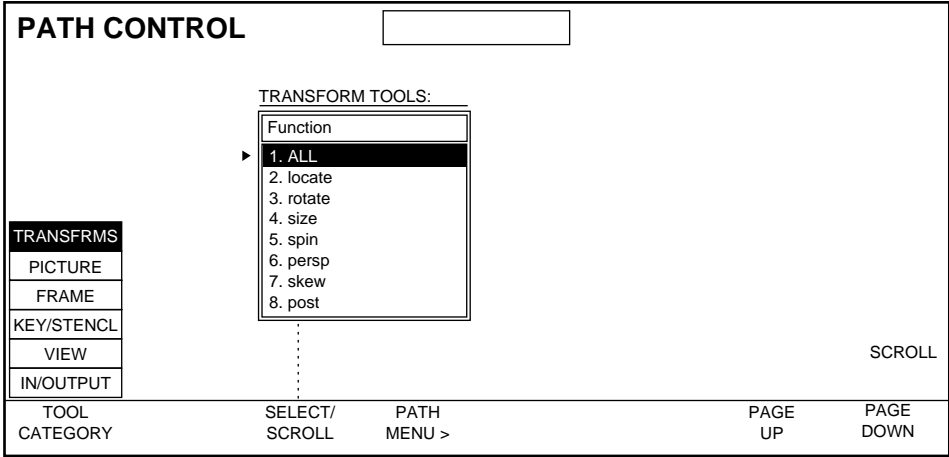
LOOP CONTROL — allows modifying the running of an effect by specifying jumps from one effect time to another.

Path Control Menu

The path an effect takes between keyframes is automatically defined by the system according to a default for each path parameter. The Path menu allows you to modify these default parameters through selection of specific types of motion parameters on a keyframe-by-keyframe basis.

When you are in a menu that has associated path control, the **Path** button located in the User Assist area to the left of the display will show low tally. This indicates you can press **Path** to go to the Path Control menu for your currently selected function. You can also double press the transform Control Panel buttons to go directly to the Path Control menu for that transform.

If you are in a menu that does not have path controls associated with it, pressing the **Path** top menu button located in the User Assist subpanel area will bring up the following menu.



You use this menu to select the top menu tool category and individual function whose path parameters you wish to change.

Path Control menu functions:

TOOL CATEGORY — categorizes the path control available by the five top menus and path associated with the Transformation buttons. The heading above the SELECT/SCROLL dialogue box will change to match the selected Tool Category.

The following are the Tool Categories and their associated functions:

- **TRANSFORMS** — ALL, locate, rotate, size, spin, perspective, skew, and post- transform.
- **PICTURE** — pseudo color, opacity, defocus, mosaic, input recursive, output recursive.
- **FRAME** — crop, border, kurl, corner pin
- **KEY STENCL** — keyer setup, coring, mask, drop shadow emboss, defocus.
- **VIEW** — lighting, perspective enhance, perspective blur.
- **IN/OUTPUT** — matte fill, motion detection, background, combiner, combiner background

SELECT/SCROLL — use to scroll and select the function within the tool category that you wish to apply path control. You can also use the **SCROLL** soft knob to scroll through the functions listed.

PATH MENU> — press this soft button to go to the path menu associated with the selected function indicated in the SELECT/SCROLL dialogue box.

PAGE UP — use to scroll back up a page in the functions listed in the SELECT/SCROLL dialogue box.

PAGE DOWN — use to scroll down a page in the functions listed in the SELECT/SCROLL dialogue box.

Transformation Path Control Menus

Krystal effects that require transformation path menus bring up the following soft buttons and soft knobs to let you control how your effect is transformed. A typical Transformation Path control menu is shown below:

LOCATE PATH			TENSION 0.0000								
Displayed: Register: Keyframe: Cur.Time:											
			CONTINUITY 0.0000								
			BIAS 0.0000								
<table border="1"> <tr> <td></td> <td>CURVE</td> </tr> <tr> <td></td> <td>SMOOTH</td> </tr> <tr> <td>ON</td> <td>LINEAR</td> </tr> <tr> <td>OFF</td> <td>S-LINEAR</td> </tr> </table>			CURVE		SMOOTH	ON	LINEAR	OFF	S-LINEAR		
	CURVE										
	SMOOTH										
ON	LINEAR										
OFF	S-LINEAR										
HOLD	PATH TYPE										

The following soft button and soft knob controls are used with this menu:

HOLD — when **ON**, no motion interpolation occurs, which will make the keyframe jump to the next keyframe location. The length of time that the effect sits on each keyframe is set by the keyframe duration (default is 1 second).

PATH TYPE — path type selections are:

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

SMOOTH — This feature is not currently implemented. If selected, a curve path with default values will be used.

LINEAR — applies a linear interpolation between keyframes; no acceleration or deceleration is applied. Movement is mechanical having 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.

Tension, Continuity, and Bias Controls

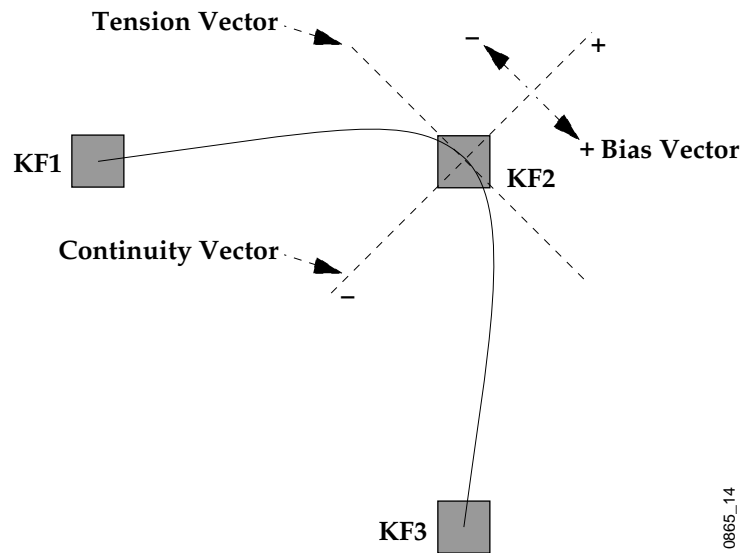
When the **CURVE** parameter is selected, the three Soft Knobs provided are:

TENSION — controls the length of the tension vector. At a setting of 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 via the continuity path vector.

BIAS — determines whether the path will be “pulled” towards the previous or the following keyframe via the bias path vector.

Path Vectors



With respect to a **CURVE** path between keyframes, each keyframe is made up of three vector parameters as shown. See the separate *Krystal User Manual* for background information and detailed explanations of the Tension, Continuity, and Bias path controls.

All Transform Paths Menu

Selecting **ALL** from the Path Control Menu brings up the All Transforms Paths menu. This menu lets you modify the paths for all the transform parameters at that keyframe.

ALL TRANSFORM PATHS

Displayed:
Register:
Keyframe:
Cur.Time:

TENSION
0.0000

CONTINUITY
0.0000

BIAS
0.0000

LOCATE values displayed.

CURVE

SMOOTH

ON

LINEAR

OFF

S-LINEAR

HOLD

PATH
TYPE

The current path for each transform parameter is viewed by pressing the corresponding transform buttons located next to the joystick (**Size/Locate**, **Rotate**, **Spin**, etc.). Text appears on the menu indicating what transform values have been assigned to the joystick and selected for display. When **Menu Ctrl**, **Locate Axis** or **Aspect** is assigned, Locate parameter values will be displayed. Menu items are gray for transforms that are not active in that keyframe. You cannot affect the paths when an inactive transform is selected (gray menu items). You must either assign an active transform to the joystick, or make an inactive transform assigned to the joystick active by changing it, before you will be able to apply a change to all the transform paths for that keyframe.

Note The buttons in the All Transform Path menu must be pressed to affect a change. Only Active and Changed transforms are affected by changes in this menu.

Spin Path Control Menu

Spin path transforms are unique. In other transforms a one-to-one mapping exists between source reference axes and target reference axes. Spin path transforms can be determined by any combination of source spin and target spin. The parameters for source spin are independent from those for target spin, and the X, Y, and Z axes for each source and target reference are also independent from each other. This creates six spin path transforms. Each of these parameters can be controlled independently, or they can be controlled as a group.

SPIN PATH					
<div> <div>Displayed:</div> <div>Register:</div> <div>Keyframe:</div> <div>Cur.Time:</div> </div>					
				TENSION	0.0000
				CONTINUITY	0.0000
				BIAS	0.0000
		SOURCE X			
		SOURCE Y			
		SOURCE Z			
		TARGET X			
ALL	TARGET Y				
SEPARATE	TARGET Z				
MODIFY	SPIN AXIS	ON	CURVE		
		OFF	SMOOTH		
			LINEAR		
			S-LINEAR		
		HOLD	PATH TYPE		

ALL — Spin path transforms will controlled together, with all axes using the same path. The source X axis path parameters are used.

SEPARATE — The six available axes are displayed in the SPIN AXIS stack to allow independent control.

Note Using the ALL transform function causes all six Spin Path menu axes to be updated with the same specified path type.

Non-Transformation Path Control Menus

Many Krystal DPM functions are non-transform (do not move images around the screen) but they still have path control capabilities. Generally these functions lack the **SMOOTH** and **CURVE** controls, since there is no geometry involved. A typical non-transform path menu is shown below.

PSEUDO COLOR PATH

Displayed:
Register:
Keyframe:
Cur.Time:

COLOR COR

PSTR/SOLR

COLOR MOD

HUE MOD

ON

OFF

LINEAR

S-LINEAR

COLOR
MODE

HOLD

PATH
TYPE

Path menus for these functions offer the following controls.

HOLD — when **ON**, this selection causes that function’s values to jump from keyframe to keyframe without interpolation.

PATH TYPE — path type selections are:

LINEAR — applies a linear interpolation to the function’s values between keyframes. The values change at a constant rate throughout the key-frame duration.

S-LINEAR — applies an interpolation to the function’s values between keyframes which includes acceleration and deceleration of the rate of change at the beginning and end of each keyframe.

Matte Path Control Menus

Paths associated with mattes or colors provide controls that may be used to affect hue. In the Border Path menu example below, the path controls for all the border box parameters *except* matte are controlled with the **HOLD** and **PATH TYPE** soft buttons, and with the three soft knobs when **CURVE** is selected. The additional matte path controls are located on the lower right side of the screen.

BORDER PATH						TENSION 0.0000
Displayed: Register: Keyframe: Cur.Time:						CONTINUITY 0.0000
						BIAS 0.0000
		CURVE			CW	
		SMOOTH			CCW	
		LINEAR			SHORT	
		S-LINEAR			LONG	
BOX	ON		ON	LINEAR		
PATTERN	OFF		OFF	S-LINEAR		
BORDER MODE	HOLD	PATH TYPE	HOLD MATTE	MATTE PATH	HUE DIRECTION	

The Matte Path hue related controls are defined as follows:

HOLD MATTE — when **ON**, retains the hue at the beginning of the keyframe and throughout the keyframe. The hue changes at the beginning of the following keyframe.

MATTE PATH — matte paths can be **LINEAR** or **S-LINEAR**.

LINEAR — applies a linear interpolation to the function's values between keyframes. The values change at a constant rate throughout the keyframe duration.

S-LINEAR — applies an interpolation to the function's values between keyframes which includes acceleration and deceleration of the rate of change at the beginning and end of each keyframe.

HUE DIRECTION — permits one of four choices for hue path to be made:

CW — selects a clockwise path (as seen on a vectorscope).

CCW — selects a counter-clockwise path.

SHORT — selects the shortest path; the least hue change between keyframes (i.e. a short transition from 40° to 320° transitions through 0°).

LONG — causes the most amount of hue change to take place (i.e. a long transition from 40° to 320° transitions through 180°).

Multiple Parameter Path Menus

Some path menus allow you to select path controls for several related parameters associated with that function. Generally you select the parameter whose path you wish to change on the left, and then make your adjustments using soft buttons and stack selections on the right. An example of one of these path menus is shown below.

LIGHTING PATH								LIGHT 2 TENSION 0.0000	
Displayed: Register: Keyframe: Cur.Time:								LIGHT 2 CONTINUITY	
								LIGHT 2 BIAS 0.0000	
HIGHLIGHT		POINT		CURVE				CW	
SHADE 2	LIGHT 1	BAR	ON	LINEAR	ON	LINEAR		CCW	
SHADE 1	LIGHT 2	PLANE	OFF	S-LINEAR	OFF	S-LINEAR		SHORT	
								LONG	
LIGHTING MODE	ADJUST	LIGHT TYPE	HOLD LIGHT 2	PATH TYPE	HOLD APPEARANCE	APPEARANCE PATH	HUE DIRECTION		

Lighting Path menu functions:

LIGHTING MODE — use to select the lighting mode path you wish to control. In the above example the **HIGHLIGHT** mode is chosen.

ADJUST — use to select whether you are setting path controls for **LIGHT 1** or **LIGHT 2**. Note that soft buttons and soft knobs will change to reflect the currently selected adjust mode.

LIGHT TYPE — use to select **POINT**, **BAR**, or **PLANE** light for path control.

HOLD LIGHT 1/2 — When **ON**, this selection causes the light position to jump from keyframe to keyframe without interpolation. Note that a “1” or a “2” appears after this soft button depending on whether Light 1 or Light 2 adjust mode is selected.

Pause Control Menu

Pauses can be added to effects. When an effect containing pauses is run (with the Stop Next function off), the effect will stop at each pause keyframe. Pressing the **Run** button resumes the running of the effect from the paused location.

To access Pause Control, press the **Run Control** top menu button then select **PAUSE CONTROL>**.

PAUSE CONTROL

Displayed:
Register:
Keyframe:
Cur.Time:

ON

OFF

PAUSE

PAUSE — Choose **ON** to enter a pause into the delegated channels' timelines. You must be on a keyframe or create a new keyframe for the pause. Choose **OFF** to disable the pause function.

Loop Control Menu

The Loop Control feature allows you to modify the running of an effect by specifying jumps from one effect time to another. See the separate *Krystal User Manual* for background information and detailed explanations of the Loop Control feature.

Jump times are applied to all the channels of an effect. Loop Control information is stored in the header data of the effect (not in keyframes), and is passed by Recall, Put, and Get register operations. Deleting all the keyframes in an effect that contains jump times will *not* clear the jump information. Recalling an empty register ensures no jump times exist in the effect. Changing the duration of an effect will not move the relative position of the jump times within the effect. For example, if a jump starts two seconds into a 10 second effect, and the effect's duration is forced to 5 seconds, the jump will occur at one second into the effect.

The Loop Control menu is accessed by pressing the **Run Control** top menu button, and then pressing the **LOOP CONTROL** > soft button.

LOOP CONTROL			
<div> <div>Displayed:</div> <div>Register:</div> <div>Keyframe:</div> <div>Cur.Time:</div> </div>		<div>1) JUMP FROM TIME 0:00</div> <div>1) JUMP TO TIME 0:00</div> <div>1) LOOP REPEAT 1</div>	
<div> <div>ON</div> <div>OFF</div> </div>	<div> <div>LOOP 1</div> <div>LOOP 2</div> <div>LOOP 3</div> </div>	<div> <div>CONTINUOUS</div> <div>COUNT</div> <div>OFF</div> </div>	<div> <div>ON</div> <div>OFF</div> </div>
LOOP ENABLED	MODIFY	LOOP MODE	ENTIRE EFFECT

The following soft knobs and soft buttons are available:

LOOP ENABLED — turns the Loop Control function on and off.

The **Loop Control Panel** button, located above the lever arm, also toggles the looping feature on and off.

MODIFY — selects which of the three Loops available will be modified by the remaining menu items.

LOOP MODE — selects the type of looping. When OFF, jump times for the selected Loop will be ignored.

CONTINUOUS — the Loop continues until stopped (up to 64,000 repetitions).

COUNT — the Loop will repeat the number of times specified by the LOOP REPEAT soft knob value. Range is 1 to 9999. A separate internal variable (loop counter) is initially set to the Loop Repeat value, and as the effect loops this counter decrements to zero, at which time the loop terminates.

- Loop counters are reset to zero by the **Rewind**, **Recall Effect**, **Go to Time**, **Go to KF**, **Previous**, and **Next** functions.
- Loop counters are NOT reset to zero by the **Run** and **Stop Next** functions:

ENTIRE EFFECT — selects whether the entire effect, or only a portion of the effect will loop. When OFF, the JUMP FROM TIME and JUMP TO TIME soft knobs are available for entering time values. The time of the current timeline cursor position can be entered by pressing **Enter**. Negative time values are not allowed.

To Loop an Entire Effect:

1. Go to the Loop Control menu (**Run Control \ LOOP CONTROL. >**).
2. Activate the Loop function by selecting **ON** with the **LOOP ENABLED** soft button. By default the entire effect will now loop continuously.
3. Select which Loop (1, 2, or 3) you wish to edit with the **Modify** button.
4. You can specify the number of loops by pressing **LOOP MODE** to select **COUNT**, then entering a repetition value with the **LOOP REPEAT** soft knob (or use the transfer button and enter the value on the keypad).

To Loop a Portion of an Effect:

1. Go to the Loop Control menu (**Run Control \ LOOP CONTROL. >**) and activate the Loop function by selecting **ON** with the **LOOP ENABLED** soft button.
2. Press **ENTIRE EFFECT** to select **OFF**.
3. Select which Loop (1, 2, or 3) you wish to edit with the **Modify** button.
4. Enter the effect time of the end of the loop. You can use the **JUMP FROM TIME** soft knob, use the transfer button and enter the value on the keypad, or press **Enter** to input the time of the timeline cursor position.
5. Enter the effect time of the beginning of the loop with the **JUMP TO TIME** parameter. The effect will loop when the “To” time is less than the “From” time. If the “To” time is greater than the “From” time, the effect will jump once, skipping the intermediate portion of the effect.

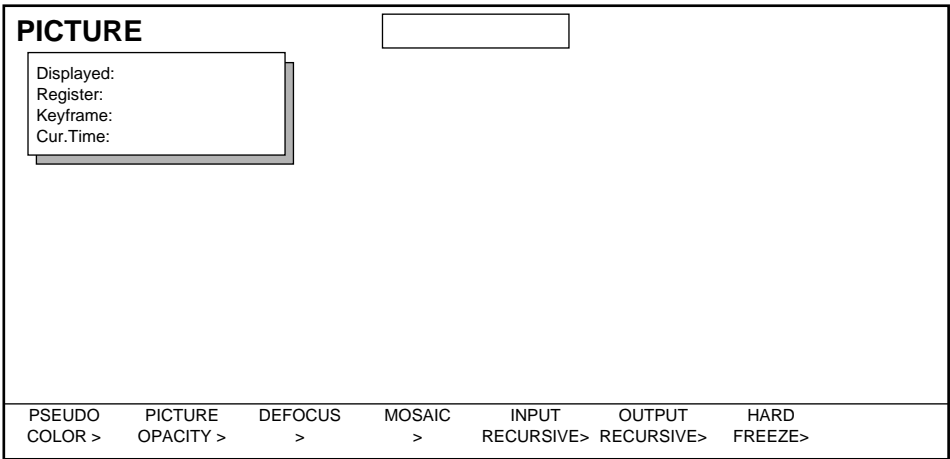
6. You can specify the number of loops by pressing **LOOP MODE** to select **COUNT**, then entering a repetition value with the **LOOP REPEAT** soft knob (or use the transfer button and enter the value on the keypad)

Picture Menu

Introduction

Picture menu functions operate on the source image (the picture’s surface) independent of the position of the image or other channels.

Pressing the **Picture** button on the Top Menu subpanel provides access to the menus shown below. Each function is described on the following pages.



Picture Menu functions include:

PSEUDO COLOR> — provides color correction, posterization and solarization effects, color and hue modulation control, and reverse video.

PICTURE OPACITY> — provides adjustment of the picture’s transparency.

DEFOCUS > — provides access to various defocus and glow effects if the Defocus option is installed.

MOSAIC> — provides access to mosaic effects if the Input Recursive option is installed.

INPUT RECURSIVE> — provides access to pre-transformation recursive effects, including freeze and motion decay if the Input Recursive option is installed.

OUTPUT RECURSIVE> — provides access to post-transformation recursive effects, including freeze, motion decay, montage, and trails if the Output Recursive option is installed.

HARD FREEZE> — provides access to hard freeze effect. This effect freezes an image and stores it in transformation memory. It is a simple freeze and does not include any adjustments, unlike the recursive options, which can be adjusted for a variety of effects.

Pseudo Color Menu

Pseudo Color parameters include: Color Correction, Posterization and Solarization, Color Modulation, and Hue Modulation. All of the Pseudo Color effects can be applied to the entire video or just the area defined by the mask.

Press the **PSEUDO COLOR>** submenu to bring up the following menu.

PSEUDO COLOR	
Displayed: Register: Keyframe: Cur.Time:	
COLOR COR	
PSTR/SOLR	
COLOR MOD	
HUE MOD	
OFF	
COLOR MODE	

COLOR MODE —lets you to choose the parameters to modify including: hue, color correction, posterization/solarization, color modulation, and hue modulation. You can also set to **OFF** when you don't want to use any of the Pseudo Color functions.

CAUTION Using functions in this menu may produce out-of-spec component levels, or a composite signal which exceeds allowable transmission levels, especially with few quantization levels.

Color Correction

These menus give you soft knobs that change Hue, Luma and Chroma values that control the picture’s color.

Select **COLOR COR** with the **COLOR MODE** soft button to bring up the following menu. The following menu has Hue selected.

PSEUDO COLOR

HUE CORRECTION
0.0000

Displayed:
Register:
Keyframe:
Cur.Time:

COLOR COR	
PSTR/SOLR	HUE
COLOR MOD	LUMA
HUE MOD	CHROMA
OFF	MASK

COLOR
MODE MODIFY

Color Correction Mode Functions:

MODIFY — provides selection of Hue, Luminance, Chroma, or Mask control.

Soft Knob used to adjust **HUE**:

HUE CORRECTION — adjusts the color of the video through $\pm 180^\circ$

The following menu shows soft knob control for Luma.

PSEUDO COLOR

GAIN/SLOPE
1.0000

BLACK OFFSET
0.0000

Displayed:
Register:
Keyframe:
Cur.Time:

COLOR COR	
PSTR/SOLR	HUE
COLOR MOD	LUMA
HUE MOD	CHROMA
OFF	MASK

COLOR
MODE MODIFY

Soft Knobs used to adjust **LUMA**:

GAIN/SLOPE — adjusts the gain applied to the luma.

BLACK OFFSET — applies a dc offset to the luminance signal. Offset range is full white to full black.

Note Set the BLACK OFFSET control first (to set the center point of the slope adjust window) before you set the GAIN/SLOPE control.

The following menu shows soft knob control for Chroma.

PSEUDO COLOR

U (B-Y) GAIN/SAT
1.0000

Displayed:
 Register:
 Keyframe:
 Cur.Time:

U (B-Y) OFFSET
0.0000

COLOR COR	
PSTR/SOLR	HUE
COLOR MOD	LUMA
HUE MOD	CHROMA
OFF	MASK

V (R-Y) GAIN/SAT
1.0000

COLOR MODE	MODIFY
------------	--------

V (R-Y) OFFSET
0.0000

Soft Knobs used to adjust **CHROMA**:

U (B-Y) GAIN/SAT — controls clip for the U (B-Y) component of the video signal. Range is 0 to 30.

U (B-Y) OFFSET — controls offset for the U (B-Y) component of the video signal. Range is -100 to +100.

V (R-Y) GAIN/SAT — controls clip for the V (R-Y) component of the video signal.

V (R-Y) OFFSET — controls the offset for the V (R-Y) component of the video signal.

All Pseudo Color Mask menus are the same, and are shown on [page 7-8](#).

Posterization/Solarization Appearance

Posterization and Solarization effects change the appearance of the video image to that of a painted, 2-dimensional surface or “poster” effect by controlling the luminance and chrominance quantization levels.

Select **PSTR/SOLR** under **COLOR MODE** and press the **MODIFY** soft button to highlight **APPEARANCE** to bring up the following menu.

PSEUDO COLOR		
<div> <div>Displayed:</div> <div>Register:</div> <div>Keyframe:</div> <div>Cur.Time:</div> </div>		<div>POSTERIZATION</div> <div>0.0000</div> <div>SOLARIZATION</div> <div>0.0000</div>
COLOR COR		
PSTR/SOLR		
COLOR MOD		
HUE MOD	APPEARANCE	ON
OFF	MASK	OFF
COLOR MODE	MODIFY	REVERSE VIDEO

Soft button controls used with this menu are:

MODIFY — you can choose to change the Appearance or Mask of the Posterization/Solarization, Color Mod, or Hue Mod parameters.

REVERSE VIDEO — lets you produce a negative image. Reverse Video may be used with the Poster/Solar, Color Mod, and Hue Mod parameters.

Soft Knob controls used with this function are:

POSTERIZATION — controls the luminance quantization levels thereby changing the appearance of the video image to that of a painted, 2-dimensional surface or “poster” effect. Range is 0 to 100.

SOLARIZATION — controls the chrominance quantization levels thereby changing the appearance of the video image to that of a painted, 2-dimensional surface or “solarized” effect. Range is 0 to 100.

Note You will not see a big difference in posterization/solarization effects if the picture has little variety in luminance or chrominance.

All Pseudo Color Mask menus are the same, and are shown on [page 7-8](#).

Color Modulation/Appearance

Color Modulation controls the mix between two colors based on the luminance level of the input video. The mix is linear between the colors selected.

Press the **COLOR MODE** button to highlight **COLOR MOD** to bring up the menu shown below.

PSEUDO COLOR				BLACK LEVEL SATURATION 0.0000
Displayed: Register: Keyframe: Cur.Time:				BLACK LEVEL BRIGHTNESS 0.0000
				BLACK LEVEL HUE 0.0000
COLOR COR		ON	BLACK CLR	ON
PSTR/SOLR		OFF	WHITE CLR	OFF
COLOR MOD	APPEARANCE			
HUE MOD	MASK			
OFF				
COLOR MODE	MODIFY	REVERSE VIDEO	ADJUST	HUE ROTATE

Soft Button controls available in this menu include:

REVERSE VIDEO — produces a negative image by inverting the luminance and chrominance. Reverse Video is also used with the Poster/Solar and Hue Mod parameters.

ADJUST — selects adjustment of Black Color or White Color.

BLACK CLR assigns the soft knobs to control the color produced with a black input signal.

WHITE CLR assigns the soft knobs to control the color produced with a white input signal.

HUE ROTATE — turns the constant rotation function **ON** or **OFF**.

Soft Knob controls include:

SATURATION — controls saturation of Black or White color. Range is 0 to 100.

BRIGHTNESS — controls brightness of Black or White color. Range is 0 to 100.

HUE — controls Hue of Black or White color. When Hue Rotate is **ON**, Hue Rotate Speed can be controlled by the top soft knob for whichever color (Black or White) you are adjusting. Adjustment range is 0 to 360 degrees.

Note A transition between complementary colors produces a gray at the 50% luminance point. A black and white picture is produced using the following settings: saturation at minimum, Brightness for black at minimum; and Brightness for white at maximum.

All Pseudo Color Mask menus are the same, and are shown on [page 7-8](#).

Hue Modulation/Appearance

Choose **HUE MOD** to use the luminance of the incoming signal to control the hue of the output color. A starting (Black Level Hue) and ending (White Level Hue) are mixed with the Saturation and direction of the mix (CW or CCW being selectable).

Displayed:
Register:
Keyframe:
Cur.Time:

SATURATION
50.0000

BLACK LEVEL HUE
0.0000

WHITE LEVEL HUE
359.0000

COLOR COR

PSTR/SOLR

COLOR MOD

HUE MOD

OFF

APPEARNCE

MASK

ON

OFF

ON

OFF

CW

CCW

COLOR MODE

MODIFY

REVERSE VIDEO

LOCK HUES

HUE DIRECTION

Soft Button controls available in this menu include:

REVERSE VIDEO — produces a negative image.

LOCK HUES — when **ON**, the difference between the black level hue and white level hue is maintained.

HUE DIRECTION — selecting **CW** causes the hue change to follow a clockwise path as seen on a vectorscope. Selecting **CCW** causes hue change in a counter-clockwise direction.

Soft Knob controls available when **LOCK HUES** is **OFF**:

SATURATION — determines the level of matte saturation, from no color (monochrome) to maximum chroma saturation. Range is 0 to 100.

BLACK LEVEL HUE — sets the hue for the incoming black level. Range is 0 to 100.

WHITE LEVEL HUE — sets the hue for the incoming white level. Range is 0 to 100.

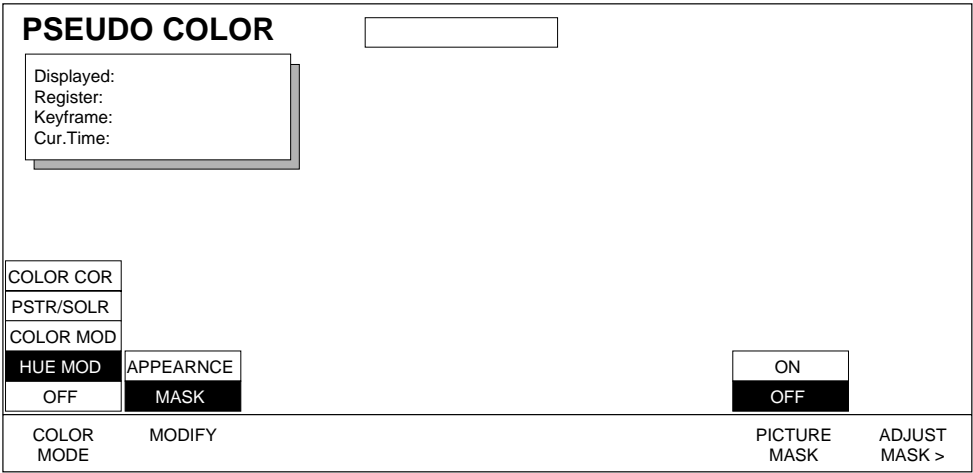
Soft Knob controls available when **LOCK HUES** is **ON** are:

SATURATION — determines the level of matte saturation, from no color (monochrome) to maximum chroma saturation. Range is 0 to 100.

+ WHITE LEVEL HUE — sets the hue for the incoming black AND white levels. A + sign appears to indicate that both hues are being set together with a fixed difference tracking. Range is 0 to 100.

Pseudo Color Mask

Pseudo Color Mask menu functions are the same for all Color Modes.



Soft Button controls available in this menu include:

PICTURE MASK — turns this function **ON** or **OFF**. **ON** applies the mask to limit the area of the picture affected by the selected effect.

ADJUST MASK> — provides access to the Adjust Mask menu located under **Key/Stencil**, where you can select and adjust the mask.

See *Section 9 – Key/Stencil* for information about adjusting masks.

Pseudo Color Path Menu

Two different types of Pseudo Color Path menus are available, one for Color Correction/Posterization/Solarization, and the other for Color Modulation/Hue Modulation.

Note When pushing the PATH button and entering the PATH menu, the PATH mode does not track the Pseudo Color menu mode. You need to select the appropriate mode once in the PATH menu.

To access Pseudo Color Path Control functions, press the **Path** button located in the User Assist Subpanel area.

PSEUDO COLOR PATH

Displayed:
Register:
Keyframe:
Cur.Time:

COLOR COR

PSTR/SOLR

COLOR MOD

HUE MOD

ON

OFF

LINEAR

S-LINEAR

COLOR MODE

HOLD

PATH TYPE

PSEUDO COLOR PATH

Displayed:
Register:
Keyframe:
Cur.Time:

COLOR COR

PSTR/SOLR

COLOR MOD

HUE MOD

ON

OFF

LINEAR

S-LINEAR

CW

CCW

SHORT

LONG

COLOR MODE

HOLD MATTE

MATTE PATH

HUE DIRECTION

See *Section 6-Run Control Menu* for information about path control functions.

Picture Opacity Menu

The Picture Opacity menu is used to adjust for picture opacity, i.e., fade the level of the channel's key signal.

Press the **Picture** Top Menu button then select the **PICTURE OPACITY>** soft button to bring up the menu shown below.

Picture Opacity functions:

PICTURE OPACITY — this soft button turns this function **ON** or **OFF**.

Soft Knob control available when **PICTURE OPACITY** is **ON**:

PICTURE OPACITY — this soft knob adjusts the picture transparency. Range is 0 to 100%, with zero fully transparent and 100 fully opaque.

Final Picture Opacity

The final opacity of a channel is determined by a combination of:

- Picture opacity (accessed via **Picture \ PICTURE OPACITY >**)
- Crop opacity (accessed via **Picture Frame \ CROP > \ BOX** or **PATTERN \ APPEARANCE**).
- Corner Pinning View Through opacity (accessed via **Picture Frame \ CORNER PINNING >**).
- Combiner Channel opacity (accessed via **Input/Output \ COMBINER CONTROL > \ CHANNEL**).

Each opacity parameter value is multiplied together. For example, if Picture opacity is set to 50.0, Combiner Channel opacity is set to 50.0 (50%), and Corner Pinning and Crop Opacities are set to 100.0, the final opacity for that channel will be 25.0 (25%).

Picture Opacity Path Menu

To access Path Control for Picture Opacity, while in the Picture Opacity menu press the **Path** button located in the User Assist Subpanel area.

PICTURE OPACITY PATH

Displayed:
Register:
Keyframe:
Cur.Time:

ON
OFF

LINEAR
S-LINEAR

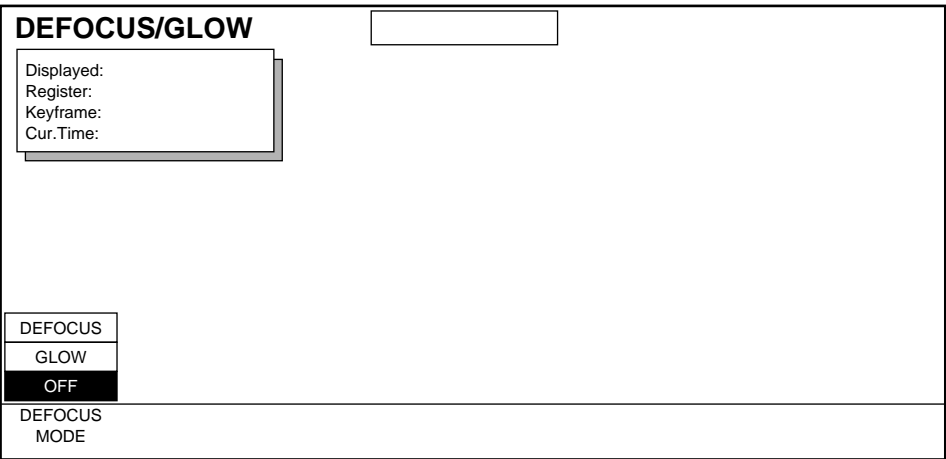
HOLD

PATH
TYPE

See *Section 6-Run Control Menu* for more information about path control functions.

Defocus/Glow Menu

The Defocus/Glow menus are accessed by pressing the **Picture** top menu and then pressing the **DEFOCUS >** soft button.



Defocus and Glow functions become available to a Krystal channel when the Defocus Option is installed into that channel’s Video Processor frame.

Defocus permits you to alter the sharpness of video and keys in a variety of ways. Defocus can be constrained to vertical, horizontal, chroma, and/or luminance, and can be masked by an internal or external source. Defocus also includes a Boundary Replicate feature that permits fine control of the edges of defocused images.

Glow adds a soft rounded matte edge around a key or cropped source. You can change the width, keying opacity, and color characteristics of the glow, and several types of glow/image combinations are available. Glow effects can reach to the outside edge of the original key or cropped source, but cannot extend beyond the uncropped/unkeyed source rectangle.

Because Defocus and Glow functions use the same hardware, they cannot both be active at the same time on the same key frame.

DEFOCUS MODE— selects **DEFOCUS** or **GLOW** functions, or turns the feature **OFF**.

Defocus/Appearance

Pressing the **DEFOCUS MODE** soft button to select **DEFOCUS** displays a screen similar to the following.

DEFOCUS/GLOW				+ DEFOCUS VIDEO & KEY 0.0000
Displayed: Register: Keyframe: Cur.Time:				
APPEARANCE				
NAM				
DEFOCUS	BNDRY REP	ALL		
GLOW	KEY ADJUST	SEP V/K	BOTH	
OFF	MASK	SEP C/L/K	SEP H/V	
DEFOCUS MODE	MODIFY	CHROMA/ LUMA/KEY	HORIZ/ VERT	

MODIFY— selects various sets of Defocus controls. When **APPEARANCE** is selected the following controls appear:

CHROMA/LUMA/KEY— allows you to apply defocus separately or in combination to the chrominance, luminance, and/or key of the image.

ALL — labeled soft knobs control both Video and Key defocus. Range 0 to 100.

SEP V/K — labeled soft knobs control the Video and Key defocus separately.

SEP C/L/K — labeled soft knobs control the Chroma, Luma, and Key defocus separately.

HORIZ/VERT— allows you to apply defocus to the horizontal, vertical, or to both aspects of the image.

BOTH — labeled soft knobs control both horizontal and vertical defocus.

SEP H/V — labeled soft knobs control horizontal and vertical defocus separately.

When **SEP C/L/K** and **SEP H/V** are selected, the following soft button appears:

MORE — additional separate controls of the Chroma, Luma, and Key defocus become available.

CHRO/LUMA — labeled soft knobs control horizontal and vertical Chroma and Luma defocus separately.

KEY — labeled soft knobs control horizontal and vertical Key defocus separately.

Defocus/NAM

When **NAM** is selected with the **MODIFY** soft button a screen similar to the following appears.

DEFOCUS/GLOW						SATURATION 0.0000	
Displayed: Register: Keyframe: Cur.Time:						BRIGHTNESS 100.0000	
						HUE 0.0000	
DEFOCUS GLOW OFF		APPEARANCE NAM BNDRY REP KEY ADJUST MASK		NAM + NAM - OFF		ON OFF	
DEFOCUS MODE		MODIFY		COMBINE		NAM MATTE	
						ON OFF HUE ROTATE	

COMBINE— allows you to selectively apply defocus (using the **APPEARANCE** controls) to only the bright or dark regions of the image, while reintroducing the original focused video.

NAM + — progressively defocuses lighter pixels

NAM - — progressively defocuses darker pixels.

OFF — turns this feature off.

When **NAM +** or **NAM -** are selected, the following soft button appears:

NAM MATTE — **ON** or **OFF**. Allows you to apply a matte to the defocused pixels with the labeled soft knobs.

When **NAM MATTE** is **ON**, the following soft knobs and soft buttons appear:

SATURATION — soft knob controls the saturation of the matte pixels. Range 0 to 100.

BRIGHTNESS — soft knob controls the brightness of the matte pixels. Range 0 to 100.

HUE — soft knob controls the hue of the matte pixels. Range 0 to 360.

HUE ROTATE — this soft button turns the constant rotation function **ON** or **OFF**.

HUE ROTATE SPEED— When Hue Rotate is **ON**, this soft knob controls the speed of the hue changes through 360°.

Defocus/Boundary Replicate

When **BNDRY REP** is selected with the **MODIFY** soft button a screen similar to the following appears.

DEFOCUS/GLOW					
Displayed: Register: Keyframe: Cur.Time:					
				SATURATION 0.0000	
				BRIGHTNESS 100.0000	
				HUE 0.0000	
APPEARANCE					
NAM					
DEFOCUS	BNDRY REP				
GLOW	KEY ADJUST				
OFF	MASK				
		PIXEL REP			
		MATTE			
				ON	KEY MATTE 100.0000
				OFF	
DEFOCUS MODE		MODIFY		HUE ROTATE	
		EDGE INSERT			

This menu controls properties of defocus near image boundaries. Defocus operates by averaging adjacent pixels, but pixels near the edge (boundary) of an image or key lack some adjacent pixels. You can specify whether matte or edge pixels will be used in place of the missing pixels to calculate defocus near boundaries.

EDGE INSERT — Selects which pixels will be used for defocus calculations near boundaries.

PIXEL REP — Edge pixels will be used.

MATTE — Matte will be used.

When **MATTE** is selected, the following soft knobs appear:

SATURATION — controls matte saturation. Range is 0 to 100.

BRIGHTNESS — controls matte brightness. Range is 0 to 100.

HUE — controls Hue of Black or White color. When Hue Rotate is **ON**, Hue Rotate Speed can be controlled by the labeled soft knob. Adjustment range is 0 to 360 degrees.

KEY MATTE — Adjusts the opacity of the replicated matte pixels used for the defocus calculations. Range is 0 to 100, with zero fully transparent and 100 fully opaque.

When **MATTE** is selected, the following soft button appears:

HUE ROTATE — this soft button turns the constant rotation function **ON** or **OFF**.

Defocus/Key Adjust

When **KEY ADJUST** is selected with the **MODIFY** soft button a screen similar to the following appears.

DEFOCUS/GLOW

Displayed:
Register:
Keyframe:
Cur.Time:

OFFSET
0.0000

APPEARANCE
NAM
DEFOCUS
GLOW
OFF

BNDRY REP
KEY ADJUST
MASK

ALL SIDES
SEP SIDES

LEFT
RIGHT
TOP
BOTTOM

DEFOCUS MODE MODIFY ADJUST LEFT SIDE RIGHT SIDE TOP SIDE BOTTOM SIDE

This menu allows you to move the position of the edges of the key associated with the selected channel’s sides. This function is similar to Crop, but acts on externally generated key signals.

ADJUST – Allows you to select which sides will be affected by the **OFFSET** soft knob.

ALL SIDES – The key edges for all sides will be adjusted simultaneously.

SEP SIDES – The key edge(s) for the side(s) selected with the remaining soft buttons will be adjusted.

Soft knobs available:

OFFSET – Moves the edge of the key in or out relative to the selected side.

Defocus/Mask

When **MASK** is selected with the **MODIFY** soft button a screen similar to the following appears.

DEFOCUS/GLOW			
Displayed: Register: Key/frame: Cur.Time:			
	APPEARANCE		
	NAM		
DEFOCUS	BNDRY REP		
GLOW	KEY ADJUST		
OFF	MASK		
DEFOCUS MODE	MODIFY	ON OFF	PICTURE MASK
			ADJUST MASK >

This menu allows you to limit defocus to those portions of an image specified by a mask.

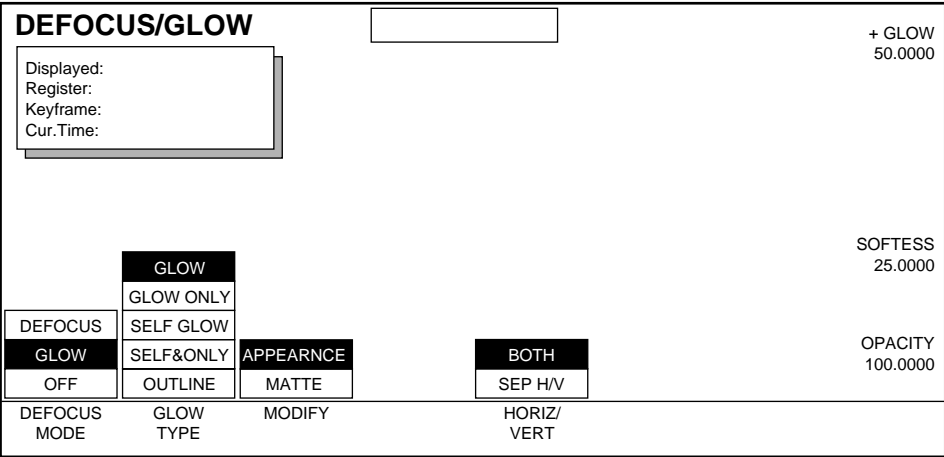
PICTURE MASK — **ON** or **OFF**. Turns the defocus masking function on and off.

ADJUST MASK > — provides access the Adjust Mask menu.

See *Section 9 – Key/Stencil* for information about adjusting masks.

Glow/Appearance

Pressing the **DEFOCUS MODE** soft button to select **GLOW** displays a screen similar to the following.



GLOW TYPE— selects from the following types of glows.

GLOW – Displays a glow matte around the edges of a keyed or cropped source image.

GLOW ONLY – Same as above but fills the original keyed or cropped image with the glow matte. The source video is not displayed.

SELF GLOW – Displays the entire source image combined with the glow around the key or cropped borders.

SELF & ONLY – Displays the entire source image combined with the glow and fills the portion of the image within the key or cropped edges with glow matte.

OUTLINE – Displays only the glow around the edges of the keyed or cropped image. The source video is not displayed.

MODIFY— selects between **APPEARANCE** and **MATTE** controls.

When **APPEARANCE** is selected (see previous figure), the following soft button is available:

HORIZ/VERT — allows adjustment of the glow edges simultaneously or separately in the horizontal and vertical directions.

BOTH — the selected glow type is applied both horizontally and vertically using a single labeled soft knobs.

SEP H/V — the selected glow type is applied horizontally and vertically using separate soft knobs.

Soft buttons available when **APPEARANCE** is selected include:

GLOW — applies the selected glow type. Range is 0 to 100.

SOFTNESS — adjusts the softness of the glow edges.

OPACITY — adjusts glow transparency. Range is 0 to 100, with zero fully transparent and 100 fully opaque.

Glow/Matte

Pressing the **MODIFY** soft button to select **MATTE** displays a screen similar to the following.

DEFOCUS/GLOW			
<div> <div>Displayed:</div> <div>Register:</div> <div>Keyframe:</div> <div>Cur.Time:</div> </div>			
			SATURATION 0.0000
			BRIGHTNESS 100.0000
			HUE 0.0000
	GLOW		
	GLOW ONLY		
DEFOCUS	SELF GLOW		
GLOW	SELF&ONLY	APPEARANCE	ON
OFF	OUTLINE	MATTE	OFF
DEFOCUS MODE	GLOW TYPE	MODIFY	HUE ROTATE

The following soft knobs and soft button are available when **MATTE** is selected:

SATURATION — controls saturation of the glow. Range is 0 to 100.

BRIGHTNESS — controls brightness of the glow. Range is 0 to 100.

HUE — controls Hue of the glow. Adjustment range is 0 to 360 degrees.

HUE ROTATE — this soft button turns the constant rotation function **ON** or **OFF**. When **ON**, rotation speed is controlled by the labeled soft knob.

Defocus/Glow Path Menu

To access Path Control for Defocus functions, while in the Defocus menu press the **Path** button located in the User Assist Subpanel area.

DEFOCUS/GLOW PATH

Displayed:
Register:
Keyframe:
Cur.Time:

TENSION
0.0000

CONTINUITY
0.0000

BIAS
0.0000

GLOW

DEFOCUS

ON

OFF

CURVE

SMOOTH

LINEAR

S-LINEAR

BNDRY REP

NAM + / -

ON

OFF

LINEAR

S-LINEAR

CW

CCW

SHORT

LONG

PATH

HOLD

PATH
TYPE

ADJUST
MATTE

HOLD
MATTE

MATTE
PATH

HUE
DIRECTION

See *Section 6-Run Control Menu* for more information about path control functions.

7-20

Krystal 4300 Reference

Mosaic Menu

The Mosaic menu is available if the Input Recursive option is installed. Press the **Picture** Top Menu button then select the **MOSAIC>** soft button to bring up the menu shown below.

Use this menu to impose a tile pattern onto the video and/or key signal.

MOSAIC				TILE SIZE 2.0000
Displayed: Register: Keyframe: Cur.Time:				TILE ASPECT 0.0000
				TILE RANDOMNESS 0.0000
ON	VIDEO & KEY	ON		
OFF	VIDEO	OFF		
	KEY			
MOSAIC	MOSAIC SOURCE	PICTURE MASK	ADJUST MASK >	

MOSAIC turns the mosaic function on or off.

Soft Knob controls include:

TILE SIZE — sets the tile size. Range is 0 to 100.

TILE ASPECT — varies the tile aspect ratio horizontally or vertically. Range is -1 to +1.

TILE RANDOMNESS — creates a tile pattern which is random in size and aspect ratio. Range is 0 to 100.

MOSAIC SOURCE selects the source affected by the mosaic: video, key, or both.

PICTURE MASK turns mask on or off. Masks come from the mask bus and allow you to apply the mosaic to selected areas of the image while others remain unaffected.

ADJUST MASK> opens the **ADJUST MASK** menu located under the **Key/Stencil** menu, where you can select and adjust the mask.

See *Section 9-Key/Stencil Menu* for information about using masks.

Mosaic Path Menu

To access Path Control for Mosaic, while in the Mosaic menu press the **Path** button located in the User Assist Subpanel area.

MOSAIC PATH

Displayed:
Register:
Keyframe:
Cur.Time:

ON

LINEAR

OFF

S-LINEAR

HOLD

PATH
TYPE

See *Section 6-Run Control Menu* for more information about path control functions.

Input Recursive Menu

The Input Recursive menu is available if the Input Recursive option is installed. Use this menu to create freeze and motion decay effects applied to the input (pre-transformation) video and/or key. Freeze effects allow you to capture a still image from moving video and manipulate it. Motion decay causes an image moving within the video raster to leave a blurry trail of old images behind it as it moves.

Freeze Override and Input Recursive Parameters

The Freeze Override feature maintains independent memory storage for two additional sets of Input Recursive and Motion Detection parameters. Settings from all the Input Recursive menus can be saved to these separate storage locations, and then invoked at any time by pressing the **Freeze 1** or **Freeze 2** Control Panel override buttons. These alternate sets of parameters can be defined by pressing the **Freeze 1** or **Freeze 2** button so it is lit, and then going to these menus and changing the parameters. Freeze Override is not keyframeable, and is applied to all channels in the effect.

Press the **Picture** Top Menu button then select the **INPUT RECURSIVE>** soft button to bring up the menu shown below.

INPUT RECURSIVE	
Displayed:	
Register:	
Keyframe:	
Cur.Time:	
<div>FREEZE</div> <div>MTN DECAY</div> <div>OFF</div>	
RECURSIVE MODE	

RECURSIVE MODE — selects the Freeze or Motion Decay recursive effect mode.

FREEZE — displays the input Freeze mode selections and adjustments.

MTN DECAY — displays the input Motion Decay mode selections and adjustments.

OFF — turns off recursive modes.

Freeze/Appearance

The Freeze/Appearance selections allow you to capture a still image from a moving video and/or key source and modify it.

To access the Freeze/Appearance selections shown below, press the **RECURSIVE MODE** soft button to select **FREEZE**, and press the **MODIFY** soft button to select **APPEARANCE**.

INPUT RECURSIVE						PICTURE DECAY 0.0000	
<div> <div>Displayed:</div> <div>Register:</div> <div>Keyframe:</div> <div>Cur.Time:</div> </div>						STAR DECAY 0.0000	
						PERIOD 0.0000	
FREEZE	APPEARANCE			NONE	VIDEO&KEY		
MTN DECAY	TIMING	ON		ON	TIME	VIDEO	ON TIME 0.0000
OFF	MASK	OFF		OFF	KEYFRAME	KEY	
RECURSIVE MODE	MODIFY	LOOP		KEYFRAME RESET	STROBE TYPE	FREEZE SOURCE	

APPEARANCE — allows you to adjust the appearance of the freeze using the selections and soft knobs described below:

PICTURE DECAY — causes frozen image to fade over time.

STAR DECAY — causes a random decay frozen image over time.

LOOP — **ON** starts the recursive effect. **OFF** stops the recursive effect and returns to live video.

Note that the **Freeze Video** button in the **Override** area of the panel acts just like the **LOOP** soft button when **FREEZE** recursive mode is selected in the Input Recursive menu. Pressing the **Freeze Video** button turns on or off whatever freeze effect has already been set up in the Input Recursive menu. The other buttons in the Override area (**Freeze Key** and **Hold Input**) are non-functional.

KEYFRAME RESET — **ON** resets the loop by creating a new frozen image at each keyframe that has Keyframe Reset on. **OFF** does not change the frozen image at each keyframe.

STROBE TYPE — sets type of strobe that will cause automatic capture of new images or disables automatic capture. The selections and adjustments below control the strobe cycle.

NONE — turns strobe off (same as hard freeze).

TIME — freezes a new image at an adjustable time interval.

KEYFRAME — freezes a new image at each keyframe.

When time is selected, the following soft knobs appear:

PERIOD — makes the strobe cycle shorter or longer (shown in frames).

ON TIME — sets the length of time that the image is unfrozen (shown as a percentage of the period).

FREEZE SOURCE — selects video, key, or both for freezing.

Motion Decay/Appearance

The **MTN DECAY** selection causes motion in the video image to leave a blurred remnant behind as it moves. The **APPEARNCE** selection allows you to modify the appearance of the motion decay.

To access the Motion Decay / Appearance selections shown below, press the **RECURSIVE MODE** soft button to select **MTN DECAY**, and press the **MODIFY** soft button to select **APPEARNCE**.

INPUT RECURSIVE

Displayed:
Register:
Keyframe:
Cur.Time:

DECAY
20.0000

BIAS (CHROMA-LUMA)
0.0000

FREEZE	APPEARNCE		
MTN DECAY	TIMING	ON	ON
OFF	MASK	OFF	OFF
RECURSIVE MODE	MODIFY	LOOP	KEYFRAME RESET

APPEARNCE — allows you to adjust the appearance of the motion decay using the selections and soft knobs described below:

DECAY — sets the mix of old video to new video. The zero setting results in no new video.

BIAS — sets the mix ratio between old and new video chroma and luma. May be set to decay chroma faster than luminance or vice versa. At -100, chroma decay is full; at +100, luma decay is full. At zero, chroma and luma are equal.

LOOP — **ON** starts the recursive effect. **OFF** stops the recursive effect and returns to live video.

KEYFRAME RESET — **ON** resets the loop by creating a new frozen image at each keyframe that has Keyframe Reset on. **OFF** does not reset the loop at each keyframe.

Timing

The Timing selection applies to both the **FREEZE** and **MTN DECAY** recursive modes and allows you to select the timing, determining when the recursive effect is written to memory and when and how it is read out of memory.

To access the Timing selections shown below, press the **RECURSIVE MODE** soft button to select **FREEZE** or **MTN DECAY**, and press the **MODIFY** soft button to select **TIMING**.

INPUT RECURSIVE					
<div> <div>Displayed:</div> <div>Register:</div> <div>Keyframe:</div> <div>Cur.Time:</div> </div>					
FREEZE	APPEARANCE		ANY FIELD	ADAPT	
MTN DECAY	TIMING	ON	ODD	REPEAT	ODD
OFF	MASK	OFF	EVEN	FRAME	EVEN
RECURSIVE MODE	MODIFY	LOOP	START WRITE	READ TIMING	DISPLAY FIELD

LOOP — **ON** starts the recursive effect. **OFF** stops the recursive effect and returns to live video.

START WRITE — selects which field will be the first (of two) to be written into memory when a freeze is initiated: the next odd field, the next even field, or the next field of any type.

READ TIMING — selects a method for reading the recursive effect out of memory. Choices are listed below:

ADAPT — displays both fields. Where motion is detected a field-based freeze is used, and where motion is not detected a frame based freeze is used.

REPEAT — replays one field to synthesize the other. Image may contain artifacts, such as stairsteps, on diagonal lines.

INTERP — replays one field to synthesize the other, but removes artifacts by averaging between adjacent lines.

FRAME — shows both stored fields. Motion between the two fields appears as jitter.

DISPLAY — selects which of the two stored fields will be displayed: Odd or Even.

Mask

The Mask selection applies to both **FREEZE** and **MTN DECAY** recursive modes and allows you to mask selected portions of the image so they are included in the recursive effect while other portions are not.

To access the Mask selections shown below, press the **RECURSIVE MODE** soft button to select **FREEZE** or **MTN DECAY**, and press the **MODIFY** soft button to select **MASK**.

INPUT RECURSIVE

Displayed:
Register:
Keyframe:
Cur.Time:

FREEZE

MTN DECAY

OFF

APPEARANCE

TIMING

MASK

ON

OFF

RECURSIVE
MODE

MODIFY

LOOP

PICTURE
MASK

ADJUST
MASK >

LOOP — **ON** starts the recursive effect. **OFF** stops the recursive effect and returns to live video.

PICTURE MASK — turns the mask **ON** or **OFF**.

ADJUST MASK> — provides access to the Adjust Mask menu located under **Key/Stencil**, where you can select and adjust the mask.

See *Section 9-Key/Stencil Menu* for information about using masks.

Input Recursive Path Menu

This feature is not currently implemented.

Output Recursive Menu

The Output Recursive menu is available if the Output Recursive option is installed. Press the **Picture** Top Menu button, then select the **OUTPUT RECURSIVE>** soft button to bring up the menu shown below.

Use this menu to create freeze, motion decay, montage, or trails effects applied to the output (post-transformation) video.

OUTPUT RECURSIVE	
Displayed: Register: Keyframe: Cur.Time:	
FREEZE	
MTN DECAY	
MONTAGE	
TRAILS	
OFF	
RECURSIVE MODE	

RECURSIVE MODE — selects the **FREEZE**, **MOTION DECAY**, **MONTAGE**, or **TRAILS** recursive effect mode.

FREEZE — displays the output Freeze mode selections and adjustments.

MTN DECAY — displays the output Motion Decay mode selections and adjustments.

MONTAGE — displays the output Montage mode selections and adjustments.

TRAILS — displays the output Trails mode selections and adjustments.

OFF — turns off recursive modes.

Freeze/Appearance

The Freeze/ Appearance selections allow you to capture a still image from a moving video source and modify it. To access the Freeze/ Appearance selections shown below, press the **RECURSIVE MODE** soft button to select **FREEZE**, and press the **MODIFY** soft button to select **APPEARANCE**.

OUTPUT RECURSIVE						PICTURE DECAY 0.0000
Displayed: Register: Keyframe: Cur.Time:						STAR DECAY 0.0000
FREEZE						
MTN DECAY						
MONTAGE						
TRAILS	APPEARANCE	ON		ON	NONE	
OFF	TIMING	OFF		OFF	TIME	
RECURSIVE MODE	MODIFY	LOOP		KEYFRAME RESET	STROBE TYPE	

APPEARANCE — allows you to adjust the appearance of the freeze using the selections and soft knobs described below:

PICTURE DECAY — causes freeze to fade away over time.

STAR DECAY — causes a random decay frozen image over time.

LOOP — **ON** starts the recursive effect. **OFF** stops the recursive effect and returns to live video.

KEYFRAME RESET — **ON** resets the loop by creating a new frozen image at each keyframe that has Keyframe Reset on. **OFF** does not change the frozen image at each keyframe.

STROBE TYPE — sets type of strobe that will cause automatic capture of new images or disables automatic capture. The selections and adjustments below control the strobe cycle.

NONE — turns strobe off.

TIME — freezes a new image at an adjustable time interval.

KEYFRAME — freezes a new image at each keyframe.

When **TIME** is selected, the following soft knobs appear:

PERIOD — makes the strobe cycle shorter or longer (shown in frames).

ON TIME — sets the length of time that the image is unfrozen (shown as a percentage of the period).

Freeze/Timing

The **TIMING** selection applies to all of the recursive modes and is discussed near the end of this section on [page 7-36](#).

Motion Decay/Appearance

The **MTN DECAY** selection causes motion in the video image to leave a blurred remnant behind as it moves. The **APPEARANCE** selection allows you to modify the appearance of the motion decay.

To access the Motion Decay / Appearance selections shown below, press the **RECURSIVE MODE** soft button to select **MTN DECAY**, and press the **MODIFY** soft button to select **APPEARANCE**.

OUTPUT RECURSIVE				DECAY 20.0000	
Displayed: Register: Keyframe: Cur.Time:					
FREEZE					
MTN DECAY					
MONTAGE					
TRAILS	APPEARANCE	ON			
OFF	TIMING	OFF			
RECURSIVE MODE	MODIFY	LOOP	KEYFRAME RESET		

APPEARANCE — allows you to adjust the appearance of the motion decay using the selections and soft knobs described below:

DECAY — sets the mix of old video to new video. The zero setting results in no new video.

LOOP — **ON** starts the recursive effect. **OFF** stops the recursive effect and returns to live video.

KEYFRAME RESET — **ON** resets the loop and starts the recursive effect over again at each keyframe where Keyframe Reset is on. **OFF** does not reset the loop at each keyframe.

Motion Decay/Timing

The **TIMING** selection applies to all of the recursive modes and is discussed near the end of this section on [page 7-36](#).

Montage/Strobe

The **MONTAGE** selection allows you to create a montage of still images from moving video by flying the moving video image around the screen. The **STROBE** selection turns montage on and off at regular intervals.

To access the Montage/Strobe selections shown below, press the **RECURSIVE MODE** soft button to select **MONTAGE**, and press the **MODIFY** soft button to select **STROBE**.

OUTPUT RECURSIVE					
<div> <div>Displayed:</div> <div>Register:</div> <div>Keyframe:</div> <div>Cur.Time:</div> </div>					
FREEZE					
MTN DECAY					
MONTAGE	STROBE				
TRAILS	APPEARANCE	ON	ON	NONE	
OFF	TIMING	OFF	OFF	TIME	ON
				KEYFRAME	OFF
RECURSIVE MODE	MODIFY	LOOP	KEYFRAME RESET	STROBE TYPE	FORCE STROBE

LOOP — ON starts the recursive effect. **OFF** stops the recursive effect and returns to live video.

KEYFRAME RESET — ON resets the loop and starts the effect over at each keyframe where Keyframe Reset on. **OFF** does not change the frozen image at each keyframe.

STROBE TYPE — sets type of strobe that will cause automatic capture of new images or disables automatic capture. The selections and adjustments below control the strobe cycle.

NONE — turns strobe off.

TIME — captures a new image at an adjustable time interval.

KEYFRAME — captures a new image at each keyframe.

When **TIME** is selected, the following soft knob appears:

PERIOD — makes the strobe cycle shorter or longer (shown in frames).

FORCE STROBE — forces the strobe to turn on or off, depending on whether there is motion in the transform. **ON** strobes regardless of transform motion. **OFF** strobes only if there is motion in the image transform.

Montage/Appearance

The **MONTAGE** selection allows you to create a montage of still images from moving video by flying the moving video image around the screen. The **APPEARANCE** selection allows you to modify the look of the montage.

To access the Montage/Appearance selections shown below, press the **RECURSIVE MODE** soft button to select **MONTAGE**, and press the **MODIFY** soft button to select **APPEARANCE**.

OUTPUT RECURSIVE					PICTURE DECAY 0.0000	
Displayed: Register: Keyframe: Cur.Time:					STAR DECAY 0.0000	
					BLUR 0.0000	
FREEZE				OVER		
MTN DECAY				UNDER		
MONTAGE	STROBE	ON	YES	ERASE		
TRAILS	APPEARANCE	OFF	NO			
OFF	TIMING					
RECURSIVE MODE	MODIFY	LOOP	SHOW PICTURE	MONTAGE MODE		

APPEARANCE — allows you to adjust the appearance of the montage using the selections and soft knobs described below:

PICTURE DECAY — sets rate at which montage fades away.

STAR DECAY — sets rate at which the montage randomly decays.

BLUR — sets the amount of montage blur.

LOOP — **ON** starts the recursive effect. **OFF** stops the recursive effect and returns to live video.

SHOW PICTURE — **YES** displays the live video image in addition to the still montage. **NO** displays only the montage without the live video image.

MONTAGE MODE — these selections determine whether the newest image appears over or under the montage. Also includes a mode for erasing a montage.

OVER — places the live or newest image on top of the montage of still images.

UNDER — places the live or newest image under the montage.

ERASE — erases a previously-created montage as you fly a new image over the old montage.

Montage/Timing

The **TIMING** selection applies to all of the recursive modes and is discussed near the end of this section on [page 7-36](#).

Trails/Strobe

The **TRAILS** selection allows you to leave a trail of old images behind as you fly an image around the screen. The **STROBE** selection turns the trail on and off at regular intervals.

To access the Trails/Strobe selections shown below, press the **RECURSIVE MODE** soft button to select **TRAILS**, and press the **MODIFY** soft button to select **STROBE**.

OUTPUT RECURSIVE

Displayed:

Register:

Keyframe:

Cur.Time:

FREEZE					
MTN DECAY	STROBE				
MONTAGE	APPEARANCE				
TRAILS	WIND	ON			
OFF	TIMING	OFF			
RECURSIVE MODE	MODIFY	LOOP	KEYFRAME RESET	STROBE TYPE	FORCE STROBE

LOOP — **ON** starts the recursive effect. **OFF** stops the recursive effect and returns to live video.

KEYFRAME RESET — **ON** resets the loop and starts the effect over again at each keyframe where Keyframe Reset is on. **OFF** does not change the image at each keyframe.

STROBE TYPE — sets type of strobe that will cause automatic capture of new images or disables automatic capture. The selections and adjustments below control the strobe cycle.

NONE — turns strobe off.

TIME — captures a new image at an adjustable time interval.

KEYFRAME — captures a new image at each keyframe.

When **TIME** is selected, the following soft knobs appear:

PERIOD — makes the strobe cycle shorter or longer (shown in frames).

ON TIME — sets the length of time that the image is unfrozen (shown as a percentage of the period).

FORCE STROBE — forces the strobe to turn on or off, depending on whether there is motion in the transform. **ON** strobes regardless of transform motion. **OFF** strobes only if there is motion in the image transform.

Trails/Appearance

The **TRAILS** selection allows you to leave a trail of old images behind as you fly an image around the screen. The **APPEARANCE** selection allows you to modify the look of the trail.

To access the Trails/Appearance selections shown below, press the **RECURSIVE MODE** soft button to select **TRAILS**, and press the **MODIFY** soft button to select **APPEARANCE**.

OUTPUT RECURSIVE					TRAIL DECAY 0.0000 STAR DECAY 0.0000 BLUR 0.0000	
Displayed: Register: Keyframe: Cur.Time:						
FREEZE						
MTN DECAY	STROBE					
MONTAGE	APPEARANCE			OVER		
TRAILS	WIND	ON	YES	UNDER		
OFF	TIMING	OFF	NO	ERASE		
RECURSIVE MODE	MODIFY	LOOP	SHOW PICTURE	TRAIL MODE		

APPEARANCE — allows you to adjust the appearance of the trail using the selections and soft knobs described below:

TRAIL DECAY — sets rate at which trail fades away.

STAR DECAY — sets rate at which trails randomly decay away.

BLUR — sets amount of blur in the trails.

LOOP — **ON** starts the recursive effect. **OFF** stops the recursive effect and returns to live video.

SHOW PICTURE — **YES** displays the moving video image in addition to the trail. **NO** displays only the trail without the moving video image.

TRAIL MODE — these selections determine whether the newest image appears over or under the trail. Also includes a mode for erasing a trail.

OVER — places the live video or newest image on top of the trail.

UNDER — places the live video or newest image under the trail.

ERASE — erases a previously-created trail as you fly a new image over the old trail.

Trails/Timing

The **TIMING** selection applies to all of the recursive modes and is discussed near the end of this section on [page 7-36](#).

Trails/Wind

The **TRAILS** selection allows you to leave a trail of old images behind as you fly an image around the screen. The **WIND** selection allows you to modify the look of the trail by making it appear that wind is blowing if off the screen.

To access the Trails/Wind selections shown below, press the **RECURSIVE MODE** soft button to select **TRAILS**, and press the **MODIFY** soft button to select **WIND**.

OUTPUT RECURSIVE				WIND ROTATION 0.6000
Displayed: Register: Keyframe: Cur.Time:				WIND VELOCITY 20.0000
FREEZE				
MTN DECAY	STROBE			
MONTAGE	APPEARANCE			
TRAILS	WIND	ON		
OFF	TIMING	OFF		
RECURSIVE MODE	MODIFY	LOOP		

WIND — makes the trail appear as though a wind is blowing if off the screen. The soft knobs described below determine how the wind affects the trail:

WIND ROTATION — sets the direction that the wind blows.

WIND VELOCITY — sets the speed of the wind.

LOOP — **ON** starts the recursive effect. **OFF** stops the recursive effect and returns to live video.

Timing

The **TIMING** selection applies to all of the recursive modes and allows you to select the timing, determining when the recursive effect is written to memory and when and how it is read out of memory.

To access the Timing selections shown below, press the **RECURSIVE MODE** soft button to select a recursive mode, and press the **MODIFY** soft button to select **TIMING**.

OUTPUT RECURSIVE

Displayed:
Register:
Keyframe:
Cur.Time:

<div>FREEZE</div>				<div>ADAPT</div>	
<div>MTN DECAY</div>				<div>REPEAT</div>	
<div>MONTAGE</div>			<div>ANY FIELD</div>	<div>INTERP</div>	
<div>TRAILS</div>	<div>APPEARANCE</div>	<div>ON</div>	<div>ODD</div>	<div>FRAME</div>	<div>ODD</div>
<div>OFF</div>	<div>TIMING</div>	<div>OFF</div>	<div>EVEN</div>		<div>EVEN</div>
RECURSIVE MODE	MODIFY	LOOP	START WRITE	READ TIMING	DISPLAY FIELD

LOOP — ON starts the recursive effect. **OFF** stops the recursive effect and returns to live video.

START WRITE — selects which field will be the first (of two) to be written into memory when a freeze is initiated: the next odd field, the next even field, or the next field of any type.

READ TIMING — selects a method for reading the recursive effect out of memory. Choices are listed below:

ADAPT — displays both fields. Where motion is detected a field-based freeze is used, and where motion is not detected a frame based freeze is used.

REPEAT — replays one field to synthesize the other. Image may contain artifacts, such as stairsteps, on diagonal lines.

INTERP — replays one field to synthesize the other, but removes artifacts by averaging between adjacent lines.

FRAME — shows both stored fields. Motion between the two fields appears as jitter.

DISPLAY — selects which of the two stored fields will be displayed: Odd or Even.

Output Recursive Path Menu

This feature is not currently implemented.

Hard Freeze Menu

Use this menu to turn on and adjust the hard freeze and motion detection. Press the **Picture** Top Menu button then select the **HARD FREEZE** soft button to bring up the menu shown below.

HARD FREEZE	
<div> <div>Displayed:</div> <div>Register:</div> <div>Keyframe:</div> <div>Cur.Time:</div> </div>	
<div> <div>ANY FIELD</div> <div> <div>ON</div> <div>OFF</div> </div> <div> <div>ODD</div> <div>EVEN</div> </div> </div>	
FREEZE	<div> <div>FREEZE</div> <div>MOTION DETECTION></div> </div>

The two **FREEZE** buttons in the Hard Freeze Menu turn the freeze off and on and select whether to freeze on field 1, field 2, or any field. In addition there is a **Freeze Video** button in the override area of the control panel which will turn the hard freeze off and on.

Hard Freeze uses the transform memory to hold the image. This means that the pre-transform functions such as pseudocolor, emboss, crops, borders, all keyer functions, perspective blur, motion detect thresholds and matte fill cannot be changed once the image is frozen. These functions must be adjusted before the freeze occurs.

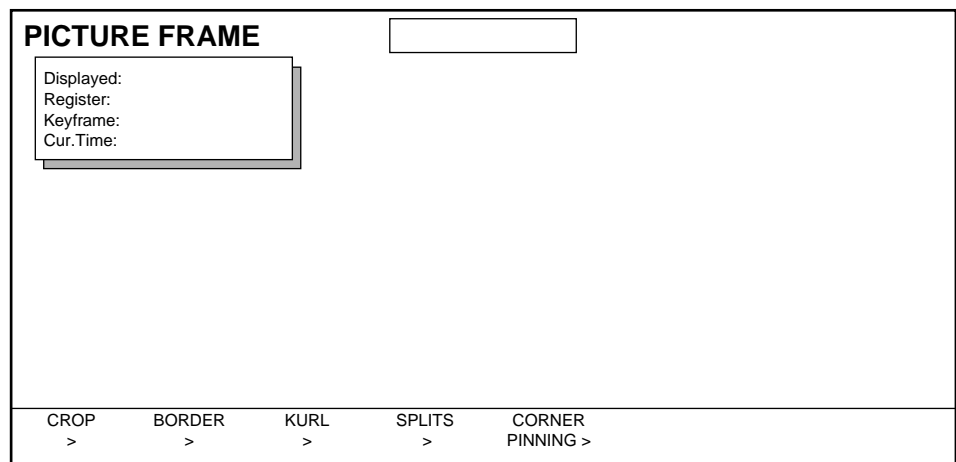
Post transform functions such as Kurl, drop shadows, lighting, perspective enhance and clip may be adjusted after the freeze takes place. Output backgrounds may also be changed after the freeze.

The **MOTION DETECTION>** button takes you to the Motion Detection Menu. See *Section 11-Input/Output Menu* for information about motion detection.

Picture Frame Menu

Introduction

Picture Frame tools manipulate the edges and “shape” applied to the picture. Press the **Picture Frame** top menu button located to the left of the menu display to bring up the following menu.



Picture Frame lower level menus include:

CROP> — reduces the active area of the image using box crops or 45 preset patterns (0 to 44) that can be keyframed to create a “wipe” effect.

BORDER> — places a border around the picture in each channel.

KURL> — this option provides access to the following Kurl effects: Page Turn, Page Roll, Ripple, Slits, Sphere, Position Modulation, Size Modulation, Rings, and Splash.

CORNER PINNING > — this option allows you to move the corners of a source image relative to the background.

Crop Menu

The Crop function allows the active area of the image to be reduced. The following menu is used to change the active area. You can use the Crop Pattern menu to keyframe a wipe into your effect.

Press the **Picture Frame** top menu button then press the **CROP** submenu button to bring up the Crop top menu.

The screenshot shows a video player interface. At the top, the word "CROP" is displayed in large, bold, black letters. Below it, there is a white rectangular box with a black border, containing the text "Displayed:", "Register:", "Keyframe:", and "Cur.Time:". To the right of this box is a small, empty white rectangular box. Below the "CROP" text, there is a vertical stack of three buttons: "BOX", "PATTERN", and "OFF". The "OFF" button is highlighted with a black background and white text. At the bottom of the screen, the text "CROP MODE" is visible.

CROP MODE — selections are:

BOX — provides a box-shaped crop.

PATTERN — provides choice of 45 preset crop patterns.

OFF — turns off the crop function.

Box/Position

Use this menu to specify the position of the crop. Press the **MODIFY** soft button to highlight **POSITION** to bring up the following menu.

CROP				POSITION - 4.0000	
Displayed: Register: Keyframe: Cur.Time:				SOFTNESS 0.0000	
BOX	POSITION				
PATTERN	APPEARANCE	ALL SIDES			
OFF	CROP MIX	SEP SIDES	LEFT	RIGHT	TOP
CROP MODE	MODIFY	ADJUST	LEFT SIDE	RIGHT SIDE	BOTTOM SIDE

Box Crop Position menu functions:

MODIFY — selections are:

POSITION — modifies the position of the crop edges.

APPEARANCE — provides tools to control crop corners (square or round); softness; opacity.

CROP MIX — provides control for combining box and pattern crops.

ADJUST — selections used to adjust various sides of the crop include:

ALL SIDES — to adjust all sides simultaneously.

SEP SIDES — to adjust the crop sides one at a time, separately or simultaneously with other selected sides. More than one of the labeled soft buttons may be adjusted at the same time by the same amount. Simultaneously hold down the sides you want adjusted together.

Soft Knob controls available are:

POSITION — controls the position of the crop edges. Position is measured in screen units.

SOFTNESS — controls the softness of the crop edges.

A plus sign (+) will appear before these soft knob parameters when **ALL SIDES** has been selected indicating that ALL sides of the crop will be adjusted simultaneously.

Note When Border is ON, the Crop softness control has no effect. Use the border softness and softness symmetry controls to adjust crop AND border softness.

Box/Appearance

This menu provides parameters to control how the crop looks. Press **MODIFY** to highlight **APPEARANCE** to bring up the following menu:

CROP							
Displayed: Register: Keyframe: Cur.Time:							
BOX	POSITION	SQUARE		ON	ON	OPACITY 100.0000	
PATTERN	APPEARANCE	ROUND		OFF	OFF		
OFF	CROP MIX			CORNERS	INVERT	WAVEFORM SHAPING	
CROP MODE		MODIFY					

Box Crop Appearance menu functions:

CORNERS — press to toggle between **SQUARE** and **ROUND** interior crop corners. The amount of corner “roundness” depends on the softness of the edges.

INVERT — press to reverse the active video and the cropped area.

WAVEFORM SHAPING — controls the soft edge appearance.

ON gives an S-linear transition resulting in a more smooth appearance.

OFF gives the softness edge a Linear transition.

Soft Knob controls:

OPACITY — controls the transparency of the cropped part of the video. The Opacity controls *both* the Box Crop and Pattern Crop opacity.

The final opacity of a channel is determined by multiplying the values for Picture opacity, Crop opacity, Corner Pinning View Through opacity, and Combiner Channel opacity. See *Final Picture Opacity on page 7-10* for more information.

Box/Mix

This menu lets you combine both Box and Pattern Crops.

CROP		
<div> <div>Displayed:</div> <div>Register:</div> <div>Keyframe:</div> <div>Cur.Time:</div> </div>		
BOX	POSITION	MULTIPLY
PATTERN	APPEARANCE	NAM +
OFF	CROP MIX	NAM -
		OFF
CROP MODE	MODIFY	COMBINE MODE

Box Crop Mix menu functions:

COMBINE MODE — this parameter controls how the Box and Pattern crops will be combined. These controls exist in both the Crop Box and Crop Pattern menus, and are linked together.

MULTIPLY — multiplies the two crop signals. When using this parameter the softness is applied to both Box and Pattern crops the same way it is for NAM -, except in MULTIPLY the soft edges are multiplied producing a softer transition.

NAM + (Non Additive Mix) — allows uncropped video from both the Box and Pattern crop to be visible. This is equivalent to a Logical AND of the Pattern and Box crops. Note that because cropping removes image area, this is equivalent to a logical OR of the remaining cropped image areas.

NAM - — takes the lesser of the two crop signals and produces more abrupt edge intersections on soft edges. NAM- only allows the video that remains uncropped by both the Box and Pattern crops to be visible. This is equivalent to a logical OR of the Box and Pattern crops, which is a logical AND of the remaining cropped image areas.

Pattern/Selection

Crops can take the shape of one of 45 preset patterns. You choose from a set of patterns using the **PATTERN** soft KNOB, as shown in the menu below.

CROP				PATTERN 3
Displayed: Register: Keyframe: Cur.Time:				
		HORIZ PATTERN REPEAT 1.0000		
		VERT PATTERN REPEAT 1.0000		
	PATTERN			
BOX	POSITION			
PATTERN	APPEARANCE			
OFF	CROP MIX			
		BOTH	SIZE 50.0000	
		SEP H/V		
CROP MODE	MODIFY	PATTERN REPEAT		

Crop Patterns menu functions:

You can choose from 45 preset crop patterns in two ways:

- Press the Transfer button next to the **PATTERN** soft knob to transfer to the Keypad to enter a pattern number directly.
- Scroll through the patterns using the **PATTERN** soft knob. The pattern number appears below the soft knob parameter shown in the menu display (0 to 44).

Note The Crop Pattern numbers correspond to the Grass Valley Switcher wipe pattern numbers.

PATTERN REPEAT — Allows you to repeat an internally generated crop pattern in a variety of ways. You can multiply a pattern in both the horizontal and vertical axes, or multiply each axis independently, and the pattern can be repeated up to 999.9999 times.

BOTH — Multiplies patterns both horizontally and vertically, with a single soft knob.

SEP H/V — Multiplies horizontal and vertical patterns separately, using two soft knobs.

The **SIZE** soft knob sets the size of the pattern.

Pattern/Position

The crop size, aspect ratio, and X-Y position can be adjusted using the functions shown in the following menu.

CROP			HORIZONTAL POSITION 0.0000
Displayed: Register: Keyframe: Cur.Time:			VERTICAL POSITION 0.0000
			SIZE 50.0000
BOX	PATTERN		ASPECT 0.0000
PATTERN	POSITION		
OFF	APPEARANCE		
	CROP MIX		
CROP MODE		MODIFY	

Soft Knob controls used with this menu are:

HORIZ POSITION — controls the position (as measured in screen units) of the pattern crop in the horizontal plane (slides it back and forth horizontally).

VERT POSITION — controls the position (as measured in screen units) of the pattern crop in the vertical plane (slides it up and down vertically).

SIZE — controls the size of the crop. A size of 100% means that no active video is cropped.

ASPECT — using a positive value stretches the crop in the Y axis; using a negative value stretches the crop in the X axis.

Pattern/Appearance

Crop patterns have functions that control the transparency of the cropped video as well as how soft the crop edges appear. The following menu shows those functions.

CROP					
Displayed: Register: Keyframe: Cur.Time:					
				SOFTNESS 0.0000	
				ROTATION 0.0000	
BOX PATTERN OFF		PATTERN POSITION APPEARANCE CROP MIX		ON OFF	
CROP MODE		MODIFY		INVERT	
				WAVEFORM SHAPING	
				POSITION SPEED	
				OPACITY 100.0000	
				ROTATION MODE	

Pattern Crop Appearance menu functions:

INVERT — press to reverse the active video and the cropped pattern area.

WAVEFORM SHAPING — controls the soft edge appearance.

ON gives the soft edge an S-linear transition resulting in a more smooth appearance.

OFF gives the soft edge a Linear transition.

ROTATION MODE — controls the rotation **SPEED** or **DIRECTION** of the crop pattern.

Soft Knob controls available are:

SOFTNESS — controls softness of the crop edges.

ROTATION/ROTATION SPEED — controls speed or direction of rotation—clockwise or counter-clockwise—depending on the mode selected.

OPACITY — controls the transparency of the cropped area. This Opacity controls *both* Box and Pattern crops' opacity.

The final opacity of a channel is determined by multiplying the values for Picture opacity, Crop opacity, Corner Pinning View Through opacity, and Combiner Channel opacity. See *Final Picture Opacity* on [page 7-10](#) for more information.

Note When Borders are active, Border softness controls BOTH Border AND Crop softness.

Pattern/Crop/Mix

When the Combine Crops function is ON the following menu appears:

CROP		
<div>Displayed:</div> <div>Register:</div> <div>Keyframe:</div> <div>Cur.Time:</div>		
BOX	PATTERN	MULTIPLY
PATTERN	POSITION	NAM +
OFF	APPEARANCE	NAM -
	CROP MIX	OFF
CROP MODE	MODIFY	COMBINE MODE

Crop Pattern Mix menu functions are the same as the Crop Box Mix menu functions described in this section on [page 8-5](#).

Crop Path Menu

To access Path Control for Crop functions, while in the Crop menu press the **Path** button located in the User Assist subpanel.

CROP PATH		
<div>Displayed:</div> <div>Register:</div> <div>Keyframe:</div> <div>Cur.Time:</div>		
<div>TENSION 0.0000</div> <div>CONTINUITY 0.0000</div> <div>BIAS 0.0000</div>		
BOX	ON	CURVE
PATTERN	OFF	SMOOTH
		LINEAR
		S-LINEAR
CROP MODE	HOLD	PATH TYPE

See *Section 6-Run Control Menu* for more information about path control functions.

Border Menu

The Border menus add borders around the inside edge of the manipulated image. Press the **Picture Frame** top menu button then press the **BORDER>** button to bring up the following menu:

BORDER		
Displayed:		
Register:		
Keyframe:		
Cur. Time:		
<div>BOX</div> <div>PATTERN</div> <div>OFF</div>		
BORDER MODE		

Border menu selections:

BORDER MODE — this mode provides **BOX** and **PATTERN** border parameters, or **OFF** to turn the Border function off.

The functions in the following series of menus are the generally similar to those for the Crop menus, except the Border menus contain flat and wash matte functions.

Note For user convenience, some Crop menu functions can be changed from the Border menus. Soft knobs are labeled with [CROP] to indicate the parameters being changed are actually located in the Crop menus.

Box/Flat/Width

Select the **BOX** border mode when you want a box-shaped border around the picture. You can then control the width of this menu using the soft buttons and knobs described below.

Press the **MATTE MODE** soft button to select **FLAT** matte (wash matte functions are described later in this section).

Press the **MODIFY** soft button to highlight the **WIDTH** parameter as shown in the following menu.

Displayed:

Register:

Keyframe:

Cur.Time:

WIDTH

0.3500

SOFTNESS

1.5000

SOFTNESS SYMMETRY

100.0000

BOX

PATTERN

OFF

BORDER MODE

FLAT

WASH

MATTE MODE

WIDTH

APPEARANCE

MATTE

BORDR MIX

MODIFY

ALL SIDES

SEP SIDES

ADJUST

LEFT

RIGHT

LEFT SIDE

TOP

BOTTOM

TOP SIDE

BOTTOM

BOTTOM SIDE

Box Border Width menu functions:

MODIFY —modifies the following parameters:

WIDTH — adjusts the width of the selected border with respect to the crop edge using the controls provided by the soft knobs. The width is measured in screen units.

APPEARANCE — this parameter controls the soft border corners (square or round) and Waveform Shaping.

MATTE — lets you adjust the border color using the controls provided by the soft knobs.

BORDER MIX — provides controls to combine box and pattern borders.

ADJUST — can make adjustments to the border sides using the following parameters:

ALL SIDES — all border sides are adjusted at once using the soft knob controls described below.

SEP SIDES — provides adjustment of border sides (left, right, top bottom) individually or in combination of one or more border sides at once. More than one of the labeled soft buttons may be pressed at the same time so that more than one border edge may be controlled simultaneously.

Soft Knob controls available with this soft button are:

WIDTH — adjusts the width of the border. Width is measured in screen units.

SOFTNESS — adjusts the softness of the border edges.

SOFTNESS SYMMETRY — determines the relative softness of the inside and outside border edges—the overall width of the border is unchanged.

When **ALL SIDES** is chosen for adjustment, a plus (+) sign will appear before the soft knob parameters indicating changes are being made to ALL sides at once.

Box/Flat/Appearance

Use this menu to change the appearance of the Box Border (including square or round corners). Press the **MODIFY** button to toggle to **APPEARANCE** to bring up the following menu.

BORDER					
Displayed: Register: Keyframe: Cur.Time:					
<div>BOX</div> <div>PATTERN</div> <div>OFF</div>		<div>WIDTH</div> <div>APPEARANCE</div> <div>MATTE</div> <div>BORDR MIX</div>		<div>SQUARE</div> <div>ROUND</div>	
<div>BORDER MODE</div>		<div>FLAT</div> <div>WASH</div> <div>MATTE MODE</div>		<div>ON</div> <div>OFF</div> <div>WAVEFORM SHAPING</div>	
		<div>MODIFY</div>		<div>OPACITY 100.0000</div>	

Box Appearance menu functions:

CORNERS —press to toggle between round and square interior border corners. The amount of corner “roundness” depends on the softness of the border edges.

Note Roundness will occur ONLY if softness is applied to the border.

WAVEFORM SHAPING controls the softness edge appearance.

ON gives an S-linear transition resulting in a more smooth appearance.

OFF gives the softness edge a Linear transition.

Soft Knob control available with this soft button is:

OPACITY — adjusts the transparency of the border.

Box/Flat/Matte

Functions in this menu control flat matte border color.

Press the **MODIFY** soft button to toggle to the **MATTE** parameters to bring up the following menu.

BORDER

Displayed:
Register:
Keyframe:
Cur.Time:

SATURATION
0.0000

BRIGHTNESS
0.0000

HUE
0.0000

BOX

PATTERN

OFF

FLAT

WASH

WIDTH
APPEARANCE

MATTE

BORDR MIX

ON

OFF

BORDER
MODE

MATTE
MODE

MODIFY

HUE
ROTATE

Box Border Flat Matte menu functions:

HUE ROTATE — select **ON** to control hue rotate speed with the soft knob.

Soft knob controls available with the Matte parameter are:

SATURATION — controls chroma saturation.

BRIGHTNESS — controls luminance level.

HUE/HUE ROTATE SPEED — When the **HUE ROTATE** function is **OFF**, this soft knob controls the Hue; when **ON** it controls rotation speed. A positive setting controls counter-clockwise rotation; a negative setting controls clockwise rotation. The units are in rotations per second.

Box/Flat/Mix

Press the **MODIFY** button to toggle to the **BORDER MIX** parameter. Use this menu when you need to combine box and pattern border functions.

BORDER						[CROP] PATTERN 3
Displayed: Register: Keyframe: Cur. Time:						
				[CROP] HORIZ PATTERN REPEAT 1.0000		
				[CROP] VERT PATTERN REPEAT 1.0000		
		WIDTH	MULTIPLY			
BOX		APPEARANCE	NAM +		APPEARANCE	
PATTERN		MATTE	NAM -		POS/ROTAT	
OFF		BORDR MIX	OFF		REPEAT	
BORDER MODE		MATTE MODE	COMBINE BORDERS		PATTERN MODIFY	
					BOTH SEP H/V PATTERN REPEAT	

Box Border Flat Mix menu functions:

COMBINE BORDERS controls how the Box and Pattern borders will be combined. These controls are similar to those in the Crop Box Mix menu.

MULTIPLY — multiplies the two border signals. When using this parameter the softness is applied to both Box and Pattern borders the same way it does for NAM -, except in MULTIPLY the soft edges are multiplied producing a softer transition.

NAM + (Non Additive Mix) — portions of the borders from both the Box and Pattern borders are visible. This is equivalent to a logical AND of the Pattern and Box borders.

NAM - — only portions of the borders from the Box or Pattern borders that overlap are visible, and more abrupt edge intersections are produced on soft edges. This is equivalent to a logical OR of the Box and Pattern borders.

OFF does not allow any border mix capability.

PATTERN MODIFY — provides access to the following Crop menu pattern controls.

APPEARANCE — [CROP] labeled soft knob controls for **PATTERN**, **PATTERN SIZE**, and **PATTERN ASPECT**.

POS/ROTAT — [CROP] labeled soft knob controls for **POSITION**, **ROTATION**, and **SPEED**.

REPEAT — [CROP] labeled soft knob controls for **PATTERN**, and **PATTERN REPEAT**.

ROTATION MODE—when **POS/ROTAT** is selected above, this button determines whether the labeled soft knob controls Crop Rotation or Rotation Speed.

PATTERN REPEAT — when **REPEAT** is selected above, this button determines whether the labeled soft knobs control Crop Horizontal and Vertical repeat separately or combined.

Box/Wash/Width

Border wash allows you to include two matte colors (Inside matte and Outside matte) within a border. You can blend (wash) the two border mattes together, and you can adjust the offset of the wash within the border. Each matte's chroma, luminance, and hue (including hue rotate and speed) can be adjusted separately. You can also round the wash corners, waveform shape the wash edges, and combine the wash between pattern and border in various ways (MULTIPLY, NAM+, NAM-).

Press the **MATTE MODE** button to toggle to **WASH** and press the **MODIFY** button to toggle to **WIDTH** to bring up the following menu.

BORDER					+ BORDER WIDTH ALL SIDES 0.3500
Displayed: Register: Keyframe: Cur.Time:					+ WASH OFFSET ALL SIDES 0.3500
		WIDTH			
		SOFTNESS			
		APPEARANCE			
		IN MATTE			
BOX					
PATTERN	FLAT	OUT MATTE	ALLSIDES		
OFF	WASH	BORDR MIX	SEP SIDES		
BORDER MODE	MATTE MODE	MODIFY	ADJUST		

Box Border Wash Width menu functions:

ADJUST — can make adjustments to the border sides using the following parameters:

ALL SIDES — all border sides are adjusted at once using the soft knob controls described below.

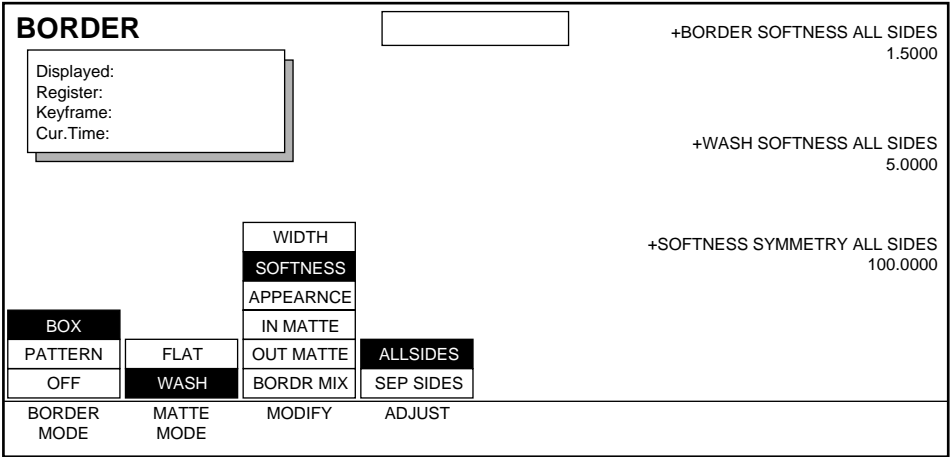
SEP SIDES — provides adjustment of border sides (left, right, top bottom) individually or in combination of one or more border sides at once.

Soft Knob controls available with this menu are:

- BORDER WIDTH** — adjusts the width of the border. Width is measured in screen units.
- WASH OFFSET**— adjusts the location of the transition between the inside and outside matte edges within the border.

Box/Wash/Softness

Press the **MODIFY** button to toggle to **SOFTNESS** to bring up the following menu.



Box Border Wash Softness menu functions:

ADJUST — can make adjustments to the border sides using the following parameters:

- ALL SIDES** — all border sides are adjusted at once using the soft knob controls described below.
- SEP SIDES** — provides adjustment of border sides (left, right, top bottom) individually or in a combination of one or more border sides.

Soft Knob controls available with this menu are:

- BORDER SOFTNESS** — controls the softness of the inside and outside edges of the border.
- WASH SOFTNESS** — adjusts the softness of the transition between the inside and outside matte edges within the border.
- SOFTNESS SYMMETRY** — determines the relative softness of the inside and outside border edges—the overall width of the border is unchanged. This control does *not* affect any wash softness within the border.

Box/Wash/Apearncce

Press the **MODIFY** button to toggle to **APPEARNCE** to bring up the following menu.

BORDER

Displayed:
Register:
Keyframe:
Cur.Time:

WIDTH

SOFTNESS

APPEARNCE

IN MATTE

OUT MATTE

BORDR MIX

BOX

PATTERN

OFF

FLAT

WASH

ROUND CORNERS

WASH CORNERS

BORDER SHAPING

WASH SHAPING

OPACITY

100.0000

Box Border Wash Appearance menu functions:

ROUND CORNERS — press to toggle between **SQUARE** and **ROUND** interior border corners. The amount of corner “roundness” depends on the border softness.

WASH CORNERS — press to toggle between **SQUARE** and **ROUND** wash corners. The amount of corner “roundness” depends on the matte softness.

BORDER SHAPING — controls the soft edge appearance of the exterior border edges. **ON** gives the soft edge an S-linear transition resulting in a more smooth appearance. **OFF** gives the soft edge a Linear transition.

WASH SHAPING — controls the soft edge appearance of the transition between the inside and outside mattes. **ON** gives the soft edge an S-linear transition resulting in a more smooth appearance. **OFF** gives the soft edge a Linear transition.

Soft Knob controls available with this menu are:

OPACITY — controls the transparency of the border.

Box/Wash In, Out/Matte

Press the **MODIFY** button to toggle to **IN MATTE** to bring up the following menu to control the colors of the inside matte. Selecting **OUT MATTE** displays an identical menu for controlling outside matte color.

BORDER			INSIDE SATURATION 0.0000							
<div> <div>Displayed:</div> <div>Register:</div> <div>Keyframe:</div> <div>Cur.Time:</div> </div>										
			INSIDE BRIGHTNESS 40.0000							
			INSIDE HUE 0.0000							
<table border="1"> <tr><td>WIDTH</td></tr> <tr><td>SOFTNESS</td></tr> <tr><td>APPEARANCE</td></tr> <tr><td>IN MATTE</td></tr> <tr><td>OUT MATTE</td></tr> <tr><td>BORDR MIX</td></tr> </table>			WIDTH	SOFTNESS	APPEARANCE	IN MATTE	OUT MATTE	BORDR MIX		
WIDTH										
SOFTNESS										
APPEARANCE										
IN MATTE										
OUT MATTE										
BORDR MIX										
BOX	FLAT		ON							
PATTERN	WASH		OFF							
OFF										
BORDER MODE	MATTE MODE	MODIFY	HUE ROTATE							

Box Border Wash In and Out Matte menu functions are the same as the flat matte functions:

HUE ROTATE — select **ON** to control hue rotate speed with the soft knob.

Soft knob controls available with the Matte parameter are:

INSIDE/OUTSIDE SATURATION — controls chroma saturation.

INSIDE/OUTSIDE BRIGHTNESS — controls luminance level.

HUE/HUE ROTATE SPEED — When the **HUE ROTATE** function is **OFF**, this soft knob controls the Hue; when **ON** it controls rotation speed. A positive setting controls counter-clockwise rotation; a negative setting controls clockwise rotation. The units are in rotations per second.

Box/Wash/Mix

Press the **MODIFY** button to toggle to **BORDER MIX** to bring up the following menu.

BORDER					
Displayed: Register: Keyframe: Cur.Time:					
		WIDTH			
		SOFTNESS			
		APPEARANCE	MULTIPLY	MULTIPLY	
BOX		IN MATTE	NAM +	NAM +	
PATTERN	FLAT	OUT MATTE	NAM -	NAM -	ON
OFF	WASH	BORDR MIX	OFF	OFF	OFF
BORDER MODE	MATTE MODE	MODIFY	COMBINE BORDERS	COMBINE WASHES	FOLLOW MASK

Border Box Wash Mix menu functions are the same as the flat matte functions (see [page 8-14](#)) with additional controls for combining washes.

COMBINE WASHES — controls how the Box and Pattern border washes will be combined. These controls are similar to those in the Crop Box Mix menu.

MULTIPLY — multiplies the two border wash signals. When using this parameter the softness is applied to both Box and Pattern borders the same way it does for NAM -, except in MULTIPLY the soft edges are multiplied producing a softer transition.

NAM + (Non Additive Mix) — portions of the border washes from both the Box and Pattern borders are visible. This is equivalent to a logical AND of the Pattern and Box border washes.

NAM - — only portions of the border washes from the Box or Pattern borders that overlap are visible, and more abrupt edge intersections are produced on soft edges. This is equivalent to a logical OR of the Box and Pattern border washes.

OFF does not allow any border wash mix capability.

PATTERN MODIFY — provides access to the following Crop menu pattern controls.

APPEARANCE — [CROP] labeled soft knob controls for **PATTERN**, **PATTERN SIZE**, and **PATTERN ASPECT**.

POS/ROTAT — [CROP] labeled soft knob controls for **POSITION**, **ROTATION**, and **SPEED**.

REPEAT — [CROP] labeled soft knob controls for **PATTERN**, and **PATTERN REPEAT**.

FOLLOW MASK— Controls whether a mask influences the borders.

ON – the inside border is affected by an internally generated or externally input mask signal (Adjust Mask controls are accessed via the Key/Stencil menu).

OFF – the inside border is controlled by the existing Border and Crop menus.

ROTATION MODE—when **POS/ROTAT** is selected above, this button determines whether the labeled soft knob controls Crop Rotation or Rotation Speed.

PATTERN REPEAT — when **REPEAT** is selected above, this button determines whether the labeled soft knobs control Crop Horizontal and Vertical repeat separately or combined.

Pattern/Flat/Pattern

Press the **BORDER MODE** button to toggle to **PATTERN** and press the **MODIFY** button to toggle to **PATTERN** to bring up the following menu.

BORDER			[CROP] PATTERN 3
Displayed: Register: Keyframe: Cur.Time:			[CROP] PATTERN SIZE 50.0000
			[CROP] PATTERN ASPECT 0.0000
BOX		PATTERN	APPEARANCE
PATTERN	FLAT	APPEARANCE	POS/ROTAT
OFF	WASH	MATTE	REPEAT
		BORDR MIX	
BORDER MODE	MATTE MODE	MODIFY	PATTERN MODIFY

PATTERN MODIFY — provides access to the following Crop menu pattern controls.

APPEARANCE — [CROP] labeled soft knob controls for **PATTERN**, **PATTERN SIZE**, and **PATTERN ASPECT**.

POS/ROTAT — [CROP] labeled soft knob controls for **POSITION**, **ROTATION**, and **SPEED**.

REPEAT — [CROP] labeled soft knob controls for **PATTERN**, and **PATTERN REPEAT**.

ROTATION MODE—when **POS/ROTAT** is selected above, this button determines whether the labeled soft knob controls Crop Rotation or Rotation Speed.

PATTERN REPEAT — when **REPEAT** is selected above, this button determines whether the labeled soft knobs control Crop Horizontal and Vertical repeat separately or combined.

Pattern/Flat/Appearance

Press the **MODIFY** button to toggle to **APPEARANCE** to bring up the following menu.

BORDER			WIDTH 0.5000
<div> <div>Displayed:</div> <div>Register:</div> <div>Keyframe:</div> <div>Cur.Time:</div> </div>			SOFTNESS 0.0000
			SOFTNESS SYMMETRY 0.0000
BOX		PATTERN	
PATTERN	FLAT	APPEARANCE	
OFF	WASH	MATTE	
		BORDR MIX	
BORDER MODE	MATTE MODE	MODIFY	ON OFF
			OPACITY 100.0000
			WAVEFORM SHAPING

Use this menu when you want to change the border's Width, Opacity, Softness, and Softness Symmetry. Border Pattern Flat Appearance menu functions include:

WAVEFORM SHAPING — controls the soft edge appearance. **ON** gives the soft edge an S-linear transition resulting in a more smooth appearance. **OFF** gives the soft edge a Linear transition.

Soft Knob controls available with this menu are:

WIDTH — adjusts the width of the border.

SOFTNESS —adjusts the overall softness of the crop border edges. This parameter works in conjunction with Softness Symmetry.

SOFTNESS SYMMETRY — this adjustment determines the relative softness of the inside and outside border edges—the overall width of the border is unchanged.

OPACITY — controls the border transparency.

Pattern/Flat/Matte

Press the **MODIFY** button to toggle to **MATTE** to bring up the following menu.

BORDER					SATURATION 0.5000
Displayed: Register: Keyframe: Cur.Time:					BRIGHTNESS 0.0000
					HUE 0.0000
BOX		PATTERN	APPEARANCE		
PATTERN	FLAT	MATTE		ON	
OFF	WASH	BORDR MIX		OFF	
BORDER MODE	MATTE MODE	MODIFY	HUE ROTATE		

This menu provides controls to adjust the flat border color. These functions are the same as the Border Box Flat Matte menu ([page 8-13](#)).

Pattern/Flat/Mix

Press the **MODIFY** button to toggle to **BORDER MIX** to bring up the following menu.

BORDER					[CROP] PATTERN 3
Displayed: Register: Keyframe: Cur.Time:					[CROP] PATTERN SIZE 50.0000
					[CROP] PATTERN ASPECT 0.0000
BOX		PATTERN	MULTIPLY		
PATTERN	FLAT	MATTE	NAM +	APPEARANCE	
OFF	WASH	BORDR MIX	NAM -	POS/ROTAT	
			OFF	REPEAT	
BORDER MODE	MATTE MODE	MODIFY	COMBINE BORDERS	PATTERN MODIFY	

This menu provides controls to combine box and pattern borders. These functions are the same as the Border Box Flat Mix menu ([page 8-14](#)).

Pattern/Wash

Press the **MATTE MODE** button to toggle to **WASH** to bring up the following menu.

BORDER				[CROP] PATTERN 3	
Displayed: Register: Keyframe: Cur.Time:				[CROP] PATTERN SIZE 50.0000	
				[CROP] PATTERN ASPECT 0.0000	
		PATTERN WIDTH APPEARNCE IN MATTE OUT MATTE BORDR MIX		APPEARNCE POS/ROTAT REPEAT	
BOX PATTERN OFF	FLAT WASH	MODIFY		PATTERN MODIFY	
BORDER MODE	MATTE MODE				

The Border Pattern Wash menus provide control of wash mattes when pattern borders are being used. These controls are similar to the Border Box Wash controls described earlier in this section.

Border Path Menu

To access Path Control for Border functions, while in the Border menu press the **Path** button located in the User Assist Subpanel.

BORDER PATH				TENSION 0.0000	
Displayed: Register: Keyframe: Cur.Time:				CONTINUITY 0.0000	
				BIAS 0.0000	
		CURVE SMOOTH LINEAR S-LINEAR		CW CCW SHORT LONG	
BOX PATTERN	ON OFF	HOLD		ON OFF	LINEAR S-LINEAR
BORDER MODE		PATH TYPE		HOLD MATTE	MATTE PATH

See *Section 6-Run Control Menu* for more information about path control functions.

Kurl Menu

Kurl is an optional feature that requires hardware installation to be operational. Press the **Picture Frame** top menu button then press the **KURL>** button to bring up the following menu.

KURL

Displayed:

Register:

Keyframe:

Cur.Time:

PAGE TURN	POS MOD
PAGE ROLL	SIZE MOD
RIPPLE	RINGS
SLITS	SPLASH
SPHERE	---
OFF	OFF

KURL
MODE

KURL
MODE

The Kurl menu provides access to the following special effects:

- Page Turn
- Page Roll
- Ripple
- Slits
- Sphere
- Position Mod
- Size Mod
- Rings
- Splash

Only one Kurl Mode may be selected at a time.

Page Turn

Page Turn is a transition effect with the video being mapped to an original plane, a cylinder, and a final plane parallel to the original plane. Page Turn is a parallel projection to the target screen with no perspective. Soft knobs control the page turn cylinder parameters.

The turn may be towards the front or back of the original plane. Turns may be executed as a single channel, double channel, or double pass effect. In a single channel execution, the source video may be applied to both the front and back. In a double channel/double pass execution, one video source is applied to the front by one channel, while another video source is applied to the back by another channel or a second pass with the initial channel.

Press **KURL MODE** button until **PAGE TURN** is highlighted to access the following menu.

KURL				RADIUS 1.0000																		
Displayed: Register: Keyframe: Cur.Time:				OFFSET 0.0000																		
<table border="1"> <tr> <td>PAGE TURN</td> <td>POS MOD</td> </tr> <tr> <td>PAGE ROLL</td> <td>SIZE MOD</td> </tr> <tr> <td>RIPPLE</td> <td>RINGS</td> </tr> <tr> <td>SLITS</td> <td>SPLASH</td> </tr> <tr> <td>SPHERE</td> <td>---</td> </tr> <tr> <td>OFF</td> <td>OFF</td> </tr> </table>		PAGE TURN	POS MOD	PAGE ROLL	SIZE MOD	RIPPLE	RINGS	SLITS	SPLASH	SPHERE	---	OFF	OFF	<table border="1"> <tr> <td>OVER</td> <td>BOTH</td> </tr> <tr> <td>UNDER</td> <td>FRONT</td> </tr> <tr> <td></td> <td>BACK</td> </tr> </table>		OVER	BOTH	UNDER	FRONT		BACK	ANGLE 0.1000
PAGE TURN	POS MOD																					
PAGE ROLL	SIZE MOD																					
RIPPLE	RINGS																					
SLITS	SPLASH																					
SPHERE	---																					
OFF	OFF																					
OVER	BOTH																					
UNDER	FRONT																					
	BACK																					
KURL MODE	KURL MODE	DIRECTION		SHOW SIDES																		

Page Turn menu functions include:

DIRECTION — **OVER** and **UNDER** control whether the page turn is towards the viewer (**OVER**) or away from the viewer (**UNDER**).

SHOW SIDES —press to select **BOTH**, **FRONT**, or **BACK** to show video on both sides, front side only, or back side only of the page being turned. Press **BOTH** if you are using one channel and you wish to show both front and back video.

Soft Knobs associated with this menu include:

RADIUS —adjusts the radius of the page turn cylinder affecting the sharpness of the curl.

OFFSET — positions the page turn cylinder with respect to the source raster and, when interpolated between keyframes, causes the page to “turn”. The offset would typically change from one edge or corner of the source raster to the opposite edge or corner for the turn.

ANGLE — defines the orientation of the page turn cylinder with respect to the source X and Y axes, and specifies the direction of the turn.

Page Roll

Page Roll is a transition effect with the video being mapped to an original plane and a cylinder. This is a parallel projection to the target screen with no perspective. Soft knobs control the page roll cylinder parameters.

The picture can roll towards the front or back of the original plane. Page Roll may be executed as a single channel, multiple channel, or multiple pass effect.

In a single channel execution, the source video may be applied to both the plane and top of the cylinder. The limitation is that the succeeding cylinder rolls will not appear if the cylinder axis is angled with respect to the source X or Y axes. In a multiple channel/multiple pass execution, the various channels may be applied to mapping of successive portions of video in a multiple revolution roll for any axis orientation. The limitation is that only the video portions corresponding to a maximum of four complete cylinder rolls may be mapped.

Press the first column of **KURL MODE** to access the following **PAGE ROLL** menu.

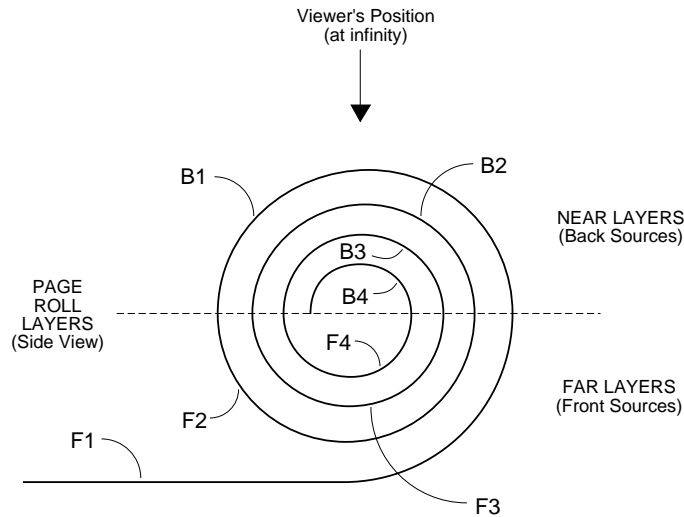
KURL				RADIUS 1.0000										
Displayed: Register: Keyframe: Cur.Time:				OFFSET 0.0000										
PAGE TURN	POS MOD			ANGLE 0.1000										
PAGE ROLL	SIZE MOD													
RIPPLE	RINGS													
SLITS	SPLASH													
SPHERE	---													
OFF	OFF													
		OVER												
		UNDER												
		<table border="1"> <tr> <td>F1 & B1</td> <td>F1 & B1</td> </tr> <tr> <td>FRONT 1</td> <td>FRONT 3</td> </tr> <tr> <td>BACK 1</td> <td>BACK 3</td> </tr> <tr> <td>FRONT 2</td> <td>FRONT 4</td> </tr> <tr> <td>BACK 2</td> <td>BACK 4</td> </tr> </table>		F1 & B1	F1 & B1	FRONT 1	FRONT 3	BACK 1	BACK 3	FRONT 2	FRONT 4	BACK 2	BACK 4	
F1 & B1	F1 & B1													
FRONT 1	FRONT 3													
BACK 1	BACK 3													
FRONT 2	FRONT 4													
BACK 2	BACK 4													
KURL MODE	KURL MODE	DIRECTION	PAGE ROLL LAYERS	PAGE ROLL LAYERS										

Page Roll menu functions include:

DIRECTION — choose **OVER** or **UNDER** to control whether the page roll is to the front or back, respectively, of the original plane.

PAGE ROLL LAYERS — accesses the two columns of page roll layer selections (Front 1 & Back 1, Front 1, Back 1, Front 2, Back 2, Front 3, Back 3, Front 4, Back 4). (Only one of the choices may be selected from the two columns at one time.)

The Page Roll may have up to eight layers (more than two layers are required to map the “corners” sticking beyond the source raster when the cylinder angle is not aligned to the source X or Y axes). Page Roll layers in an **OVER** Page Roll are shown below:



Page Roll soft knob controls are:

RADIUS - adjusts the radius of the page roll cylinder affecting the sharpness of the curl.

OFFSET positions the page roll cylinder with respect to the source raster. The offset would typically change from one edge or corner of the source raster to the opposite edge or corner for the roll.

ANGLE defines the orientation of the page roll cylinder with respect to the source X and Y axes, and specifies the direction of the roll.

Ripple

Ripple is an effect in which the source video mapped to a plane is effectively distorted into and out of the target screen by a train of concentric waves. This is a parallel projection to the target screen with no perspective.

The wave train may be selected from a set of patterns which include sine wave, triangular wave, square wave, ramp, circle, random, pulse, or trapezoidal wave. Soft knob controls are provided to change wave amplitude, frequency, and phase/speed.

Ripple Modulation

Press the **KURL MODE** soft button to highlight the **RIPPLE** function, and press **MODIFY** to highlight the **MODULATN** function as shown in the menu below.

KURL				AMPLITUDE 1.0000
Displayed: Register: Keyframe: Cur.Time:				FREQUENCY 1.0000
				PHASE 0.0000
PAGE TURN	POS MOD			
PAGE ROLL	SIZE MOD			
RIPPLE	RINGS			
SLITS	SPLASH	MODULATN		
SPHERE	---	POSITION		
OFF	OFF	PATTERN		
			LOCKED	
			MOVING	
KURL MODE	KURL MODE	MODIFY	PHASE MODE	

Ripple Modulation menu functions:

PHASE MODE — used to set the modulation to **LOCKED** or **MOVING**.

Soft Knobs used with this menu are:

AMPLITUDE defines the amplitude of modulation.

FREQUENCY defines the modulation frequency (number of waves).

PHASE — determines the starting point or phase of the modulation to occur at the center point. **PHASE** becomes **SPEED** when the Phase Mode is set to **MOVING**.

Ripple Position

Press the **MODIFY** soft button to highlight **POSITION** to bring up the menu shown below.

KURL				HORIZ POSITION 0.0000
Displayed: Register: Keyframe: Cur.Time:				VERT POSITION 0.0000
PAGE TURN	POS MOD			ANGLE 0.0000
PAGE ROLL	SIZE MOD			
RIPPLE	RINGS			
SLITS	SPLASH	MODULATN		
SPHERE	---	POSITION		ASPECT 0.0000
OFF	OFF	PATTERN		
KURL MODE	KURL MODE	MODIFY		

Soft Knob controls with this menu include:

HORIZ POSITION — adjusts the horizontal position of the center point for the ripple effect.

VERT POSITION — adjusts the vertical position of the center point for the ripple effect.

ANGLE — defines the angle of the ripple with respect to the source X and Y axes.

ASPECT — scales the horizontal and vertical dimensions of the ripple effect.

Ripple Pattern

Press the **MODIFY** soft button to highlight **PATTERN** as shown in the menu below:

KURL
 Displayed:
 Register:
 Keyframe:
 Cur.Time:

PAGE TURN	POS MOD
PAGE ROLL	SIZE MOD
RIPPLE	RINGS
SLITS	SPLASH
SPHERE	---
OFF	OFF

MODULATN
POSITION
PATTERN

SINE	CIRCLE
TRIANGLE	RANDOM
SQUARE	PULSE
RAMP	TRAPEZOID

KURL
MODE

KURL
MODE

MODIFY

RIPPLE
PATTERN

RIPPLE
PATTERN

+ ONLY

Ripple Pattern menu functions include:

RIPPLE PATTERN — only one of the Ripple Pattern menu items may be selected at one time. Selections from the first column of patterns are:

SINE — Sine Wave

TRIANGLE — Triangular Wave

SQUARE — Square Wave

RAMP — Sawtooth Wave

Selections from the second column of patterns are:

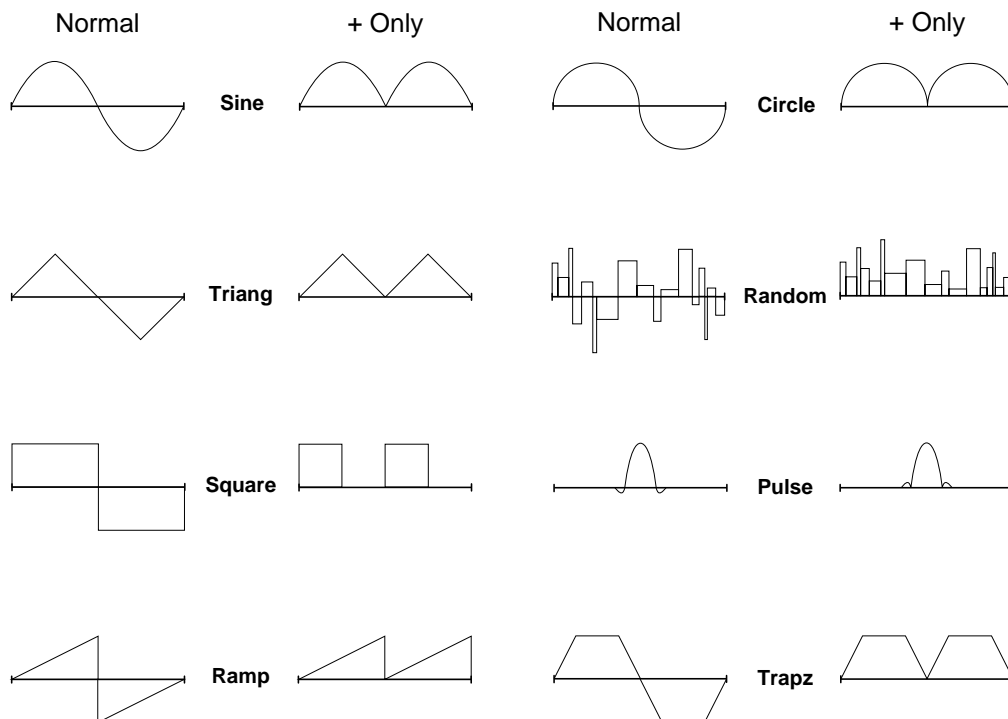
CIRCLE — Like Sine, but with circular crests and troughs.

RANDOM — Random Function

PULSE — Truncated Sine wave

TRAPEZOID — Trapezoidal Wave

+ONLY — when **ON**, this parameter causes the pattern waveform to be “rectified” about the level midway between the peak to peak values of the normal waveform as shown in the following illustration.



Slits

Press **KURL MODE** to highlight the **SLITS** function. Slits is an effect in which the source video is split into a number of parallel slits. The width of the slits may be uniform or random, and an angle may be specified. An offset function is provided which controls the amount of displacement of alternating slits in opposite directions (to cause a transition type effect).

Slit modulation patterns include sine wave, triangular wave, square wave, ramp, circle, random, pulse, or trapezoidal wave (same as Ripple Patterns in previous menu).

Soft knob controls are provided which change the phase of the Slits, and the amplitude, frequency, and phase of the modulation pattern.

Slits Modulation

Press the **KURL MODE** soft button to highlight the **SLITS** mode then press **MODIFY** to select **MODULATN** to access the Slits menu shown below:

KURL		AMPLITUDE 0.0000	
Displayed: Register: Keyframe: Cur.Time:			
		FREQUENCY 2.0000	
PAGE TURN	POS MOD	PHASE 0.0000	
PAGE ROLL	SIZE MOD		
RIPPLE	RINGS		
SLITS	SPLASH	HORIZONTAL ADJUST 0.0000	
SPHERE	---		
OFF	OFF		
MODULATN			
POSITION			
PATTERN			
KURL MODE	KURL MODE	LOCKED	
	MODIFY	MOVING	
		PHASE MODE	

Slits Modulation menu functions include:

PHASE MODE — used to set the slits to **LOCKED** or **MOVING**.

Soft Knobs controls available are:

AMPLITUDE — defines the amplitude of the modulation pattern applied to the two sets of alternating slits.

FREQUENCY — defines the frequency of the modulation pattern and, therefore, the number of cycle patterns affecting the slit displacement.

PHASE — determines the starting point or phase of the modulation to occur at the center point. **PHASE** becomes **SPEED** when the **PHASE MODE** is set to **MOVING**.

HORIZONTAL ADJUST — moves the position of all slits relative to the input image.

Slits Position

Press the **MODIFY** button to highlight **POSITION** to bring up the following menu:

KURL

Displayed:
Register:
Keyframe:
Cur.Time:

OFFSET
0.0000

SLIT ANGLE
0.0000

NUMBER OF SLITS
50.0000

WIDTH RAMDOMNESS
0.0000

PAGE TURN	POS MOD	
PAGE ROLL	SIZE MOD	
RIPPLE	RINGS	
SLITS	SPLASH	MODULATN
SPHERE	---	POSITION
OFF	OFF	PATTERN

KURL
MODE

KURL
MODE

MODIFY

Soft Knob controls with this menu are:

OFFSET — sets the distance adjoining slits move away from each other.

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

NUMBER OF SLITS — defines the number of slits.

WIDTH RAMDOMNESS — defines the degree of randomization of slit width.

Slits Pattern

Press **MODIFY** button to highlight **PATTERN** to bring up the following menu.

KURL

Displayed:

Register:

Keyframe:

Cur.Time:

PAGE TURN	POS MOD				
PAGE ROLL	SIZE MOD				
RIPPLE	RINGS				
SLITS	SPLASH	MODULATN			
SPHERE	---	POSITION			
OFF	OFF	PATTERN			

KURL MODE

KURL MODE

MODIFY

SLITS PATTERN

SLITS PATTERN

+ ONLY

The Slits Pattern menu functions and soft knob controls are the same as those shown for Ripples Pattern menu ([page 8-31](#)).

Sphere

Sphere is an effect in which the source video is mapped to the surface of a sphere. Controls are provided which change the aspect and size of the sphere, the point in source video to be mapped to the center of the front surface of the sphere, and the horizontal and vertical scaling of the source video to be mapped.

Press **KURL MODE** to toggle to the **SPHERE** function then press **MODIFY** to toggle to **WRAP** or **POSITION** to bring up the following menu.

KURL			HORIZ POSITION 0.0000												
Displayed: Register: Keyframe: Cur.Time:			VERT POSITION 0.0000												
<table border="1"> <tr> <td>PAGE TURN</td> <td>POS MOD</td> </tr> <tr> <td>PAGE ROLL</td> <td>SIZE MOD</td> </tr> <tr> <td>RIPPLE</td> <td>RINGS</td> </tr> <tr> <td>SLITS</td> <td>SPLASH</td> </tr> <tr> <td>SPHERE</td> <td>---</td> </tr> <tr> <td>OFF</td> <td>OFF</td> </tr> </table>			PAGE TURN	POS MOD	PAGE ROLL	SIZE MOD	RIPPLE	RINGS	SLITS	SPLASH	SPHERE	---	OFF	OFF	SIZE 1.0000
PAGE TURN	POS MOD														
PAGE ROLL	SIZE MOD														
RIPPLE	RINGS														
SLITS	SPLASH														
SPHERE	---														
OFF	OFF														
<table border="1"> <tr> <td colspan="2">WRAP</td> </tr> <tr> <td colspan="2">POSITION</td> </tr> </table>			WRAP		POSITION		ASPECT 0.0000								
WRAP															
POSITION															
KURL MODE	KURL MODE	MODIFY													

Sphere menu functions include:

WRAP — provides control over horizontal and vertical scaling of the source video before it is mapped to the sphere.

POSITION — provides control over the horizontal and vertical and positioning of the image on the sphere.

Soft Knob controls available with these functions:

HORIZONTAL WRAP — Controls how much of the image is mapped onto the sphere by compressing or stretching the image horizontally.

VERTICAL WRAP — Controls how much of the image is mapped onto the sphere by compressing or stretching the image vertically.

HORIZONTAL POSITION — Controls where the image is mapped onto the sphere by moving the image horizontally on the sphere's surface.

VERTICAL POSITION — Controls where the image is mapped onto the sphere by moving the image vertically on the sphere's surface.

SIZE — defines the radius of the sphere before it is modified by Aspect.

ASPECT — scales the horizontal and vertical dimensions of the sphere.

Position Modulation

Position Modulation is an effect in which the source video is position-modulated through an additive process with either a single wave train, or two wave trains with the second wave at a right angle to the first. Each of the two wave trains may be selected independently from a set of modulation patterns. Soft knobs are provided which change wave amplitude, frequency, phase, speed, and angle.

Pos Mod Horiz/Vert Position

Press the second column **KURL MODE** to highlight to **POS MOD** menu as shown below.

KURL				HORIZONTAL AMPITUDE 1.0000																			
Displayed: Register: Keyframe: Cur.Time:				HORIZONTAL FREQUENCY 1.0000																			
<table border="1"> <tr> <td>PAGE TURN</td> <td>POS MOD</td> </tr> <tr> <td>PAGE ROLL</td> <td>SIZE MOD</td> </tr> <tr> <td>RIPPLE</td> <td>RINGS</td> </tr> <tr> <td>SLITS</td> <td>SPLASH</td> </tr> <tr> <td>SPHERE</td> <td>---</td> </tr> <tr> <td>OFF</td> <td>OFF</td> </tr> </table>		PAGE TURN	POS MOD	PAGE ROLL	SIZE MOD	RIPPLE	RINGS	SLITS	SPLASH	SPHERE	---	OFF	OFF	<table border="1"> <tr> <td>HORIZ POS</td> <td>MODULATN</td> <td>LOCKED</td> </tr> <tr> <td>VERT POS</td> <td>PATTERN</td> <td>MOVING</td> </tr> </table>		HORIZ POS	MODULATN	LOCKED	VERT POS	PATTERN	MOVING	HORIZONTAL PHASE 0.0000	
PAGE TURN	POS MOD																						
PAGE ROLL	SIZE MOD																						
RIPPLE	RINGS																						
SLITS	SPLASH																						
SPHERE	---																						
OFF	OFF																						
HORIZ POS	MODULATN	LOCKED																					
VERT POS	PATTERN	MOVING																					
				ANGLE 0.0000																			
KURL MODE	KURL MODE	POSITION	MODIFY	PHASE MODE																			

Position Modulation menu functions include:

POSITION — provides the following adjustment parameters:

HORIZ POS selects a modulation pattern which displaces the source video in the direction determined by the **ANGLE** soft knob.

VERT POS selects a modulation pattern which displaces the source video at right angles to the direction determined by the **ANGLE** soft knob.

MODIFY — you can modify the following modes.

MODULATN — amplitude, frequency, speed, and angle control is provided through the soft knobs (see descriptions below).

PATTERN — choose this mode to be able to select a modulation pattern from the two columns of **POS MOD PATTERN** soft buttons.

PHASE MODE — you can set the following modes:

LOCKED — The modulation starts at a fixed location. The wave train can be moved to different positions with the soft knobs.

MOVING— The modulation is continuously moving. Speed and direction of the wave train can be adjusted with the soft knobs.

Soft Knob controls are labeled Horizontal or Vertical, depending on the current setting of the **POSITION** soft button:

AMPLITUDE defines the modulation amplitude.

FREQUENCY defines the modulation frequency and therefore the number of pattern cycles to appear across the source.

PHASE determines the starting point or phase of Position 1 to occur at the center point. When the **PHASE MODE** is set to **MOVING**, the **PHASE** knob becomes a **SPEED** control.

ANGLE defines the angle of the Position Modulation with respect to the source X and Y axes.

Pos Mod Pattern

Press the **MODIFY** button to highlight the **PATTERN** function that brings up the following menu. The functions in this menu are identical to those found in the Ripple Pattern menu (Refer to Ripple menu).

KURL

Displayed:

Register:

Keyframe:

Cur.Time:

PAGE TURN

PAGE ROLL

RIPPLE

SLITS

SPHERE

OFF

POS MOD

SIZE MOD

RINGS

SPLASH

OFF

HORIZ POS

VERT POS

MODULATN

PATTERN

SINE

TRIANGLE

SQUARE

RAMP

CIRCLE

RANDOM

PULSE

TRAPAZOID

ON

OFF

KURL MODE

KURL MODE

POSITION

MODIFY

POS MOD PATTERN

POS MOD PATTERN

+ ONLY

Pos Mod Pattern menu functions:

POSITION — horizontal or vertical position.

MODIFY — modulation or pattern.

POS MOD PATTERN — only one of the Pos Mod Pattern menu items may be selected at one time.

+ONLY — when **ON**, this parameter causes the pattern waveform to be “rectified” about the level midway between the peak to peak values of the normal waveform.

Size Modulation

Size Modulation is an effect in which the source video is size-modulated through a multiplicative process with either a single wave train, or two wave trains with the second wave at a right angle to the first. Each of the two wave trains may be selected independently from a set of modulation patterns.

Press the second column **KURL MODE** to toggle to **SIZE MOD** function to access the Size Modulation menu shown below:

KURL						HORIZONTAL AMPLITUDE 1.0000	
Displayed: Register: Keyframe: Cur.Time:						HORIZONTAL FREQUENCY 1.0000	
						HORIZONTAL PHASE 0.0000	
PAGE TURN	POS MOD						
PAGE ROLL	SIZE MOD						
RIPPLE	RINGS						
SLITS	SPLASH						
SPHERE	---	HORIZ POS	MODULATN	LOCKED	ANGLE 0.0000		
OFF	OFF	VERT POS	PATTERN	MOVING			
KURL MODE	KURL MODE	POSITION	MODIFY	PHASE MODE			

Soft knobs are provided which change wave amplitude, frequency, phase, speed, and angle.

Size Modulation Pattern

KURL							
Displayed: Register: Keyframe: Cur.Time:							
PAGE TURN	POS MOD						
PAGE ROLL	SIZE MOD						
RIPPLE	RINGS						
SLITS	SPLASH						
SPHERE	---	HORIZ MOD	MODULATN	SINE	CIRCLE		
OFF	OFF	VERT POS	PATTERN	TRIANGLE	RANDOM		
				SQUARE	PULSE		
				RAMP	TRAPAZOID		
KURL MODE	KURL MODE	POSITION	MODIFY	POS MOD PATTERN	POS MOD PATTERN	+ ONLY	

The Size Mod Pattern menu has the same soft button and soft knob controls as the Pos Mod Pattern menu.

Rings

Press the second column **KURL MODE** button to highlight the **RINGS** parameter.

Rings Radius

Press the **MODIFY** button to highlight the **RADIUS** parameter as shown in the menu below.

KURL

Displayed:
Register:
Keyframe:
Cur.Time:

OUTSIDE RADIUS
1.0000

INSIDE RADIUS
0.2500

OFFSET
1.0000

COUNT
3.0000

PAGE TURN	POS MOD
PAGE ROLL	SIZE MOD
RIPPLE	RINGS
SLITS	SPLASH
SPHERE	---
OFF	OFF

RADIUS

POSITION

KURL
MODE

KURL
MODE

MODIFY

Soft Knob controls include:

- OUTSIDE RADIUS** — defines the spacing of the rings.
- INSIDE RADIUS** — defines the half width of each ring.
- OFFSET** — defines the distance of the first ring from the center.
- COUNT** — defines the number of rings.

Rings Position

Press **MODIFY** button to highlight the **POSITION** parameter as shown in the following menu.

KURL				HORIZ POSITION 0.0000
Displayed: Register: Keyframe: Cur.Time:				VERT POSITION 0.0000
PAGE TURN	POS MOD			ANGLE 0.0000
PAGE ROLL	SIZE MOD			
RIPPLE	RINGS			
SLITS	SPLASH			
SPHERE	---	RADIUS		ASPECT 0.0000
OFF	OFF	POSITION		
KURL MODE	KURL MODE	MODIFY		

Soft Knob controls include:

HORIZ POSITION— adjusts the horizontal position of the center point for the rings effect.

VERT POSITION — adjusts the vertical position of the center point for the rings effect.

ANGLE — defines the angle of the rings (only visible with a non-zero aspect).

ASPECT — scales the horizontal and vertical dimensions of the rings.

Splash

Press the **MODIFY** soft button to highlight the **SPLASH** parameter as shown in the following menu.

KURL					
Displayed:					
Register:					
Keyframe:					
Cur.Time:					
PAGE TURN	POS MOD				
PAGE ROLL	SIZE MOD				
RIPPLE	RINGS				
SLITS	SPLASH	MODULATN			
SPHERE	----	POSITION			
OFF	OFF	PATTERN			
KURL MODE	KURL MODE	MODIFY			
			SINE	CIRCLE	
			TRIANGLE	RANDOM	
			SQUARE	PULSE	ON
			RAMP	TRAPEZOID	OFF
			ANGLE MOD PATTERN	ANGLE MOD PATTERN	+ ONLY

The Splash optional feature is a special enhancement to the Kurl option that allows you to distort an image into and out of the target screen by a set of radial waves (like the spokes of a wheel).

Requirements

To perform Splash functions correctly, the RAG Warp mezzanine must be version #066221-10 or higher. This version consists of a #066221-01 mezzanine that has been updated to -10 with the addition of a hardware license PLD. The Splash feature is only enabled when the RAG Warp board is at the proper revision and hardware license is also present.

Functions

The menu functions and soft knob controls used in this menu are generally the same as those shown for Ripples Pattern menu (see [page 8-28](#)) with the following changes:

MODULATION — the **AMPLITUDE** soft knob changes the amount of radial distortion. Amplitude values above 8 and below -8 will impose a circular clip of the splash effect. The **FREQUENCY** soft knob changes the number of waves around the edge of the image. If the frequency is not an integer value, a discontinuity in the wave pattern will be visible.

POSITION — the **ASPECT** soft knob stretches the distortion pattern vertically when dialed to positive values, and stretches the pattern horizontally when dialed to negative values.

Kurl Path Menu

To access Path Control for Kurl functions, while in the Kurl menu press the **Path** button located in the User Assist subpanel to go to the menu shown below.

KURL PATH																		
<div> <div>Displayed:</div> <div>Register:</div> <div>Keyframe:</div> <div>Cur.Time:</div> </div>			TENSION 0.0000															
			CONTINUITY 0.0000															
			BIAS 0.0000															
<table border="1"> <tr><td>PAGE TURN</td><td>POS MOD</td></tr> <tr><td>PAGE ROLL</td><td>SIZE MOD</td></tr> <tr><td>RIPPLE</td><td>RINGS</td></tr> <tr><td>SLITS</td><td>SPLASH</td></tr> <tr><td>SPHERE</td><td>---</td></tr> </table>	PAGE TURN	POS MOD	PAGE ROLL	SIZE MOD	RIPPLE	RINGS	SLITS	SPLASH	SPHERE	---	<table border="1"> <tr><td>ON</td></tr> <tr><td>OFF</td></tr> </table>	ON	OFF	<table border="1"> <tr><td>CURVE</td></tr> <tr><td>SMOOTH</td></tr> <tr><td>LINEAR</td></tr> <tr><td>S-LINEAR</td></tr> </table>	CURVE	SMOOTH	LINEAR	S-LINEAR
PAGE TURN	POS MOD																	
PAGE ROLL	SIZE MOD																	
RIPPLE	RINGS																	
SLITS	SPLASH																	
SPHERE	---																	
ON																		
OFF																		
CURVE																		
SMOOTH																		
LINEAR																		
S-LINEAR																		
KURL MODE	KURL MODE	HOLD	PATH TYPE															

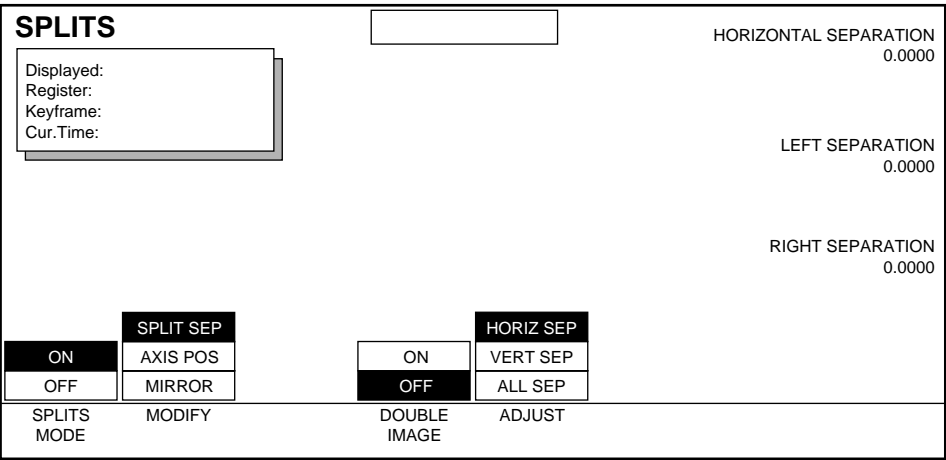
See *Section 6-Run Control Menu* for more information about path control functions.

Splits Menu

The Splits and Mirrors function allows you to divide a channel’s picture horizontally and/or vertically, and create mirror images of the image along these axes.

Note The Kurl feature overrides the Splits and Mirrors feature. When Kurl is ON, Splits and Mirrors effects will not be displayed. Make sure Kurl is OFF before you use this feature.

The Splits menu is accessed by pressing the **Picture Frame** top menu button, and then pressing the **SPLITS >** soft button.



SPLITS MODE — turns the Splits and Mirror function on and off.

MODIFY — selects which of the following functions will be modified by the remaining menu items.

Split Separation

SPLIT SEP — allows control of the separation between the two parts of the split picture. You can select **HORIZ**, **VERT**, or **ALL** with the soft buttons, then control the amount of separation with the labeled soft knobs. Separation values are displayed in screen units, and are additive.

DOUBLE IMAGE — When ON, fills the area of separation by extending the interior sides of each half of the original split picture to the axis position. At large separation values the picture will be doubled about the axis. This control is available when **SPLIT SEP** has been selected.

Axis Position

SPLITS			
Displayed: Register: Keyframe: Cur.Time:			
		HORIZONTAL AXIS 0.0000	
		VERTICAL AXIS 50.0000	
<div> <div>ON</div> <div>OFF</div> </div>		<div> <div>SPLIT SEP</div> <div>AXIS POS</div> <div>MIRROR</div> </div>	
SPLITS MODE		MODIFY	

AXIS POS— allows control of the position of the axis, which can be moved horizontally or vertically with the labeled soft knobs to create an unequal picture split.

Mirror

SPLITS							
Displayed: Register: Keyframe: Cur.Time:							
<div> <div>ON</div> <div>OFF</div> </div>		<div> <div>SPLIT SEP</div> <div>AXIS POS</div> <div>MIRROR</div> </div>		<div> <div>ON</div> <div>OFF</div> </div>		<div> <div>ON</div> <div>OFF</div> </div>	
SPLITS MODE		MODIFY		LEFT LEFT		RIGHT RIGHT	
				TOP TOP		BOTTOM BOTTOM	

MIRROR — mirrors the side of a picture about the axis location to the opposite side. It is possible to simultaneously reflect multiple sides by turning on the **LEFT**, **RIGHT**, **TOP**, and **BOTTOM** soft buttons. It is always the original picture for that side that is reflected. A side has been mirrored to the opposite side will not be mirrored a second time. Mirror feature orientation is based on the pictures source space.

Corner Pinning Menu

The Corner Pinning feature allows you to move the corners of a source image relative to the background. Krystal corner pinning is based on source, not target, space. The new corner locations need not form a rectangle. Corner pinning is accomplished by distorting the source image to fit into its newly defined corners. The modified image remains in its original source plane, and is not “bent” along the Z axis. Corner pinning is key-frameable, with all standard path control functions.

Press the **Picture Frame** top menu button then press the **CORNER PINNING >** button to bring up the following menu:

CORNER PINNING							
<div> <div>Displayed:</div> <div>Register:</div> <div>Keyframe:</div> <div>Cur.Time:</div> </div>				<div>CORNER X</div> <div>-4.0000</div>			
				<div>CORNER Y</div> <div>3.0000</div>			
<div>VIEW THROUGH OPACITY</div> <div>75.0000</div>							
<div>ON</div> <div>OFF</div>		<div>USER</div> <div>PRESET</div> <div>OFF</div>	<div>ON</div> <div>OFF</div>	<div>ALL CRNRS</div> <div>SEP CRNRS</div>	<div>UL</div>	<div>UR</div>	<div>LR</div>
CORNER PINNING	CROP MODE	VIEW THROUGH	ADJUST	UPPR LEFT CORNER	UPPR RIGHT CORNER	LOWR RIGHT CORNER	LOWR LEFT CORNER

CORNER PINNING— turns corner pinning on or off. When **ON**, the various corner pinning controls appear on the screen. When **OFF**, a corner pinned source image reverts to a non-corner pinned state.

CROP MODE— selects the following operating modes:

USER — Establishes a relationship between Corner Pinning and Crops that uses corner pinned values to determine the source image area. Crop values (controlled by the Crop menu) are used to select which portion of the source image appears in the corner pinned area.

PRESET — Established a relationship between Corner Pinning and Preset Crops, similar to above. Preset Crop is controlled via **System Setup \ SYSTEM CONFIG \ OK \ SUITE CONFIG \ SYSTEM ALIGNMENT > \ CHANNEL INPUT >**

OFF — Restores normal crop behavior, where crops alter the size of the source image area.

VIEW THROUGH OPACITY— When ON, you can adjust the View Through Opacity soft knob to view the background through the source image. The source image is dimmed with this control only during effect editing. The source returns to its previously defined opacity when the effect is run, or when you exit the Corner Pinning menu.

The final opacity of a channel is determined by multiplying the values for Picture opacity, Crop opacity, Corner Pinning View Through opacity, and Combiner Channel opacity. See *Final Picture Opacity on page 7-10* for more information.

ADJUST— determines which corners are affected by corner pinning.

ALL CRNRS — The **CORNER X** and **CORNER Y** soft knobs are available to position all four corners simultaneously.

SEP CRNRS — Four **CORNER** soft buttons become available to select which source image corner is affected by the X and Y soft knobs. Multiple corners can be selected for modification simultaneously.

Joystick Control

Pressing the **Menu Control** panel button while in the Corner Pinning menu allows you to modify parameters with the joystick. Moving the Joystick up, down, left, and right will move the selected corner(s) in the corresponding source space coordinate direction.

Corner Pinning Path Menu

To access Path Control for Corner Pinning functions, while in the Corner Pinning menu press the **Path** button located in the User Assist subpanel.

CORNER PINNING PATH

TENSION
0.0000

CONTINUITY
0.0000

BIAS
0.0000

		CURVE					
		SMOOTH					
		LINEAR					
		S LINEAR					
ALL CRNRS	ON						
SEP CRNRS	OFF			UL	UR	LR	LL
ADJUST	HOLD	PATH TYPE		UPPR LEFT CORNER	UPPR RIGHT CORNER	LOWR RIGHT CORNER	LOWR LEFT CORNER

See *Section 6-Run Control Menu* for more information about path control functions.

Key/Stencil Menu

Introduction

Keying is a process where parts of one picture are inserted into or mixed with another to create a composite picture. Stenciling is a type of keying that involves selecting a portion of the frame for special processing, such as applying an effect like emboss. Masking can be used to define areas of a picture for keying or stenciling. The Key/Stencil menu provides tools to control keying, stenciling, and masking.

Press the **Key/Stencil** top menu button to bring up the following menu.

KEY/STENCIL					
<div> <div>Displayed:</div> <div>Register:</div> <div>Keyframe:</div> <div>Cur.Time:</div> </div>					
KEYER SETUP >	CORING >	ADJUST MASK >	DROP SHADOWS >	EMBOSS >	GLOW >

Key/Stencil lower level menus include:

KEYER SETUP > — used to select an external key, self key, or disable the key completely. This menu is also used to adjust the selected key's appearance.

CORING > — helps eliminate noise near black level by forcing the video to black when luminance falls below a specified level.

ADJUST MASK > — selects internal or external mask, adjusts internal mask's pattern, position, appearance, and controls the combining of internal and external masks.

DROP SHADOW > — creates a drop shadow based on the shape of the key signal, and is used to adjust the position and appearance of the drop shadow.

EMBOSS > — creates an “emboss” texturing effect in the keyed image over background by placing a highlight on one edge of a key pattern and a shadow on the other.

GLOW > — provides access to the Defocus/Glow menus, from which you can adjust glow parameters defined by the key signal.

Keyer Setup Menu

The Keyer Setup menu allows you to select and control the internal and external key signals. Press the **KEYER SETUP** button from the **Key Stencil** top menu to bring up the menu shown below:

KEYER SETUP

Displayed:

Register:

Keyframe:

Cur.Time:

Near

Far

EXTERNAL

SELF

OFF

KEYER MODE

FRONT SIDE	back side
Video: 1	Video: 1
Key: 1	Key: 1
Mask: 0	Mask: 0

Keyer Setup menu functions include:

KEYER MODE — mode selections are:

EXTERNAL selects the external key input as the key source.

SELF selects the luminance values of the input video as the keyer source.

OFF disables the Keyer mode.

External Keyer Appearance

Press the **KEYER MODE** button to highlight the **EXTERNAL** and press **MODIFY** to select **APPEARANCE** as shown in the following menu.

KEYER SETUP						CLIP HIGH 100.0000
Displayed: Register: Keyframe: Cur.Time:		FRONT SIDE back side				
		Video: 1	Video: 1			
		Key: 1	Key: 1			CLIP LOW 0.0000
		Mask: 0	Mask: 0			
<div>Near</div> <div>Far</div>						KEY OFFSET 0.0000
<div>EXTERNAL</div> <div>SELF</div> <div>OFF</div>		<div>APPEARANCE</div> <div>KEY MIX</div>		<div>ON</div> <div>OFF</div>		
KEYER MODE		MODIFY		<div>INVERT KEY</div> <div>WAVEFORM SHAPING</div>		[DEFOCUS] KEY ADJUST >

External Keyer Appearance menu functions include:

INVERT KEY — when **ON**, inverts the key signal.

WAVEFORM SHAPING — controls the linearity of the transition between the background and the video. **ON** gives an S-linear transition resulting in a more smooth appearance. **OFF** gives a Linear transition.

[DEFOCUS] KEY ADJUST — provides access to the Defocus Glow menu, from which you can adjust horizontal and vertical key size.

Soft Knob controls available in the **EXTERNAL** mode are:

CLIP HIGH — sets the threshold on the input key signal above which the processed key will always be high.

CLIP LOW — sets the threshold on the input key signal below which the processed key will always be low.

When the input key signal level falls between the Clip Low and Clip High thresholds, the processed key signal falls proportionally between zero and full on key levels. Setting Clip Low and Clip High to 0.0 and 100.0, respectively, results in a linear (unity gain) key. The narrower (or greater) the range between them, the sharper (or smoother) the key transition and resulting transition between background and video.

KEY OFFSET — sets the left and right horizontal offset on the input key signal to the video.

External Keyer Key Mix

Use this menu to combine the External Key with the Self Key signal. Press the **MODIFY** button to highlight **KEY MIX** as shown in the following menu.

KEYER SETUP

Displayed:
Register:
Keyframe:
Cur.Time:

FRONT SIDEback side
Video: 1Video: 1
Key: 1Key: 1
Mask: 0Mask: 0

NearFar

EXTERNAL
SELF
OFF

APPEARANCE
KEY MIX

MULTIPLY
NAM +
NAM -
OFF

ON
OFF

KEYER MODEMODIFYCOMBINE MODEINVERT MIX

[DEFOCUS] KEY ADJUST >

External Keyer Key Mix menu functions include:

COMBINE MODE — The modes are:

MULTIPLY multiplies the External and Self Key signals to generate the final key.

NAM+ takes the greater of the External and Self Key signals to be the final key.

NAM- takes the lesser of the External and Self Key signals to be the final key.

OFF used to turn off the combining of the key signals.

INVERT MIX — When **ON**, inverts the combined keys.

[DEFOCUS] KEY ADJUST — provides access to the Defocus Glow menu, from which you can adjust horizontal and vertical key size.

Self Key Appearance

KEYER SETUP

Displayed:
Register:
Keyframe:
Cur.Time:

NearFar

EXTERNAL
SELF
OFF

APPEARNCE
KEY MIX

KEYER
MODE

FRONT SIDE
Video: 1
Key: 1
Mask: 0

back side
Video: 1
Key: 1
Mask: 0

MULTIPLY
NAM +
NAM -
OFF

ON
OFF

ON
OFF

COMBINE
MODE

CLIP HIGH
100.0000

CLIP LOW
0.0000

INVERT

WAVEFORM
SHAPING

[DEFOCUS]
KEY ADJUST >

Self Keyer Appearance menu functions include:

INVERT — when **ON**, inverts the key signal.

WAVEFORM SHAPING — controls the linearity of the transition between the background and the video. **ON** gives an S-linear transition resulting in a more smooth appearance. **OFF** gives a Linear transition.

[DEFOCUS] KEY ADJUST — provides access to the Defocus Glow menu, from which you can adjust horizontal and vertical key size.

Soft Knob controls available to adjust **SELF** Key are:

CLIP HIGH — sets the threshold on the input key signal above which the processed key will always be high.

CLIP LOW — sets the threshold on the input key signal below which the processed key will always be low.

See [page 9-3](#) for more information about clip thresholds.

Krystal 4300 Reference

9-5

Self Key Mix

Use this menu to combine the Self Key and the External Key signal. Press the **MODIFY** button to highlight **KEY MIX** as shown in the following menu.

KEYER SETUP

Displayed:
Register:
Keyframe:
Cur.Time:

FRONT SIDEback side
Video: 1Video: 1
Key: 1Key: 1
Mask: 0Mask: 0

NearFar

EXTERNAL
SELF
OFF

APPEARANCE
KEY MIX

MULTIPLY
NAM +
NAM -
OFF

ON
OFF

KEYER
MODEMODIFYCOMBINE
MODEINVERT
MIX[DEFOCUS]
KEY ADJUST >

Self Key, Key Mix menu functions include:

COMBINE MODE — The modes are:

MULTIPLY — multiplies the External and Self Key signals to generate the final key.

NAM+ — takes the greater of the External and Self Key signals to be the final key.

NAM- — takes the lesser of the External and Self Key signals to be the final key.

OFF — used to turn off the combining of External and Self key signals.

INVERT MIX — When **ON**, inverts the combined keys.

[DEFOCUS] KEY ADJUST — provides access to the Defocus Glow menu, from which you can adjust horizontal and vertical key size.

Keyer Path Menu

To access Path Control for Keyer Setup functions, while in the Keyer Setup menu press the **Path** button located in the User Assist subpanel as shown in the menu below.

KEYER PATH

Displayed:
Register:
Keyframe:
Cur.Time:

EXTERNAL

SELF

ON

OFF

LINEAR

S-LINEAR

KEYER
MODE

HOLD

PATH
TYPE

See *Section 6-Run Control Menu* for more information about path control functions.

Coring Menu

The Coring menu provides tools to force the video to black when luminance falls below a specified level. This is useful in eliminating noise near black level which may be a problem when keying.

Press the **CORING>** button located in the **Key/Stencil** top menu to bring up the following menu:

CORING

Displayed:
Register:
Keyframe:
Cur.Time:

Near

Far

ON

OFF

CORING

FRONT SIDE

back side

Video: 1Video: 1

Key: 1Key: 1

Mask: 0Mask: 0

KEY

ALL

CORING AREA

CORING LEVEL

7.5000

The following Soft Button function is used with this menu when the **CORING** mode is **ON**:

CORING AREA — coring choices include:

KEY cores only those areas outside the active key region (where video is assumed invalid).

ALL cores the entire picture.

The soft knob used with this menu is:

CORING LEVEL — sets the coring threshold below which the video is forced to black. This parameter is given in IRE units, where 7.5 corresponds to black and 100 to white.

Coring Path Menu

To access Path Control for Coring functions, while in the Coring menu press the **Path** button located in the User Assist subpanel to bring up the menu shown below.

CORING PATH

Displayed:
Register:
Keyframe:
Cur.Time:

ON

OFF

LINEAR

S-LINEAR

HOLD

PATH
TYPE

See *Section 6-Run Control Menu* for more information about path control functions.

Adjust Mask Menu

You use the Adjust Mask menu to modify the internal or external mask’s pattern, position, appearance, or mask mix. Access the menu by pressing the **ADJUST MASK** submenu button within the **Key/Stencil** top menu.

Soft Button functions available with this menu are:

MASK MODE — **INTERNAL** and **EXTERNAL** mask modes.

MODIFY — **PATTERN**, **POSITION**, **APPEARANCE**, **MASK MIX**

Internal Mask Pattern

To bring up the following menu, press the **MASK MODE** soft button to highlight **INTERNAL** and then select **PATTERN** using the **MODIFY** soft button.

ADJUST MASK

Displayed:
Register:
Keyframe:
Cur.Time:

Near

Far

PATTERN

POSITION

INTERNAL

EXTERNAL

APPEARANCE

MASK MIX

BOTH

SEP H/V

MASK MODE

MODIFY

PATTERN REPEAT

FRONT SIDE

back side

Video: 1

Key: 1

Mask: 0

Video: 1

Key: 1

Mask: 0

PATTERN REPEAT

1.0000

SIZE

50.0000

PATTERN

3

Menu functions include:

PATTERN REPEAT — Allows you to repeat an internally generated crop pattern in a variety of ways. You can multiply a pattern in both the horizontal and vertical axes or multiply each independently, and the pattern can be repeated up to 999.9999 times.

BOTH — Multiplies patterns both horizontally and vertically, with a single soft knob.

SEP H/V — Multiplies horizontal and vertical patterns separately, using two soft knobs.

Soft knobs used to modify position are:

PATTERN — lets you enter directly from the keypad, one of 44 preset mask patterns. To enter a particular pattern number from the keypad, press the TRANSFER button next to this soft knob to transfer control to the Keypad.

PATTERN REPEAT— lets you enter the number of pattern repetitions.

SIZE — controls the size of the mask.

Internal Mask Position

You use the Adjust Mask Internal Mask Position menu to set the position of the internal key mask in relation to the picture.

To bring up the following menu, press the **MASK MODE** soft button to highlight **INTERNAL** and then select **POSITION** using the **MODIFY** soft button.

ADJUST MASK			
<div>Displayed:</div> <div>Register:</div> <div>Keyframe:</div> <div>Cur.Time:</div>		<div>HORIZONTAL POSITION</div> <div>0.0000</div>	
		<div>FRONT SIDE</div> <div>Video: 1</div> <div>Key: 1</div> <div>Mask: 0</div>	<div>back side</div> <div>Video: 1</div> <div>Key: 1</div> <div>Mask: 0</div>
<div>Near</div> <div>Far</div>		<div>VERTICAL POSITION</div> <div>0.0000</div>	
		<div>SIZE</div> <div>50.0000</div>	
<div>PATTERN</div> <div>POSITION</div> <div>INTERNAL</div> <div>EXTERNAL</div>		<div>APPEARANCE</div> <div>MASK MIX</div>	
<div>MASK MODE</div>		<div>MODIFY</div>	
		<div>ASPECT</div> <div>0.0000</div>	

Soft knobs used to modify position are:

HORIZONTAL POSITION — controls the position (as measured in screen units) of the mask in the horizontal plane (slides it back and forth horizontally).

VERTICAL POSITION — controls the position (as measured in screen units) of the mask in the vertical plane (slides it up and down vertically).

SIZE — controls the size of the mask.

ASPECT — using a positive value stretches the mask in the Y axis; using a negative value stretches the mask in the X axis.

Internal Mask Appearance

Press the **MODIFY** button to highlight **APPEARANCE** to bring up the following menu:

ADJUST MASK

Displayed:
Register:
Keyframe:
Cur.Time:

Near

Far

FRONT SIDEback side

Video: 1Video: 1

Key: 1Key: 1

Mask: 0Mask: 0

ROTATION
0.0000

SOFTNESS
0.0000

OPACITY
100.0000

INTERNAL

EXTERNAL

PATTERN

POSITION

APPEARANCE

MASK MIX

ON

OFF

ON

OFF

POSITION

SPEED

MASK
MODE

MODIFY

INVERT

WAVEFORM
SHAPING

ROTATION
MODE

Internal Mask Appearance menu functions include:

INVERT — **ON** reverses the masked and unmasked areas generated by the internal mask.

WAVEFORM SHAPING — controls the linearity of the mask edge. **ON** gives an S-linear transition resulting in a more smooth appearance. **OFF** gives a Linear transition.

ROTATION MODE — controls the **POSITION** or **SPEED** of the rotation of the internal mask.

Soft knobs used to adjust appearance are:

SOFTNESS — controls softness of the mask edges.

ROTATION — this soft knob changes to **ROTATION** (clockwise or counter-clockwise movement) or **ROTATION SPEED** depending upon which **ROTATION MODE** you have chosen.

OPACITY — controls the transparency of the mask.

Internal Mask, Mask Mix

To bring up the following menu, press the **MODIFY** button to highlight **MASK MIX**.

ADJUST MASK						
Displayed: Register: Keyframe: Cur.Time:		<div>FRONT SIDE</div> <div>back side</div> <div>Video: 1 Video: 1</div> <div>Key: 1 Key: 1</div> <div>Mask: 0 Mask: 0</div>				
<div>Near</div> <div>Far</div>						
		<div>PATTERN</div> <div>POSITION</div> <div>INTERNAL APPEARANCE</div> <div>EXTERNAL MASK MIX</div>				
		<div>ON</div> <div>OFF</div>			<div>ON</div> <div>OFF</div>	
		<div>ON</div> <div>OFF</div>			<div>ON</div> <div>OFF</div>	
<div>MASK MODE</div> <div>MODIFY</div>		<div>COMBINE MASKS</div> <div>WAVEFORM SHAPING</div>			<div>INVERT MIX</div> <div>OPACITY 100.0000</div>	

Soft buttons used with this menu include:

COMBINE MASKS — **ON** or **OFF** to enable or disable. When **ON**, the mask signal is the multiplicative combination of the internal and external mask.

WAVEFORM SHAPING — controls the linearity of the mask edge. **ON** gives an S-linear transition resulting in a more smooth appearance. **OFF** gives a Linear transition.

INVERT MIX — **ON** or **OFF**. (Available when **COMBINE MASKS** is **ON**). **ON** inverts the combined mask signal, swapping the masked and unmasked areas.

Soft knobs used with this menu include:

OPACITY —use to control the mask's opacity.

External Mask Appearance

To bring up this menu, press the **MASK MODE** soft button to highlight the **EXTERNAL** parameter.

ADJUST MASK

Displayed:
Register:
Keyframe:
Cur.Time:

Near

Far

FRONT SIDE

back side

Video: 1Video: 1
Key: 1Key: 1
Mask: 0Mask: 0

INTERNAL

APPEARANCE

EXTERNAL

MASK MIX

MASK MODE

MODIFY

CLIP HIGH
100.0000

CLIP LOW
0.0000

MASK OFFSET
0.0000

ON
OFF

ON
OFF

INVERT

WAVEFORM
SHAPING

OPACITY
100.0000

INVERT — **ON** or **OFF** to exchange the masked and unmasked areas in External Mask mode.

WAVEFORM SHAPING — controls the linearity of the mask edge. **ON** gives an S-linear transition resulting in a more smooth appearance. **OFF** gives a Linear transition.

Soft knobs used with this menu include:

CLIP HIGH — sets the threshold on the input key signal above which the processed key will always be high.

CLIP LOW — sets the threshold on the input key signal below which the processed key will always be low.

See [page 9-3](#) for more information about clip thresholds.

MASK OFFSET — sets the horizontal key offset from the video.

OPACITY — controls mask’s transparency.

External Mask Mix

To bring up the following menu, press **MODIFY** soft button to highlight the **MASK MIX** parameter.

ADJUST MASK			
Displayed: Register: Keyframe: Cur.Time:			
<div>Near</div> <div>Far</div>			
		FRONT SIDE Video: 1 Key: 1 Mask: 0	back side Video: 1 Key: 1 Mask: 0
INTERNAL	APPEARANCE	ON	ON
EXTERNAL	MASK MIX	OFF	OFF
MASK MODE MODIFY		COMBINE MASKS	INVERT
		INVERT MIX	OPACITY 100.0000

COMBINE MASKS — **ON** or **OFF** to enable or disable. When **ON**, the mask signal is the multiplicative combination of the internal and external mask.

INVERT — **ON** or **OFF** to exchange the masked and unmasked areas.

INVERT MIX — **ON** or **OFF**. **ON** inverts the combined mask signal, swapping the masked and unmasked areas.

Soft Knobs include:

OPACITY — controls the mask's transparency.

Mask Path Menus

Two Path Control menus exist for Adjust Mask.

ADJUST MASK PATH

Displayed:
Register:
Keyframe:
Cur.Time:

TENSION
0.0000

CONTINUITY
0.0000

BIAS
0.0000

INTERNAL

EXTERNAL

ON

OFF

CURVE

SMOOTH

LINEAR

S-LINEAR

MASK
MODE

HOLD

PATH
TYPE

ADJUST MASK PATH

Displayed:
Register:
Keyframe:
Cur.Time:

INTERNAL

EXTERNAL

ON

OFF

LINEAR

S-LINEAR

MASK
MODE

HOLD

PATH
TYPE

See *Section 6-Run Control Menu* for more information about path control functions.

Drop Shadow Menu

A drop shadow is an area equal in size to the keyed or cropped picture. The shadow may be adjusted for relative position, opacity, and color. Press the **DROP SHADOW** soft button while in the top **Key/Stencil** menu to bring up the following menu:

DROP SHADOW	
<div> <div>Displayed:</div> <div>Register:</div> <div>Keyframe:</div> <div>Cur.Time:</div> </div>	
<div> <div>ON</div> <div>OFF</div> </div>	
DROP SHADOW	

DROP SHADOW — toggle drop shadow function **ON** or **OFF**. When On it will bring up the **MODIFY** soft button.

Appearance

To bring up the following menu press the **DROP SHADOW** soft button and press the **MODIFY** button until **APPEARANCE** is highlighted. Use this menu to change the appearance of the drop shadow.

DROP SHADOW	
<div> <div>Displayed:</div> <div>Register:</div> <div>Keyframe:</div> <div>Cur.Time:</div> </div>	
<div> <div>ON</div> <div>OFF</div> </div>	<div> <div>APPEARANCE</div> <div>MATTE</div> </div>
<div> <div>DROP SHADOW</div> <div>MODIFY</div> </div>	

HORIZONTAL POSITION

0.5000

VERTICAL POSITION

- 0.5000

SIZE

1.0000

OPACITY

50.0000

MODIFY — Appearance or Matte.

APPEARANCE — controls Opacity, Horiz/Vert Position, and Size through the soft knobs.

MATTE — provides controls for drop shadow color.

Soft knob controls used with this menu include:

HORIZONTAL POSITION — moves the drop shadow left and right, relative to the video.

VERTICAL POSITION — moves the drop shadow up and down, relative to the video.

SIZE — adjusts the size of the drop shadow.

OPACITY — controls the transparency of the drop shadow.

Matte

Press the **MODIFY** soft button to highlight **MATTE** which brings up the following menu. This menu is used to adjust the color of the drop shadow.

DROP SHADOW		SATURATION 0.0000	
<div> <div>Displayed:</div> <div>Register:</div> <div>Keyframe:</div> <div>Cur.Time:</div> </div>		<div>BRIGHTNESS 0.0000</div> <div>HUE 0.0000</div>	
ON	APPEARANCE	ON	
OFF	MATTE	OFF	
DROP SHADOW	MODIFY	HUE ROTATE	

Drop Shadow Matte menu functions:

HUE ROTATE — when **ON**, controls the hue rotation speed; when **OFF**, controls the Hue.

Soft Knob Controls:

SATURATION — controls the chroma saturation.

BRIGHTNESS — controls the brightness.

HUE/HUE ROTATE SPEED — controls the hue or hue rotation speed.

Drop Shadow Path Menu

To access Path Control for Drop Shadow functions, while in the Drop Shadow menu press the **Path** button located in the User Assist subpanel area.

DROP SHADOW PATH

Displayed:

Register:

Keyframe:

Cur.Time:

TENSION

0.0000

CONTINUITY

0.0000

BIAS

0.0000

ON

OFF

CURVE

SMOOTH

LINEAR

S-LINEAR

ON

OFF

LINEAR

S-LINEAR

CW

CCW

SHORT

LONG

HOLD

PATH
TYPE

HOLD
MATTE

MATTE
PATH

HUE
DIRECTION

See *Section 6-Run Control Menu* for more information about path control functions.

Emboss Menu

The Emboss menu brings up tools used to create an emboss effect. Embossing simulates the lighting changes that occur when an embossing stamp has pressed a pattern onto a sheet of paper.

Emboss effects are created by placing a highlight on one side of a key or mask signal (leading edge), and a shadow on the other side (trailing edge). This simulates a three-dimensional texturing effect in the keyed image over the background.

Appearance

Press the **EMBOSS>** button located in the **Key Stencil** top menu then press the **EMBOSS** soft button to highlight **ON** to bring up the following menu.

EMBOSS

Displayed:
Register:
Keyframe:
Cur.Time:

ANGLE
0.0000

STRENGTH
50.0000

KEYER
MASK
MULTIPLY
NAM+
NAM-

ON
OFF

ON
OFF

ON
OFF

APPEARANCE
MATTE

EMBOSS MODIFY EMBoss SOURCE KEY PASS FOLLOW SHADOW DROP SHADOW >

Emboss Appearance menu functions include:

EMBOSS SOURCE — emboss sources are:

- KEYER** — uses the key signal as the embossing pattern.
- MASK** — uses the mask signal as the embossing pattern.
- MULTIPLY** – uses the key and the mask signals as the embossing pattern.
- NAM+** — uses the positively NAMED key with mask signals as the embossing pattern. NAM+ is done by comparing the key with the mask and selecting pixels with higher luminance values.
- NAM-** — uses the negatively NAMED key with the mask signals as the embossing pattern. NAM- is done by comparing the key with the mask and selecting pixels with lower luminance values.

KEY PASS — **ON** or **OFF** to enable or disable. When **ON**, passes the key signal to the output when embossing effects are enabled; produces wider edges on the embossing pattern.

FOLLOW SHADOW — **ON** or **OFF** to enable or disable. **ON** links the location of the leading and trailing edges of the emboss effect to the drop shadow position.

DROP SHADOW >— provides access to the Drop Shadow menu.

Soft Knobs available with this menu include:

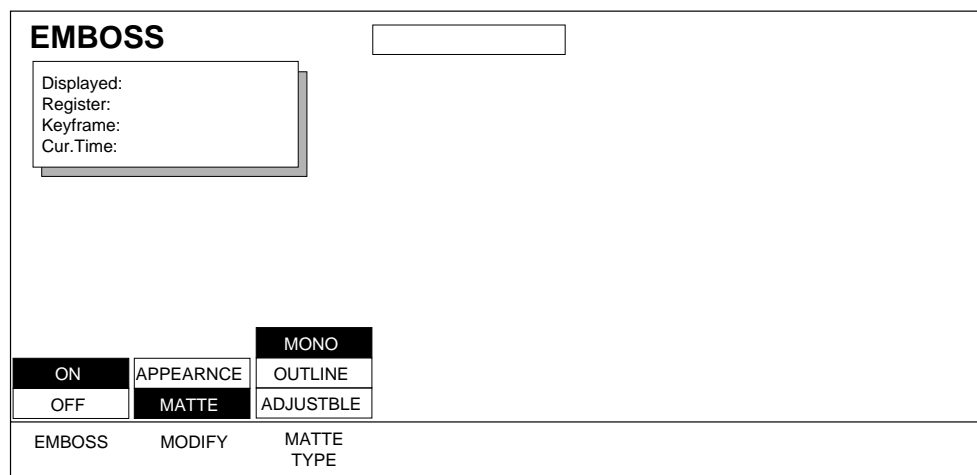
ANGLE — is used to move the apparent location of the light source of the emboss effect.

STRENGTH — is used to adjust the apparent depth of the emboss texturing by changing the opacity of the emboss.

Matte

Emboss Matte Mono

To access this menu, press the **MODIFY** soft button to highlight the **MATTE** parameter.



Emboss Matte Mono menu functions include:

MATTE TYPE — the matte types are:

MONO selects monochrome outlines for the emboss (white on leading edges, black on trailing edges), and overrides other matte controls.

OUTLINE produces a same color emboss highlight on both the leading and trailing edges of the key signal.

ADJUSTBLE activates two matte generators, one for the leading edge and one for the trailing edge of the key signal.

Emboss Matte Outline

To adjust Matte Outline select **OUTLINE** by pressing the **MATTE TYPE** button to bring up the following menu:

EMBOSS

Displayed:
Register:
Keyframe:
Cur.Time:

SATURATION
0.0000

BRIGHTNESS
0.0000

HUE
0.0000

ON
OFF

APPEARANCE
MATTE

MONO
OUTLINE
ADJUSTBLE

ON
OFF

EMBOSS

MODIFY

MATTE
TYPE

HUE
ROTATE

Soft buttons used to modify emboss matte outline are:

HUE ROTATE — **ON** or **OFF** to enable or disable this function. When **ON**, the top soft knob controls Hue Rotate Speed.

Soft knobs used with this menu are:

SATURATION sets the saturation of the emboss matte.

BRIGHTNESS sets the brightness of the emboss matte.

HUE sets the hue of the emboss matte.

Emboss Adjustable Matte

Press the **MATTE TYPE** button to highlight the **ADJUSTBLE** parameter to bring up the following menu:

EMBOSS						
<div>Displayed:</div> <div>Register:</div> <div>Keyframe:</div> <div>Cur.Time:</div>					TRAIL SATURATION 0.0000	
					TRAIL BRIGHTNESS 0.0000	
					TRAIL HUE 0.0000	
ON	APPEARANCE	MONO	ON	ON	BOTH	
OFF	MATTE	OUTLINE	OFF	OFF	LEAD	ON
		ADJUSTBLE			TRAIL	OFF
EMBOSS	MODIFY	MATTE TYPE	ENABLE LEAD	ENABLE TRAIL	ADJUST EDGE	HUE ROTATE

Soft buttons used with this menu are:

ENABLE LEAD — used to enable and disable the leading edge emboss.

ENABLE TRAIL — used to enable/disable the trailing edge emboss.

ADJUST EDGE — This soft button is available when **BOTH** **ENABLE LEAD** and **ENABLE TRAIL** are set to **ON**. Use to adjust the Lead edge, Trail edge, or both at the same time. A plus (+) sign will appear before the soft knob function name when **BOTH** has been selected.

HUE ROTATE — This soft button is available when **ADJUST EDGE** is not on “both” or one of **ENABLE LEAD** and **ENABLE TRAIL** is “ON”. When **ON**, controls the hue rotation speed; when **OFF**, controls the hue.

Soft knobs used with all three of the **ADJUST EDGE** selections used in this menu are:

SATURATION sets the saturation of the emboss matte.

BRIGHTNESS sets the brightness of the emboss matte.

HUE sets the hue of the emboss matte.

Emboss Path Menu

To access Path Control for Emboss functions, while in the Emboss menu press the **Path** button located in the User Assist subpanel to bring up the menu shown below

EMBOSS PATH

Displayed:
Register:
Keyframe:
Cur.Time:

ON

OFF

LINEAR

S-LINEAR

ON

OFF

LINEAR

S-LINEAR

CW

CCW

SHORT

LONG

HOLD

PATH
TYPE

HOLD
MATTE

MATTE
PATH

HUE
DIRECTION

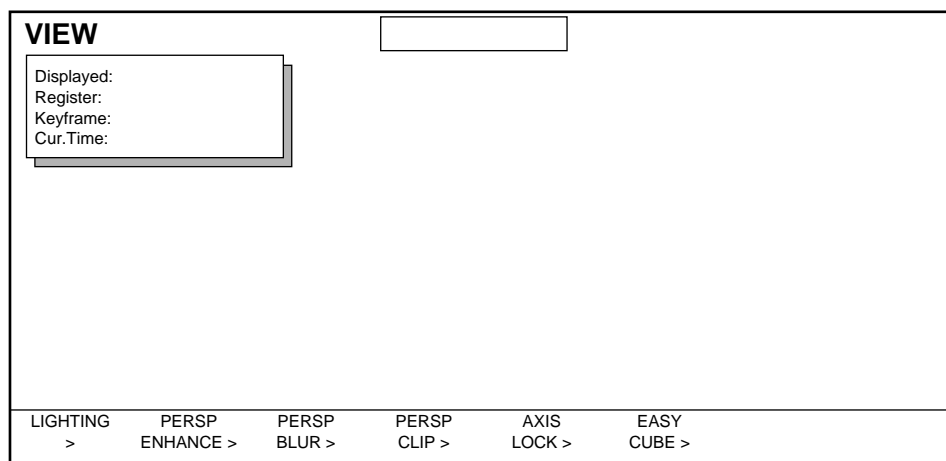
See *Section 6-Run Control Menu* for more information about path control functions.

View Menu

Introduction

The View menus lets you enhance the apparent depth of a manipulated picture (using lighting and perspective tools), and provides an axis tool that helps you control placement of the picture in three-dimensional space.

Press the **View** top level button to bring up the menu shown below:



View lower level menus include:

LIGHTING > — creates two positionable light sources in 3D space which can produce highlights and shading. Each light source can be a Point, Bar or Plane. This feature is an option.

PERSP ENHANCE > —causes the image to appear to be either dimmed to black or faded into the background as a function of the apparent depth of the transformed picture from the viewer.

PERSP BLUR > — adds blur to the video or key signal or both as a function of the apparent depth of the transformed picture from the viewer. Also has controls for blurring/ sharpening key with respect to video.

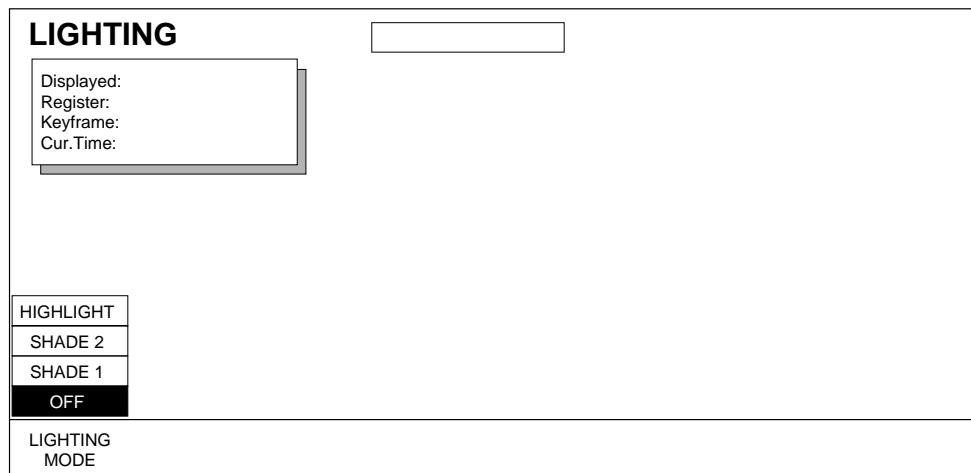
PERSP CLIP > — controls clipping those portions of the image that extend out of the screen “behind” the viewer

AXIS LOCK > — locks the picture and the axis together so that during a transform the axis keeps the same spatial relationship to the picture.

EASY CUBE> — controls the automatic translation of the faces of a three-sided shape as they rotate into view, creating the illusion of a solid, six-sided cube.

Lighting Menu

If you have the Light Source Option installed, press the **View** button located in the Top Menu subpanel. Then press the **LIGHTING>** soft button in that menu to bring up the menu shown below.



This menu provides two positionable light sources in 3D space that can create HIGHLIGHTS (lighting without shading) or SHADING effects (using one or two light sources). The light source can be the shape of a Bar, Point, or Plane. The apparent reflection of the light source is directly related to the physics of incident light reflecting on a surface.

Soft button and soft knob functions vary by lighting mode as described in the following menus.

LIGHTING MODE — there are three lighting modes and OFF:

HIGHLIGHT — produces specular lighting effects in the form of Point, Bar or Plane lighting as described below under **LIGHT TYPE**. Each highlight can be a different color.

SHADE 2 — used to create shading effects. When the image is transformed, the lights create realistic shading from two light sources. Each light has both a highlight and a shading component. Highlights for both sources must be the same color; shading mattes must also be the same color.

SHADE 1 — used to create a shading effect using one light source. The single light source used to create the shading is at full bandwidth.

OFF — turns the Lighting function off.

Highlight

Press the **LIGHTING MODE** soft button until **HIGHLIGHT** is selected to bring up the menu shown below.

LIGHTING			
<div> <div>Displayed:</div> <div>Register:</div> <div>Keyframe:</div> <div>Cur.Time:</div> </div>		<div> <div></div> <div>LIGHT 1X POSITION -2.0000</div> <div>LIGHT 1Y POSITION -2.0000</div> <div>LIGHT 1Z POSITION -5.0000</div> </div>	
HIGHLIGHT	POINT	POSITION	
SHADE 2	BAR	APPEARANCE	
SHADE 1	PLANE	MATTE	
OFF	LIGHT 1	OFF	
	LIGHT 2		
LIGHTING MODE	ADJUST	LIGHT TYPE	MODIFY

Use this menu to create lighting effects by choosing one, two, or both light sources. You can then adjust each light source separately and choose between a Point, Bar or Plane light source. Lighting can be modified by choosing their Position in 3D space. The light's appearance is controlled through Intensity, Specular Diffusion, Add/Mix Ratio, and Opacity soft knobs. The light's Matte is also changed using Hue or Rotation, Saturation, and Brightness soft knob controls.

Soft button and soft knob functions vary by lighting modes as described below.

Highlight Lighting Menu functions:

ADJUST — provides controls through soft knobs and soft buttons for two light sources: **LIGHT 1** or **LIGHT 2**. Both light sources may be used in an effect or just one at a time by turning one OFF.

LIGHT TYPE — you can choose from three light types or OFF.

POINT — simulates a spotlight type of lighting effect that radiates light evenly in all directions.

BAR — simulates lighting from a bar-shaped long, thin lighting source.

PLANE — simulates the glare that would be reflected from an image if a bright light were shined on it from infinity.

OFF — turns off **LIGHT 1**, **LIGHT 2**, or both light sources.

MODIFY — you can modify the following lighting parameters:

POSITION — used with **POINT** and **BAR** light sources to control the position of the point light, or the position of some point along the bar light, with respect to the X, Y and Z axes in 3D space.

ROTATION — used with **BAR** and **PLANE** light sources to control the direction of the bar light, or the direction that the plane light faces along the X, Y and Z axes. (Setting the Rotation to 0 places the Plane light directly behind the viewer's head).

APPEARANCE provides control of **INTENSITY**, **SPECULAR DIFFUSION**, **ADD/MIX RATIO**, and **OPACITY** through the Soft Knobs.

MATTE — provides **HUE** or **HUE ROTATION SPEED**, **SATURATION**, and **BRIGHTNESS** controls through the Soft Knobs for both Highlight and Shade modes.

Soft knobs used to modify **POINT** or **BAR POSITION**.

Note that the number before the axis (i.e. "1X, 2X") will change to reflect which light you are adjusting (Light 1 or Light 2). All Light Positions are given in screen units in relation to Source Space.

LIGHT 1X POSITION — controls the X-axis location of the light source.

LIGHT 1Y POSITION — controls the Y-axis location of the light source

LIGHT 1Z POSITION — controls the Z-axis location of the light source.

Soft knobs used to modify **BAR** and **PLANE ROTATION**:

LIGHT 1X ROTATION — controls the angle of rotation around the X-axis.

LIGHT 1Y ROTATION — controls the angle of rotation around the Y-axis.

LIGHT 1Z ROTATION — controls the angle of rotation around the Z-axis.

Shade 2

When you want to create shading effects based on two light sources, press **LIGHTING MODE** to highlight the **SHADE 2** parameter as shown in the menu below.

LIGHTING					
Displayed: Register: Keyframe: Cur.Time:				LIGHT 1 INTENSITY 0.0000	
				SPECULAR DIFFUSION 0.0000	
				ADD/MIX RATIO 0.0000	
HIGHLIGHT		POINT	POSITION		
SHADE 2		BAR	ROTATION		
SHADE 1	LIGHT 1	PLANE	APPEARANCE	SPECULAR	
OFF	LIGHT 2	OFF	MATTE	SHADING	
LIGHTING MODE	ADJUST	LIGHT TYPE	MODIFY	ADJUST LEVELS	
				OPACITY 0.0000	

There are three components to the light. The Specular component represents light reflected off of the surface of the transformed image. The Shading component represents how the light illuminates the image itself. The Ambient component represents how dark the deepest shadow can be.

The **ADJUST LEVELS** soft button allows you to control the **SPECULAR** or **SHADING** functions separately. The **SHADING** parameter adds controls for **SHADING INTENSITY** and **AMBIENT LEVELS**. The shading effect remains realistic when the image is transformed. Each light used is at half bandwidth.

Shade 2 Lighting menu functions:

ADJUST LEVELS lets you separately control the following parameters by using the soft knobs.

SPECULAR — adds soft knob controls for light intensity, specular diffusion, add/mix ratio, and opacity.

SHADING — adds soft knob controls for shading intensity and ambient light levels. These knobs control how much of the picture you can see in shaded areas.

Soft Knobs used to modify **SPECULAR APPEARANCE** shown in this menu include:

LIGHT INTENSITY — controls the brightness of the light at the source. The menu display lets you know which light you are adjusting by showing Light 1 or Light 2 Intensity.

SPECULAR DIFFUSION — controls how much light is scattered as it is reflected off of the surface of the picture. With 100% diffusion it is as if the light were reflecting off of a mirror. At 0% diffusion it is like light reflecting off of a frosted piece of glass.

ADD/MIX RATIO — a higher setting with this soft knob ADDS the luminance signal of the light with the luminance signal of the video. A lower setting MIXES the luminance level of the light source with the video's luminance level. 100% indicates a full additive mix, 0% indicates a non-additive mix.

OPACITY — adjusts the Opacity for both lights when you have MIXED the video (using the soft knob described above) to control how much picture shows through the light if 100% mix, or how much light can be added if 100% add. Since Opacity dissolves the light ON or OFF, you can use opacity to turn the light OFF quickly.

Note Start with Opacity set at 100% before adjusting the other three soft knobs. This lets you more clearly see the effect the other knobs have on the picture.

Soft knobs used to modify **SHADING APPEARANCE** include:

SHADING INTENSITY — this parameter controls how bright the illumination component of the light is.

AMBIENT LEVEL — this parameter controls how dark the deepest shadow can be (100% is fully bright, eliminating the effect of the shading and ambient light components; 0% goes to black). This control works well with Kurl effects.

Shade 1

When you want to create shading effects based on one light source, press **LIGHTING MODE** to highlight the **SHADE 1** parameter as shown in the menu below.

LIGHTING				LIGHT 1 INTENSITY 0.0000
Displayed: Register: Keyframe: Cur.Time:				
				SPECULAR DIFFUSION 0.0000
				ADD/MIX RATIO 0.0000
HIGHLIGHT	POINT	POSITION		
SHADE 2	BAR	ROTATION		
SHADE 1	PLANE	APPEARANCE	SPECULAR	OPACITY 0.0000
OFF	OFF	MATTE	SHADING	
LIGHTING MODE	LIGHT TYPE	MODIFY	ADJUST LEVELS	

Functions are the same in this menu as Shade 2 mode. The only difference is that there is no ADJUST for Light 1 or Light 2 since the shading from this menu is produced from only one light. You get a full bandwidth light using this mode, which helps prevent banding along the soft edges of the light sources.

SHADE 1 uses light 1 of the **SHADE 2** mode. Light 1's parameters are carried across (and keyframed across) as you switch between Shade 2 and Shade 1. For example: set the specular matte of Light 1 in Shade 2 mode. Switch to Shade 1 mode. Note that the matte stays where you set it.

Shade 1 Lighting menu functions (Shade 1 is the same as Light 1 in Shade 2 mode):

The functions in this menu, with the exception of the ADJUST mode not being applicable to this menu, are the same as those used in the **SHADE 2** mode. Refer to the immediately preceding section "**SHADE 2** lighting mode menu" for details.

Matte

Matte functions are used for both Highlight and Shading parameters. When you choose **SHADE 2** lighting mode, Mattes for both **SPECULAR** and **SHADING** parameters are provided as shown in the menu below.

The Highlight mode provides separate mattes for Light 1 and Light 2 Specular lighting. The Shade mode provides one matte for BOTH lights' specular components. One matte (usually black) is shared by BOTH lights' Shading and Ambient components.

LIGHTING						SPECULAR SATURATION 0.0000	
Displayed: Register: Keyframe: Cur.Time:						SPECULAR BRIGHTNESS 0.0000	
						SPECULAR HUE ROTATION SPEED 0.0000	
HIGHLIGHT		POINT	POSITION				
SHADE 2		BAR	ROTATION				
SHADE 1	LIGHT 1	PLANE	APPEARANCE		SPECULAR	ON	
OFF	LIGHT 2	OFF	MATTE		SHADING	OFF	
LIGHTING MODE	ADJUST	LIGHT TYPE	MODIFY		ADJUST MATTE	HUE ROTATE	

Lighting Matte menu functions:

ADJUST MATTE — **SPECULAR** or **SHADING** matte adjustments are provided by the soft knobs described below.

HUE ROTATE — activates hue rotation.

ON provides soft knob control for **HUE ROTATION SPEED**.

OFF provides soft knob control for **HUE**.

Soft Knob functions include:

SATURATION — controls **SPECULAR** or **SHADING** chroma saturation depending upon which **ADJUST MATTE** mode you are in.

BRIGHTNESS — controls **SPECULAR** or **SHADING** brightness depending upon which **ADJUST MATTE** mode you are in.

HUE or **HUE ROTATION SPEED** — when **HUE ROTATE** soft button is set to **OFF**, this soft knob controls **HUE**. When **ON**, the soft knob controls **HUE ROTATION SPEED**. A positive setting controls clockwise rotation speed; a negative setting controls counterclockwise rotation speed.

Lighting Path Menu

To access Path Control for Lighting functions, while in the Lighting menu press the **Path** button located in the User Assist subpanel to bring up a menu similar to that shown below.

LIGHTING PATH

Displayed:

Register:

Keyframe:

Cur.Time:

LIGHT 2 TENSION

0.0000

LIGHT 2 CONTINUITY

LIGHT 2 BIAS

0.0000

HIGHLIGHT

SHADE 2

SHADE 1

POINT

BAR

PLANE

CURVE

LINEAR

S-LINEAR

ON

OFF

ON

OFF

LINEAR

S-LINEAR

CW

CCW

SHORT

LONG

LIGHTING MODE

ADJUST

LIGHT TYPE

HOLD LIGHT 2

PATH TYPE

HOLD APPEARANCE

APPEARANCE PATH

HUE DIRECTION

See *Section 6-Run Control Menu* for more information about path control functions.

Perspective Enhance Menu

To access this menu, press **PERSP ENHANCE** submenu button located in the **View Top Menu**.

Dim and Fade

This menu provides controls which cause the image to appear to be either dimmed to black (Dim), or faded into the background (Fade) as the apparent depth of the picture increases. Press the **ENHANCE MODE** button to choose the mode you wish to control.

PERSP ENHANCE

Displayed:
Register:
Keyframe:
Cur.Time:

FADE
DIM
OFF

ENHANCE
MODE

FADE
0.0000

SOFTNESS
0.0000

START DEPTH
0.0000

Soft knobs used to adjust Dim and Fade are:

FADE — controls the amount of fade.

SOFTNESS — controls the softness of the fade or dim edge.

START DEPTH — sets the depth at which the picture begins to fade or dim. In front of that point there is no dimming or fading; behind that point, the picture dims or fades at a rate determined by the Softness and Fade knob settings.

Perspective Enhance Path Menu

To access Path Control for Perspective Enhance functions, while in the Perspective Enhance menu press the **Path** button located in the User Assist sub-panel to bring up a menu similar to that shown below.

PERSP ENHANCE PATH

Displayed:
Register:
Keyframe:
Cur.Time:

FADE

DIM

ON

OFF

LINEAR

S-LINEAR

ENHANCE
MODE

HOLD

PATH
TYPE

See *Section 6-Run Control Menu* for more information about path control functions.

Perspective Blur Menu

This menu provides control of Perspective Blur. This is the depth of field which determines before what point an image blurs (blurring occurs on closer parts of the image, as if they were out of focus).

PERSP BLUR		
<div> <div>Displayed:</div> <div>Register:</div> <div>Keyframe:</div> <div>Cur.Time:</div> </div>		VIDEO BLUR 50.0000
		KEY BLUR OFFSET 0.0000
		DEPTH 0.0000
<div> <div>ON</div> <div>OFF</div> </div>		
PERSP BLUR		

Soft buttons used with this menu are:

PERSP. BLUR — turns the blur function ON or OFF.

Soft Knobs used to adjust Perspective Blur are:

VIDEO BLUR — controls the relative amount of blur applied to closer portions of the image. Video and Key are adjusted together.

KEY BLUR OFFSET — blurs or sharpens key with respect to video blur.

DEPTH — used to set the depth at which the picture begins to blur. Behind that point there is no blurring; in front of that point, the picture blurs as a function of the amount of blur and the apparent depth.

Perspective Blur Path Menu

To access Path Control for Perspective Blur functions, while in the Perspective Blur menu press the **Path** button located in the User Assist subpanel to bring up the menu shown below.

Persp Blur Path

Displayed:
Register:
Keyframe:
Cur.Time:

ON

OFF

LINEAR

S-LINEAR

HOLD

PATH
TYPE

See *Section 6-Run Control Menu* for more information about path control functions.

Perspective Clip Menu

Use this menu to blank portions of the image that wrap around the screen “behind” the viewer. This condition occurs when a transform is performed that causes the picture to extend behind the eye plane as determined by the Perspective parameters.

Press the **View** Top Menu button then select the **PERSP CLIP** soft button to bring up the following menu:

PERSP CLIP

Displayed:
Register:
Keyframe:
Cur.Time:

ON

OFF

PERSP
CLIP

The soft button used with this menu is:

PERSP CLIP — **ON** or **OFF**. When **OFF**, the picture will wrap around and return to the screen.

Axis Lock Menu

Use Axis Lock to lock the axis to the picture so that when you perform a transform the axis keeps the same spatial relationship to the picture.

To access this menu, press the **View** button located in the Top Menu area then select the **AXIS LOCK>** button to bring up the menu shown below. You can also double press the **Locate Axis** button located in the Transform sub-panel area to bring up this menu.

AXIS LOCK

Displayed:

Register:

Keyframe:

Cur.Time:

ON

OFF

AXIS

LOCK

Soft Buttons used with the Axis Lock submenu are:

AXIS LOCK — enables or disables the lock mode.

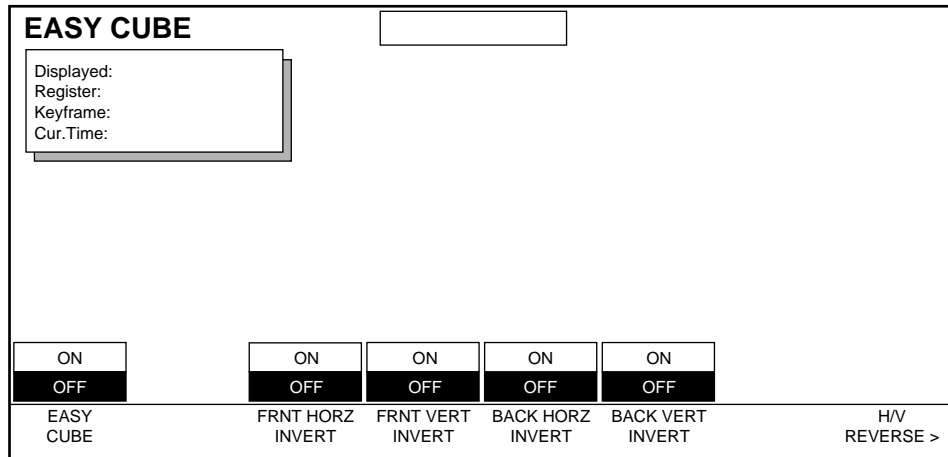
ON — keeps the axis locked with the channel during a transform, causing the axis to move with the picture.

OFF — leaves the axis at its current location when the channel moves.

Easy Cube Menu

Easy Cube lets you build a three channel cube effect that gives the illusion of having separate channels assigned to each of the object's six faces. Easy Cube accomplishes this by automatically translating channels to the opposite face of a rotating object as the opposite face become visible.

The Easy Cube menu is accessed by pressing the **View** top menu button, and then pressing the **EASY CUBE.>** soft button



Soft Buttons used with the Easy Cube submenu are:

EASY CUBE — enables or disables the Easy Cube mode.

INVERT (4 buttons) — Inverts the front or back side of the channel vertically or horizontally. This is useful to correcting the orientation of the faces of the cube as it is rotated.

H/V REVERSE — provides access to the H/V Reverse menu.

Using Easy Cube

1. With Easy Cube **OFF**, create half of a “solid” object with three sides. One way to do this is to delegate three channels, crop the pictures so they are square, rotate the pictures 90° to each other, then use a Z axis source locate to move the edges till they touch. The outward facing surfaces of the object should be the Front sides of each picture.
2. Turn Easy Cube **ON** for all three delegated channels used to create the object.
3. Spin the three sides as a group using a Global channel. If necessary, invert the pictures on the front or back sides of the object using the Easy Cube menu.

4. Move the object to the desired screen positions using the Global channel, inserting keyframes as needed. As the object turns into each position, pictures on the object's opposite sides will be created automatically as they move into view, and the pictures will be inverted as specified.

Easy Cube Invert and Horiz/Vert Reverse

The **INVERT** controls located on the Easy Cube menu invert the orientation of the source image. Horizontal invert swaps the orientation left to right, and Vertical invert swaps the orientation top to bottom. The Easy Cube invert controls are included as part of the effect and are keyframeable. Once these controls have been set, they remain active even when the Easy Cube feature is turned OFF. The controls are included in the Easy Cube menu for user convenience.

The Easy Cube **INVERT** controls are similar to the Horiz/Vert Reverse menu **REVERSE** controls. The Horiz/Vert Reverse controls, however, can be associated with a particular source, and can change if the source changes. Easy Cube invert controls are not associated with any particular source, and once activated will be applied to all the sources used by that channel.

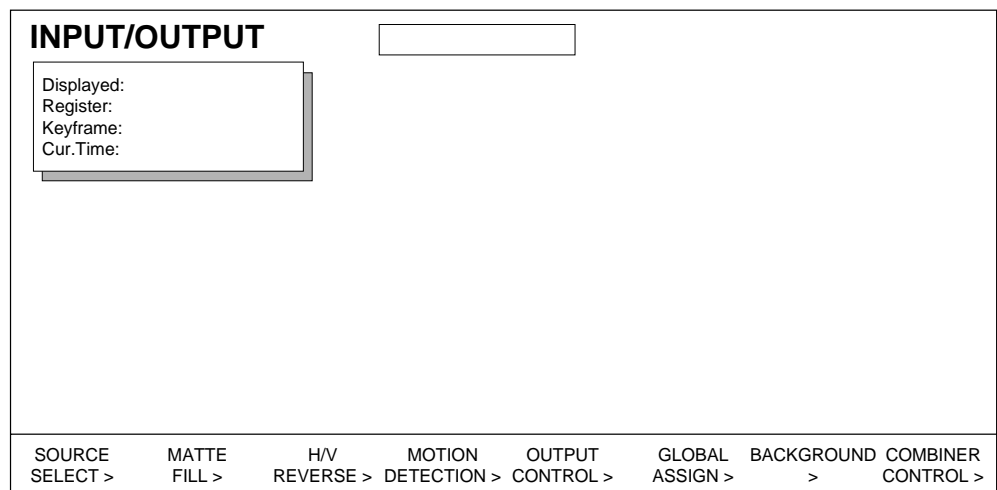
The Easy Cube and Horiz/Vert Reverse controls are cumulative. For example, if only the Easy Cube Vertical **INVERT** control is **ON**, the image will be inverted top to bottom. If both the Easy Cube menu Vertical **INVERT** and Horiz/Vert Reverse menu **VERT REVERSE** controls are on, the picture will be inverted twice, and so return to its original orientation (the same as when both controls are off). In general it is probably best to use only the Easy Cube controls for your cube effects and leave the Source Memory Invert controls set to **OFF**.

Input/Output Menu

Introduction

Input/Output tools are used to set the behavior of different sources entering and leaving the Krystal system.

Press the **Input/Output** top menu button to access the top level menu shown below.



From this menu you can access the submenus described in detail on the following pages. Input/Output lower level menus include:

SOURCE SELECT > — defines where the sources for video, key and mask come from. It is possible to select different sources for the front or back sides of the video on a keyframe by keyframe basis.

MATTE FILL > — adds matte fill to the picture, the mask, or the picture and the mask. Different matte fill selections can be made for the front and back sides of the video, key, or mask signal.

H/V REVERSE > — provides separate controls for reversing the front and back sides of the picture, both horizontally and vertically.

MOTION DETECTION > — cleans up resolution by changing the way in which the video signal is processed. Especially useful when using fast moving video. Krystal resamples incoming video by looking back a frame or field and using this information to smooth out the signal. This is a source memory parameter.

OUTPUT CONTROL > — turns the channel outputs off and on and inverts the output key signal.

GLOBAL ASSIGN > — sets which channels are assigned to which of the two global channels, and allows channels to be unassigned to either global channel. This feature is keyframable.

BACKGRND > — used to select the appearance of the background signal. A different background may be selected for each channel. (If your system is equipped with a Combiner you may want to use the combiner background feature available under Combiner Control >.) This feature is keyframable.

COMBINER CONTROL > — used to control how the optional Combiner combines the video sources, select primary and secondary combiner outputs, and select combiner backgrounds.

Source Select Menu

Source Selection defines where the sources for video, key, and mask come from. Different source selections can be made for the Front or Back Sides of the picture, or the same sources can be selected for both.

Press the **Input/Output** top menu button then the **SOURCE SELECT>** soft button to display the Source Select menu shown below.

SOURCE SELECT												
Displayed: Register: Keyframe: Cur.Time:												
<div>Near</div> <div>Far</div>		<table border="1"> <thead> <tr> <th>FRONT SIDE</th> <th>back side</th> </tr> </thead> <tbody> <tr> <td>Video: 1</td> <td>Video: 2</td> </tr> <tr> <td>Key: 1</td> <td>Key: 2</td> </tr> <tr> <td>Mask: 1</td> <td>Mask: 2</td> </tr> </tbody> </table>			FRONT SIDE	back side	Video: 1	Video: 2	Key: 1	Key: 2	Mask: 1	Mask: 2
FRONT SIDE	back side											
Video: 1	Video: 2											
Key: 1	Key: 2											
Mask: 1	Mask: 2											
		VIDEO ▶ Source 1 Source 2 Source 3 Source 4 Source 5 Source 6 Source 7 Source 8 ▼	KEY ▶ Source 1 Source 2 Source 3 Source 4 Source 5 Source 6 Source 7 Source 8 ▼	MASK ▶ Source 1 Source 2 Source 3 Source 4 Source 5 Source 6 Source 7 Source 8 ▼								
<div>ON</div> <div>OFF</div>		<div>UNSHAPED</div> <div>SHAPED</div>		SCROLL								
HOLD INPUT	VIDEO SHAPED	SELECT VIDEO SRC	SELECT KEY SRC	SELECT MASK SRC								
		PAGE UP	PAGE DOWN									

Source Select menu functions include:

HOLD INPUT — this is a keyframable parameter that applies to both the front and back sides of the picture. It is not part of Source Memory (described in Section 4 - User Tools), but resides on the Source Memory function timeline and can be applied to each channel. When **ON**, Source Memory parameters (including source selections) will *not* be updated for these keyframes during the running of the effect. This is useful when selecting sources on-the-fly. When **OFF**, Source Memory parameters are updated normally.

VIDEO SHAPED — determines how the key signal will be processed. This is a source memory parameter that can be applied to the front and back sides of a picture independently.

SHAPED — select when the source video is shaped. Key processing will be additive.

UNSHAPED — select when the source video is unshaped. Key processing will be multiplicative.

SELECT VIDEO SRC — used to select the source for the Video. When pressed, the item pointed to by the scroll arrow is hard selected and is displayed in the Front/Back Side area above, depending on whether Near or Far is selected on the panel.

SELECT KEY SRC — used to select the source for the Key. When pressed, the item pointed to by the scroll arrow is hard selected and is displayed in the Front/Back Side area above, depending on whether Near or Far is selected on the panel.

SELECT MASK SRC — used to select the source for the Mask. When pressed, the item pointed to by the scroll arrow is hard selected and is displayed in the Front/Back Side area above, depending on whether Near or Far is selected on the panel.

PAGE UP — used to bring information that is out of view above the first selection into view.

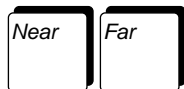
PAGE DOWN — used to bring information that is out of view below the last selection into view.

Soft Knob control used in this menu is:

SCROLL — use to scroll through the menu choices for the selected soft button.

Delegating the Front and Back Sides

The same source information can be applied to both sides of the video image, or the two sides may be adjusted separately. Source Selection menu operations are applied to the delegated side of delegated channels.



The **Near** or **Far** buttons located on the lower control panel in the Position Subpanel area are used to delegate the sides of the picture. The **Near** button delegates the visible side of the picture for source selection and source parameter adjustments. The **Far** button delegates the hidden side of the picture for source selection and source parameter adjustments.

Near/Far indicators on the left side of the screen indicate which side or sides are currently delegated. If both the near and far sides are delegated, the first delegated side is shown in black and the second side is shown in gray. Undelegated sides are shown in white.

The window at the top of the menu display in the Source Selection menu shows the different source information delegated to the two sides. The delegated side labels “FRONT SIDE” and “back side” above this window are shown in both upper case and lower case type. UPPER CASE indicates which side is currently visible and therefore “Near”. Lower case indicates which side is currently not visible and therefore “Far”.

Note The parameters stay with the side to which they are delegated whether or not they are in or out of view.

Switcher Effects Send and Krystal Source Selection

When a Krystal system is configured with a Switcher that supports the Effects Send feature, Krystal uses a separate Effects Send Source Memory when the Switcher is placed in Effects Send mode. The Effects Send Source Memory is independent of the Source Memory, and both are described in Section 4 - User Tools.

The Switcher's Effects Send state (On or Off) can be saved on a keyframe by keyframe basis to a Krystal effect register. This Krystal effect can then control the Effects Send state of the switcher when the effect is run. All Source Memory menus indicate when the Switcher is in Effects Send. The Switcher Effects Send states is also indicated in the Transform Timeline menu.

Selecting any source from the Krystal menu automatically turns Effects Send OFF. The Switcher can be put back into Effects Send by the operator pressing an Effects Send button on the Switcher panel, or by going to a Krystal keyframe or running a Krystal effect that specifies Effects Send.

Matte Fill Menu

Press the **Input/Output** top menu button then the **MATTE FILL>** submenu button to display the Matte Fill menu shown below. Selections from this menu allow you to control the matte fill. Different matte fill selections can be made for the front and back sides.

MATTE FILL				SATURATION
Displayed: Register: Keyframe: Cur.Time:		FRONT SIDE back side		100.0000
		Video: 1	Video: 2	
		Key: 1	Key: 2	
		Mask: 1	Mask: 2	BRIGHTNESS
				50.0000
Near Far				HUE
				0.0000
MATTE VIDEO		ON OFF		ON OFF
MATTE FILL		PICTURE MASK		HUE ROTATE

Matte Fill Menu Functions:

MATTE FILL — this soft button chooses between **VIDEO** fill or **MATTE** fill. The following controls appear only when matte fill is selected.

PICTURE MASK — this soft button turns matte fill masking On and Off. When On, the **ADJUST MASK >** soft button becomes available to provide access to the Adjust Mask menu.

HUE ROTATE — When On selects a matte which rotates in hue with respect to time. The rotation is adjustable in either direction.

Soft Knobs used with this menu are:

SATURATION — controls matte fill chroma saturation.

BRIGHTNESS — controls matte fill brightness.

HUE or **HUE ROTATE SPEED** — when Hue Rotate is **OFF**, the soft knob function is **HUE** and controls the hue of the matte fill. When Hue Rotate is **ON**, the soft knob becomes **HUE ROTATE SPEED**. A positive setting controls counter-clockwise hue rotation speed; a negative setting controls clockwise hue rotation speed.

Matte Fill Path Menu

To access Path Control for Matte Fill functions, while in the Matte Fill menu press the **Path** button located in the User Assist subpanel to bring up the menu shown below.

MATTE FILL PATH														
<div>Displayed: Register: Keyframe: Cur.Time:</div>														
<div></div>														
<div><table><tr><td>ON</td><td>LINEAR</td><td>CW</td></tr><tr><td>OFF</td><td>S-LINEAR</td><td>CCW</td></tr><tr><td></td><td></td><td>SHORT</td></tr><tr><td></td><td></td><td>LONG</td></tr></table></div>			ON	LINEAR	CW	OFF	S-LINEAR	CCW			SHORT			LONG
ON	LINEAR	CW												
OFF	S-LINEAR	CCW												
		SHORT												
		LONG												
HOLD MATTE	MATTE PATH	HUE DIRECTION												

See *Section 6-Run Control Menu* for more information about path control functions.

Horiz/Vert Reverse Menu

Press the **Input/Output** top menu button then the **HORIZ/VERT>** submenu to display the Horizontal/Vertical Reverse menu shown below.

HORIZ/VERT REVERSE

Displayed:

Register:

Keyframe:

Cur.Time:

Near

Far

FRONT SIDE

back side

Video: 1

Video: 2

Key: 1

Key: 2

Mask: 1

Mask: 2

ON

OFF

ON

OFF

HORIZ

REVERSE

VERT

REVERSE

H/V Reverse menu functions include:

HORIZ REVERSE — **ON** reverses the image horizontally.

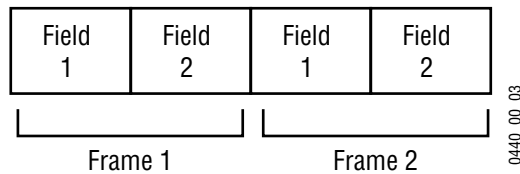
VERT REVERSE — **ON** reverses the image vertically.

The front and back sides of a picture can be reversed separately.

Motion Detection Menu

Whenever video is manipulated in any DPM, the video data must be resampled. In the process of video resampling, unwanted artifacts can occur where there is motion in the video. Motion Detection is the process of smoothing out or “hiding” such artifacts. Motion detection is especially helpful when using fast moving video.

Krystal simultaneously performs two types of motion detection from a Frame (comprised of 2 fields) stored in memory:



Frame Motion Detection — looks for differences between similar fields or every other field:

Frame A Field 1 vs. Frame B Field 1;
 Frame A Field 2 vs. Frame B Field 2.
 The data compared is one FRAME apart.

Field Motion Detection — looks for differences between non-similar or adjacent fields:

Frame A Field 1 vs. Frame A Field 2;
 Frame A Field 2 vs. Frame B Field 1;
 Frame B Field 1 vs. Frame B Field 2.
 The data compared is one FIELD apart.

The Motion Detection menu provides controls to clean up resolution by changing the way in which the luminance, chrominance, and key signals are processed. All Motion Detection parameters are part of source memory.

Freeze Override and Motion Detection Parameters

The Freeze Override feature maintains independent memory storage for two additional sets of Motion Detection and Input Recursive parameters. Settings from the Motion Detection menus can be saved to these separate storage locations, and then invoked at any time by pressing the **Freeze 1** or **Freeze 2** Control Panel override buttons. These alternate sets of parameters can be defined by pressing the **Freeze 1** or **Freeze 2** button so it is lit, and then going to these menus and changing the parameters. Freeze Override is not keyframeable, and is applied to all channels in the effect.

Press the **Input/Output** top menu button, press the **MOTION DETECTION>** soft button to display the Motion Detection menu.

MOTION DETECTION						LUMA FIELD 5.5000
Displayed: Register: Keyframe: Cur.Time:		FRONT SIDE Video: 1 Key: 1 Mask: 1		back side Video: 2 Key: 2 Mask: 2		
<div>Near</div> <div>Far</div>						CHROMA FIELD 5.5000
						+ LUMA & CHROMA FIELD
<div>ADAPT</div> <div>FIELD</div> <div>FRAME</div>		<div>BOTH</div> <div>FIELD</div> <div>FRAME</div>		<div>ON</div> <div>OFF</div>		KEY FIELD 5.5000
INTERP MODE		MODIFY THRESHOLD		ENHANCED VIDEO		

Motion Detection Menu Functions:

INTERP MODE — allows you to choose the interpolation method used for combining the resampled video:

ADAPT — the interpolation of the resampled video is based on the motion detection threshold values. (The **MODIFY THRESHOLD** control becomes available when this mode is selected.)

FIELD — forces the interpolation of the resampled video to only use the current field of video. This method can cause a loss of resolution, but is good for fast moving video.

FRAME — forces the interpolation of the resampled video to use both the current and previous fields of video. This may be useful for still graphic images or slow moving video.

The following parameters are available when the **ADAPT** mode is selected:

MODIFY THRESHOLD — Motion thresholds are the amount of motion that is acceptable and still have the interpolators (resamplers) use the full frame of data. If the actual motion for a given pixel is greater than the threshold, then the interpolators will NOT use both fields to do the interpolation for that pixel. If the actual motion is less than the threshold, then both fields will be used in the interpolation.

Motion thresholds are expressed as a percentage. If the threshold is set at 3% then any motion less than 3% is acceptable (meaning the data is acceptable to do frame interpolation), while any motion greater than 3% will be unacceptable (meaning the data is unacceptable to do frame interpolation; it will use Field interpolation). A 0% would mean that ANY motion is unacceptable and a threshold of 100% means ALL motion is acceptable.

BOTH — both Field AND Frame threshold values will be modified simultaneously with the soft knobs. A plus (+) sign will appear before the soft functions. (The **DISPLAY THRESHOLD** control becomes available when this mode is selected.)

FIELD — only the field threshold values will be changed. Soft knob functions allow you to change chroma, luma, and key field thresholds separately as well as simultaneously.

FRAME — only the frame threshold values will be changed. Soft knob functions allow you to change chroma, luma, and key frame thresholds separately as well as simultaneously.

Soft Knobs used with this menu are:

LUMA FIELD/FRAME — modifies the Luma field/frame threshold.

CHROMA FIELD/FRAME — modifies the Chroma field/frame threshold.

+LUMA & CHROMA FIELD/FRAME — modifies the Luma AND Chroma Field/Frames simultaneously. (This function is not available when **BOTH** is selected with **MODIFY THRESHOLD**.)

KEY FIELD/FRAME — modifies the Key field/frame threshold.

The following parameter is available when the **BOTH** is selected with **MODIFY THRESHOLD**:

MOTION DETECTION							
Displayed: Register: Keyframe: Cur.Time:		FRONT SIDE		back side			
		Video: 1		Video: 2			
		Key: 1		Key: 2			
		Mask: 1		Mask: 2			
						+LUMA FRAME 2.5000	
						+CHROMA FRAME 2.5000	
Near Far							
ADAPT BOTH							
FIELD FIELD							
FRAME FRAME							
		ON OFF		FIELD FRAME		+KEY FRAME 2.5000	
INTERP MODE		MODIFY THRESHOLD		ENHANCED VIDEO		DISPLAY THRESHOLD	

DISPLAY THRESHOLD — toggles between displaying the FIELD or FRAME thresholds used in the Chroma, Luma and Key soft knob parameters.

Enhanced Video Option

If you have the Enhanced Image Fidelity option installed on your system, the following additional menu control is available.

ENHANCED VIDEO — provides cleaner resolution by changing the way in which the luminance, chrominance, and key signals are processed. In general, select **ON** for camera sources or sources shot with a lens. Set to **OFF** when using computer generated sources.

Enhanced Video is a source memory parameter.

Output Control Menu

The Output Control menu will turns the output of each of the channels Off or On.

OUTPUT CONTROL

Displayed:
Register:
Keyframe:
Cur.Time:

ON
OFF

ON
OFF

ON
OFF

ON
OFF

ON
OFF

CHANNEL 1
OUTPUT

CHANNEL 2
OUTPUT

CHANNEL 3
OUTPUT

CHANNEL 4
OUTPUT

OUTPUT
KEY INVERT

CHANNEL 1-4 OUTPUT — enables or disables the selected channel’s output. When **OFF**, Black will be output if the Channel Background is Off, and Back-ground will be output if the background is On.

OUTPUT KEY INVERT inverts the key in the output.

Global Assignment Menu

The Global Assignment menu allows you to assign one or more channels to a global channel and manipulate all of these channels at once.

GLOBAL ASSIGNMENT

GLOBAL ASSIGNMENTS:

Local Channel	Assignment
▶ 1.Channel 1	Global 1
2.Channel 2	Global 1
3.Channel 3	Global 1
4.Channel 4	Global 1
5.Global 1	Global 2
6.Global 2	

SCROLL

SELECT

ATTACH TO

ATTACH TO

CLEAR

SCROLL

GLOBAL 1

GLOBAL 2

ATTACHMENT

Use the **SELECT/SCROLL** button to select a channel then press the **ATTACH TO GLOBAL 1** or **ATTACH TO GLOBAL 2** to attach that channel to the global channel. A global channel can also be attached to the other global channel. Conflicting global channel assignments (Global channels assigned to themselves or simultaneously assigned to each other) are not permitted.

CLEAR ATTACHMENT clears a channel attachment.

Global assignments are keyframable.

Background Menu

Background is used to determine the appearance of the background signal that is present outside the edges of the transformed video, or mixed with the video when opacity is used.

Press the **Input/Output** top menu button then the **BACKGRND>** soft button to display a menu similar to that shown below.

BACKGROUND

Displayed:
Register:
Keyframe:
Cur.Time:

ROTATION SPEED
0.0000

S. BLACK

WASH

MATTE

OFF

APPEARANCE

MATTE 1

MATTE 2

POSITION

SPEED

BACKGRND
MODE

MODIFY

ROTATION
MODE

Background Menu Functions:

BACKGRND MODE —lets you choose whether a background is Super Black, Wash, Matte, or Off. When background is on, a full raster key signal is output.

S. BLACK — provides a background of super black (0 black).

WASH — provides control of a two matte color wash for the background. (The **MODIFY** control becomes available when this mode is selected.)

MATTE — provides **SATURATION**, **BRIGHTNESS**, and **HUE** control of a single color matte for the background.

OFF — background defaults to black and turns off the full raster key signal.

MODIFY — when **WASH** is selected you can control the wash **APPEARANCE**, **MATTE 1**, or **MATTE 2**.

ROTATION MODE — When **APPEARANCE** is selected a soft knob is available to control the wash **POSITION** or wash **ROTATION SPEED**.

Wash Matte 1 and Matte 2

Use these menus to control the color of Matte 1 and Matte 2.

BACKGROUND		MATTE 1 SATURATION 0.0000
Displayed: Register: Keyframe: Cur.Time:		MATTE 1 BRIGHTNESS 0.0000
		MATTE 1 HUE 0.0000
S. BLACK		
WASH	APPEARANCE	
MATTE	MATTE 1	
OFF	MATTE 2	ON OFF
BACKGRND MODE	MODIFY	HUE ROTATE

Soft Knobs used with this menu include:

MATTE SATURATION — controls the matte chroma saturation.

MATTE BRIGHTNESS — controls the matte brightness.

MATTE HUE — controls the matte hue. When **HUE ROTATE** is **ON**, this soft knob controls the rotation speed.

Wash Background Path Menu

To access Path Control for Background Path functions, while in the Background menu press the **Path** button located in the User Assist subpanel.

BACKGROUND PATH

Displayed:

Register:

Keyframe:

Cur.Time:

ON

OFF

LINEAR

S-LINEAR

ON

OFF

LINEAR

S-LINEAR

CW

CCW

SHORT

LONG

HOLD

WASH PATH

HOLD MATTE

MATTE PATH

HUE

DIRECTION

See *Section 6-Run Control Menu* for more information about path control functions.

Combiner Menus

The combiner menus are used to set up how the optional Combiner processes its input signals to create its combined output signals. Most Krystal combiner parameters are stored in the Camera channel. These combiner parameters are saved to Krystal registers and to disk as Camera channel information.

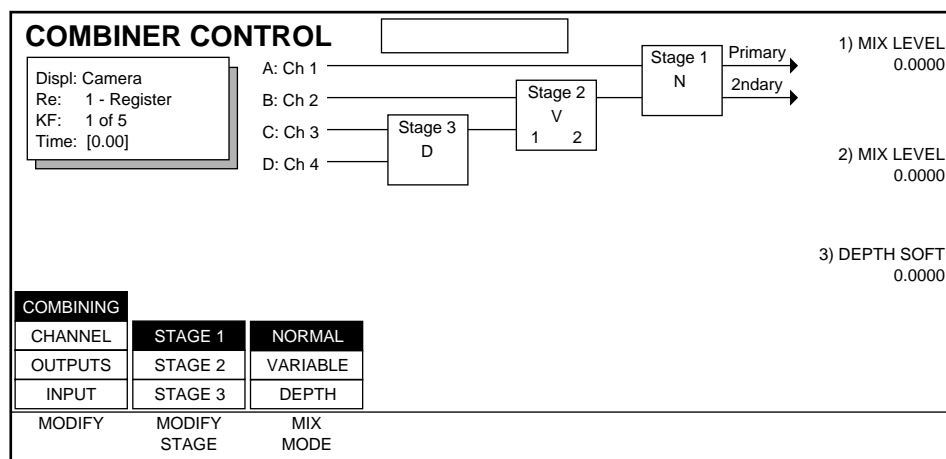
The controls active on the combiner menus can vary, depending on whether the camera channel or a logical channel is delegated. Inactive controls are grayed out.

Note If the Camera and more than one logical channel are delegated, and the Camera is the display channel, the parameter values for the lowest numbered delegated logical channel will be displayed. If a logical channel is the display channel and the Camera channel is delegated, Camera channel parameters will be displayed along with those for the logical channel.

Two different sets of Combiner menus exist, one set for the 4 Channel Combiner option, and one for 2 x 2 Combiner option. The appropriate set of menus will be displayed, depending on which type of Combiner is configured with your currently acquired Effect Manager.

4 Channel Combiner Control Menu

Press **Input/Output \ COMBINER CONTROL >** to access the Four Channel Combiner Control menu. A graphical representation of the combiner stages and signal paths appears on this screen.



Because only two signals are combined at a time, intermediate stages are required for four channel combining. Each stage has one channel input, and one other input from a previous stage. Stage 1 is the final output stage, Stage 2 is the intermediate stage, and Stage 3 is the initial stage. Stage 3 actually has two channel inputs, since there are no previous stages. For simplicity, the two inputs to each stage (including Stage 3) are called Channel (Chan) and Prev (Prev).

The currently selected Mix Mode of each stage is indicated on the screen with **N** (Normal), **D** (Depth), and **V** (Variable). When a stage is set to Variable the numbers of the layering selections are also displayed.

Combining

When the Camera channel is delegated, the following functions are available.

Press **MODIFY** to select **COMBINING**, and select a combining stage by pressing **MODIFY STAGE**. You can now assign a combining method to that stage by pressing **MIX MODE**. Each stage can be given a different mix mode. Soft knobs controls on the right are associated with each stage. The parameters controlled by these knobs varies depending on the mix mode selected.

NORMAL — Allows simple mix control of the source channel's input over the previous stage's output (or the lower priority input channel to the first stage).

MIX LEVEL — determines if only the Channel (0 Mix Level), or only the Previous (100 mix level), or a mix of the two selections (intermediate levels) will be output where the input key signals overlap.

Press **MIX MODE** to assign a **VARIABLE** mix mode to the selected stage and display the following menu.

COMBINER CONTROL					
Displ: Camera Re: 1 - Register KF: 1 of 5 Time: [0.00]		From Var: 1. Chan over Prev 2. Chan under Prev 3. Chan only 4. Prev only 5. Chan in Prev Key 6. Prev in Chan Key 7. Chan out Prev Key 8. Prev out Chan Key 9. Chan atop Prev 10. Prev atop Chan 11. Chan xor Prev 12. Chan plus Prev 13. Clear		TO Var: 1. Chan over Prev 2. Chan under Prev 3. Chan only 4. Prev only 5. Chan in Prev Key 6. Prev in Chan Key 7. Chan out Prev Key 8. Prev out Chan Key 9. Chan atop Prev 10. Prev atop Chan 11. Chan xor Prev 12. Chan plus Prev 13. Clear	1) MIX LEVEL 0.0000 2) MIX LEVEL 0.0000 3) MIX LEVEL 0.0000 SCROLL
COMBINING	STAGE 1	NORMAL			
CHANNEL	STAGE 2	VARIABLE			
OUTPUTS	STAGE 3	DEPTH			
INPUT					
MODIFY	MODIFY STAGE	MIX MODE	SELECT/ SCROLL	SELECT/ SCROLL	

VARIABLE — Allows the selection of the following layering options for that stage's Channel and Previous input signals.

Chan over Prev — shows both Chan and Prev video signals. Chan always has priority over Prev (i.e. Chan is in front of Prev).

Chan under Prev — shows both Chan and Prev video signals. Prev always has priority over Chan.

Chan only — shows Chan video only. Prev video is suppressed.

Prev only — shows Prev video only. Chan video is suppressed.

Chan in Prev Key— shows the Chan video that is inside the area where the Chan and Prev key signals overlap.

Prev in Chan Key— shows the Prev video that is inside the area where the Chan and Prev key signals overlap.

Chan out Prev Key— shows the Chan video that is outside the area where the Chan and Prev key signals overlap.

Prev out Cam Key— shows the Prev video that is outside the area where the Chan and Prev key signals overlap.

Chan atop Prev — shows Chan video inside Prev's key signal and on top of the Prev video.

Prev atop Chan — shows Prev video inside Chan's key signal and on top of the Chan video.

Chan xor Prev — shows Chan and Prev video, except where the Chan and Prev key signals overlap nothing is shown.

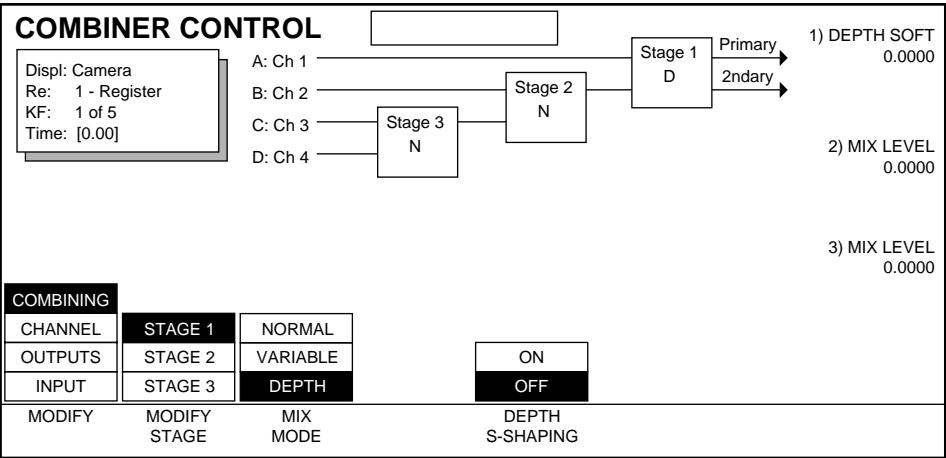
Chan plus Prev — shows Chan video where there is only Chan video, shows Prev video where there is only Prev video, does an additive mix where the two video signals intersect. (NOTE: This setting may generate video outside legal broadcast range.)

Clear — No video is visible.

Soft Knobs used with this menu include:

The **MIX LEVEL** soft knob for variable mix mode determines if only the selection in the **FROM VAR** column (0% Mix Level), or only the **TO VAR** column (100% Mix Level), or a mix of the two selections (intermediate levels) will be output where the input key signals overlap.

Press **MIX MODE** to select **DEPTH** to assign that mix mode to the selected stage and display the following menu.



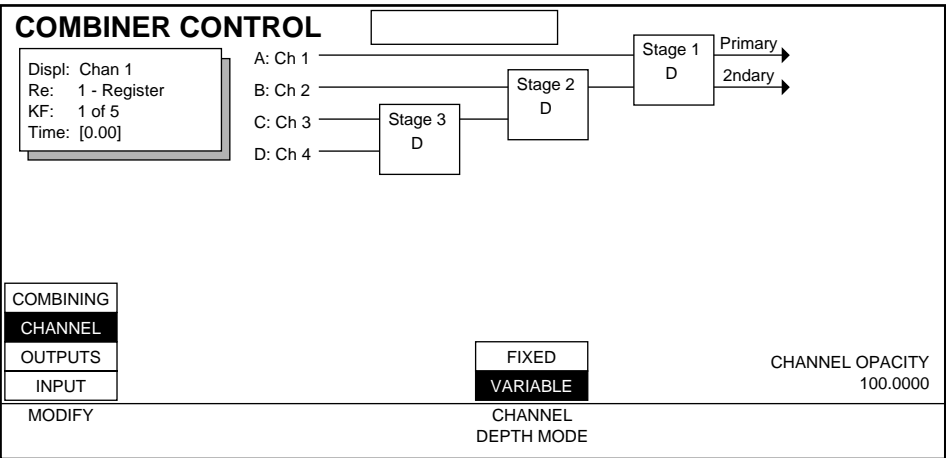
DEPTH — The depth information contained in the key signals is used to determine the priority of the layering of the video signals. (The depth level of each channel can be adjusted, as explained below). When Depth is selected the following soft button and soft knob are available:

DEPTH SOFT soft knob adjusts the softness of the intersecting edges of the pictures.

DEPTH S-SHAPING — soft button determines the softness transition of the intersecting picture edges. When **ON**, an S-Linear transition is used. When **OFF**, a Linear transition is used.

Channel

Press **MODIFY** to select **CHANNEL** to display the following menu. These functions are only active when a logical channel is delegated.



CHANNEL DEPTH MODE — Selects the type of depth information output for the delegated channel.

Selecting **FIXED** allows the depth to be determined by the setting of the **CHANNEL DEPTH** soft knob. The same depth value is applied to the entire surface of the picture, even when it has been rotated in 3-D space.

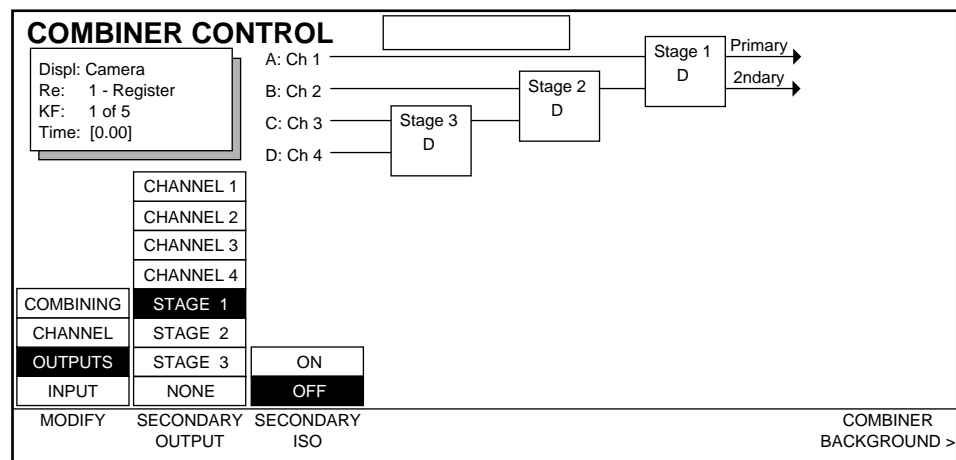
Selecting **VARIABLE**, allows depth to be determined by the 3-D space location of the delegated channel. Different depth values will be assigned to different portions of the picture when it is rotated in 3-D space.

The **CHANNEL OPACITY** soft knob adjusts the picture opacity of the delegated channel.

The final opacity of a channel is determined by multiplying the values for Picture opacity, Crop opacity, Corner Pinning View Through opacity, and Combiner Channel opacity. See *Final Picture Opacity* on [page 7-10](#) for more information.

Outputs

Press **MODIFY** to select **OUTPUTS** to display the following menu. From this menu you control what is delivered to the primary and secondary combiner outputs, and these signal paths are graphically displayed on the menu screen. Any one of the four input channels or any one of the three stages can be assigned to the secondary output. These controls are active only when the Camera channel is delegated

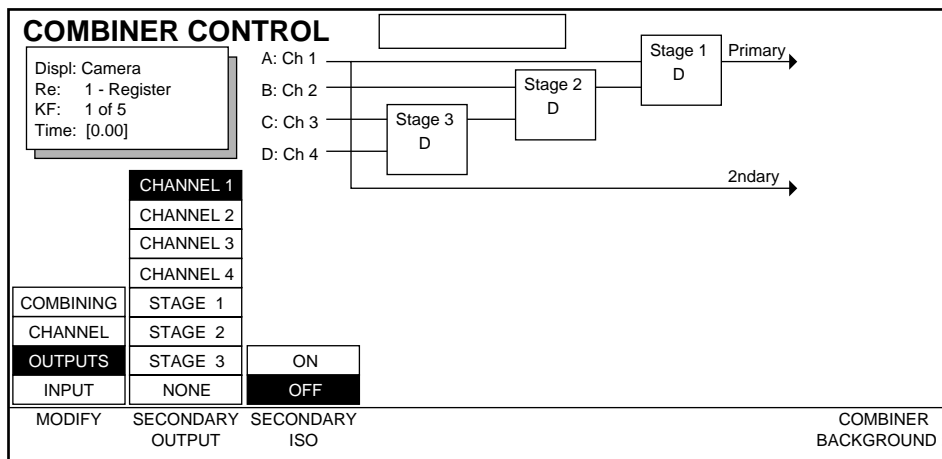


SECONDARY OUTPUT — Selects what signal is delivered to the secondary output.

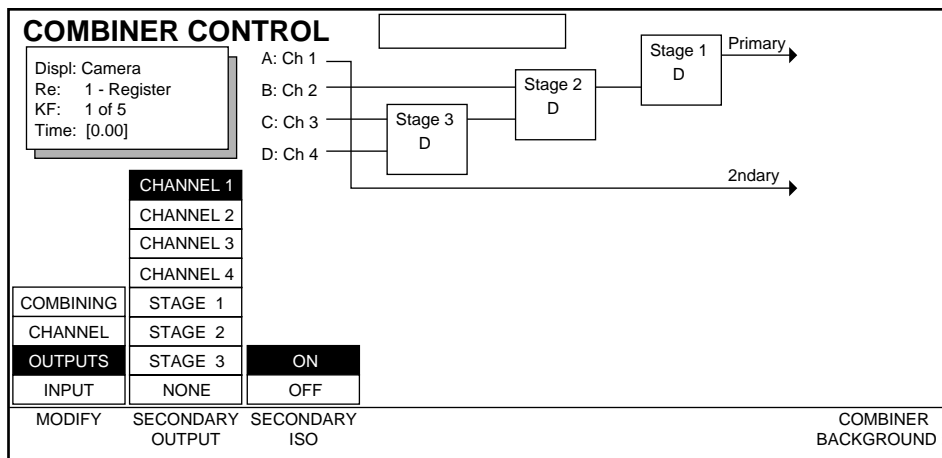
SECONDARY ISO — Removes the channel or stage selected for Secondary Output from the primary output (it is isolated to the secondary output).

COMBINER BACKGROUND > — Provides access to the Combiner Background menu.

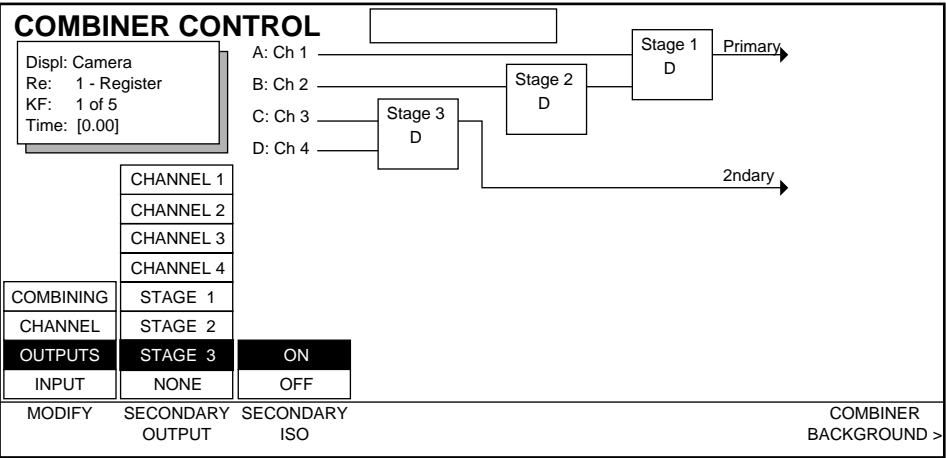
The figure below shows a menu where only Channel 1 has been selected for display on the secondary output. The primary output is not affected.



The figure below shows a menu where Channel 1 has been selected to display on the secondary output and has been isolated. The primary output no longer includes Channel 1.

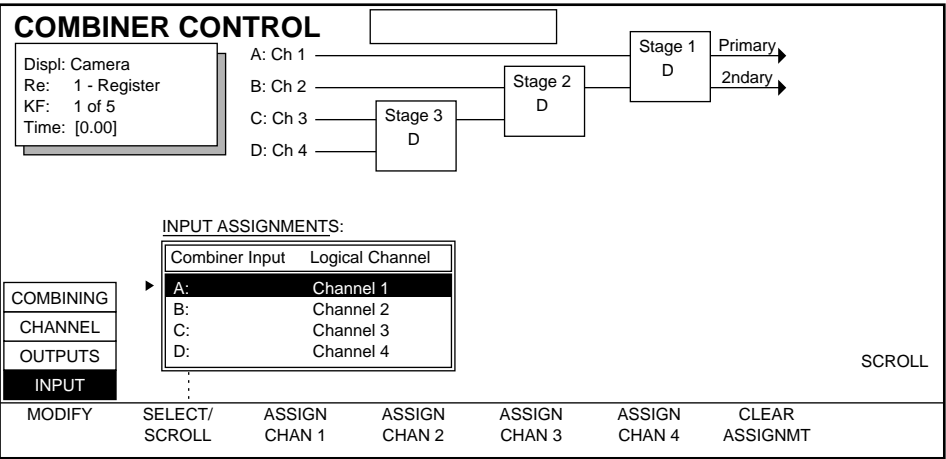


The Secondary ISO feature makes it possible to create two separate combined outputs simultaneously. The figure below shows Stage 3 isolated to the secondary output, making combined channels 1 and 2 appear on the primary output, and combined channels 3 and 4 appear on the secondary output.



Input

Press **MODIFY** to select **INPUT** to display the following menu. The Camera channel must be delegated to change input controls.



From this menu you control the combiner input assignments. You map logical channels (1, 2, 3, 4) to combiner inputs A, B, C, and D in any order desired. Note that the A, B, C, D letters do *not* indicate physical Krystal Video Processor channels. The actual channel being assigned will be whatever channel has been acquired for control by that Krystal logical channel.

Use the **SELECT/SCROLL** soft button or the scroll knob to select the desired combiner input. Then press the appropriate **ASSIGN** soft button to assign that channel. Press **CLEAR ASSIGNMENT** to remove a logical channel's assignment a combiner input. You can assign the same channel to multiple inputs if you wish.

2 x 2 Combiner Menu

Press the **Input/Output** top menu button then the **COMBINER >** soft button to access the Combiner menus. When configured with a 2 x 2 Channel Combiner, pressing **COMBINER MODE** to select **COMBINER**, and pressing **MIX MODE** to select **NORMAL**, displays the following menu.

COMBINER			MIX LEVEL 0.0000
Displayed: Camera, Krystal Register: 1 - Register 1 Keyframe: 1 of 5 Cur.Time: [0:00]			
	NORMAL		
COMBINER	VARIABLE		
CHANNEL	DEPTH		
COMBINER MODE	MIX MODE	COMBINER BACKGRND >	

Soft Knobs used with this menu include:

MIX LEVEL — determines if only Channel A (0 Mix Level), or only Channel B (100 mix level), or a mix of the two channels (intermediate levels) will be output where the A and B key signals overlap. Channel A is the physical channel currently assigned to logical channel 1, and Channel B is the physical channel assigned to logical channel 2.

COMBINER BACKGROUND > — provides access to the Combiner Background menu.

Press **MIX MODE** to select **VARIABLE** to display a menu similar to the following.

This menu lets you control how the video inputs are combined. Two scrollable windows are available. You can select different layering options in each window and mix between the two, if you wish. The following selections can be made:

A over B — shows both A and B video signals. A always has priority over B (i.e. A is in front of B).

B over A — shows both A and B video signals. B always has priority over A.

A only — shows A video only. B video is suppressed.

B only — shows B video only. A video is suppressed.

A in B — shows the A video that is inside the area where the A and B key signals overlap.

B in A — shows the B video that is inside the area where the A and B key signals overlap.

A out B — shows the A video that is outside the area where the A and B key signals overlap.

B out A — shows the B video that is outside the area where the A and B key signals overlap.

A atop B — shows A video inside B's key signal and on top of the B video.

B atop A — shows B video inside A's key signal and on top of the A video.

A xor B — shows A and B video, except where the A and B key signals overlap nothing is shown.

A plus B — shows A video where there is only A video, shows B video where there is only B video, does an additive mix where the two video signals intersect. (NOTE: This setting may generate video outside legal broadcast range.)

Clear — turns off both the A and B video, showing nothing.

Soft Knobs used with this menu include:

MIX LEVEL — determines if only the selection in the **FROM VAR** column (0 Mix Level), or only the **TO VAR** column (100 mix level), or a mix of the two selections (intermediate levels) will be output where the A and B key signals overlap.

COMBINER BACKGROUND > — provides access to the Combiner Background menu.

When **DEPTH** is selected in the **MIX MODE** the depth of the key signal is used to determine the intersection of the video signals.

COMBINER		DEPTH SOFTNESS 0.0000
<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;"> Displayed: Camera, Krystal Register: 1 - Register 1 Keyframe: 1 of 5 Cur.Time: [0:00] </div>		
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">COMBINER</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">CHANNEL</div> </div>	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">NORMAL</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">VARIABLE</div> <div style="border: 1px solid black; padding: 2px;">DEPTH</div> </div>	
COMBINER MODE	MIX MODE	COMBINER BACKGRND >

Soft Knobs used with this menu include:

DEPTH SOFTNESS — determines the sharpness of the intersection of the video signals.

COMBINER BACKGROUND > — provides access to the Combiner Background menu.

When **CHANNEL** is selected with the **COMBINER MODE** soft button, and a Channel has been delegated, the following controls become available:

COMBINER			
Displayed: Chan 1, Krystal Register: 1 - Register 1 Keyframe: 1 of 5 Cur.Time: [0:00]			
		CHANNEL DEPTH 0.0000	
COMBINER	ON	FIXED	CHANNEL OPACITY 100.0000
CHANNEL	OFF	VARIABLE	
COMBINER MODE	CHANNEL ISO MODE	CHANNEL DEPTH MODE	COMBINER BACKGRND >

CHANNEL ISO MODE — puts Video A input on the video A output connector. Selecting **OFF** puts the combined (video 1 and video 2) video on the video A output connector.

CHANNEL DEPTH MODE — Selecting **VARIABLE** causes the depth to be determined by the 3D position of the video signal. Selecting **FIXED** allows the depth to be determined by the setting of the **CHANNEL DEPTH** soft knob.

Soft Knobs used with the menu include:

CHANNEL DEPTH — sets the fixed depth of the channel.

CHANNEL OPACITY — sets the opacity of the channel.

The final opacity of a channel is determined by multiplying the values for Picture opacity, Crop opacity, Corner Pinning View Through opacity, and Combiner Channel opacity. See *Final Picture Opacity* on page 7-10 for more information.

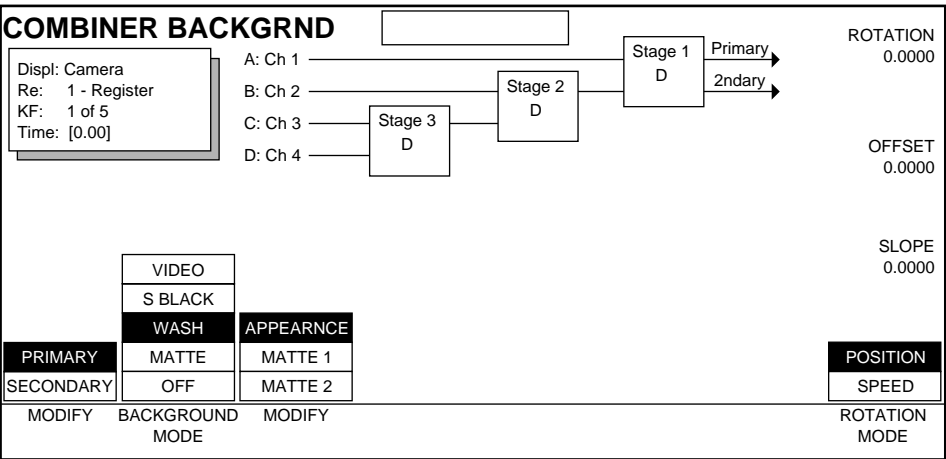
COMBINER BACKGROUND > — provides access to the Combiner Background menu.

Combiner Background Menu

4 Channel Combiner Background

The Four Channel Combiner background is separate from the individual channel backgrounds. However, only one background will be visible at a time on an individual output. If a channel is using a background, it will be passed on to subsequent combiner stages. Because that channel’s back-ground fills the entire raster, if a combiner background is also selected it will be hidden until the channel’s background is turned off. Also, the portions of any other channels that are “behind” a channel using a background will also be hidden.

Press **Input/Output \ BACKGROUND > \ COMBINER BACKGROUND >** to access the Combiner Background menu shown below. (This menu is also accessible from the Combiner Control menu when **OUTPUTS** is selected.) From this menu you can adjust the background for the primary and secondary combiner outputs. These controls are only available when the Camera channel is delegated and is the display channel (first channel delegated).



Press **MODIFY** to select the Primary or Secondary output, then press **BACKGROUND MODE** to select the desired background.

The combiner backgrounds of the primary and secondary outputs can be any of the following:

VIDEO — uses the externally input background video as the background. Each Combiner Output module has a background input video connector, which is used exclusively by the user of that output module. This same video input is delivered to both the primary and secondary outputs if video background is selected for these outputs.

S. BLACK — provides a superblack for background (0 black).

WASH — provides a wash between two mattes. The following controls are available when **WASH** is selected:

APPEARANCE allows you to set the rotation (angle), rotate speed, offset, and slope of the wash matte. **OFFSET** controls the placement of the wash transition on the screen. **SLOPE** controls the sharpness of the wash transition. The **ROTATION MODE** soft button determines whether the soft knob controls angle or speed.

MATTE 1 and **MATTE 2** selections allow you to control the Saturation, Brightness, Hue, and Hue Rotate Speed of each wash matte. The **HUE ROTATE** soft button determines whether the soft knob controls angle or rotate speed.

MATTE — allows you to set the Saturation, Brightness, Hue, and Hue Rotate of a single color matte.

OFF — turns off the background so the background is black.

2 x 2 Combiner Background

The 2 x 2 Combiner Background menu is used to set the background for the combiner output video. These controls are only available when the Camera channel is delegated and is the display channel (first channel delegated).

COMBINER BACKGROUND		<input type="text"/>		ROTATION 0.0000
<div> Displayed: Register: Keyframe: Cur.Time: </div>				
VIDEO				
S BLACK				
WASH	APPEARANCE			
MATTE	MATTE 1			
OFF	MATTE 2			
COMBINER MODE		MODIFY		POSITION SPEED
				ROTATION MODE

The combiner background can be any of the following:

VIDEO — uses the externally input background video as the background.

S. BLACK — provides a superblack for background (0 black).

WASH — provides a wash between two mattes. The following controls are available when **WASH** is selected:

APPEARANCE allows you to set the rotation (angle) or rotate speed of the matte. The **ROTATION MODE** soft button determines whether the soft knob controls angle or speed.

MATTE 1 and **MATTE 2** selections allow you to control the Saturation, Brightness, Hue, and Hue Rotate Speed of each wash matte. The **HUE ROTATE** soft button determines whether the soft knob controls angle or rotate speed.

MATTE — allows you to set the Saturation, Brightness, Hue, and Hue Rotate of a single color matte. The **HUE ROTATE** soft button determines whether the soft knob controls hue or speed.

OFF — turns off the background so the background is black.

Combiner Path Menus

All the standard path controls are available for 2 x 2 and Four Channel Combiner functions. Different Path menus are available, depending on whether the Camera channel or a Logical channel are delegated. Text appears indicating which channel's parameters are displayed.

See *Section 6-Run Control Menu* for more information about path control functions.

4 Channel Combiner Path

Camera Channel Delegated

COMBINER PATH				TENSION 0.0000
Displayed: Camera, Krystal Register: 1 - Register 1 Keyframe: 1 of 5 Cur.Time: [0:00]				
			Combining path parameters displayed. Stage 1 values displayed.	CONTINUITY 0.0000
				BIAS 0.0000
ALL		CURVE		
STAGE 1		SMOOTH		
STAGE 2	ON	LINEAR		
STAGE 3	OFF	S LINEAR		
MODIFY	HOLD	PATH TYPE		

Logical Channel Delegated

COMBINER PATH

Displayed: Chan 1, Krystal
Register: 1 - Register 1
Keyframe: 1 of 5
Cur.Time: [0:00]

TENSION
0.0000

CONTINUITY
0.0000

BIAS
0.0000

Logical Channel path parameters displayed.

ON

OFF

HOLD

CURVE

SMOOTH

LINEAR

S LINEAR

PATH
TYPE

2 x 2 Combiner Path

Camera Channel Delegated

COMBINER PATH

Displayed: Camera, Krystal
Register: 1 - Register 1
Keyframe: 1 of 5
Cur.Time: [0:00]

TENSION
0.0000

CONTINUITY
0.0000

BIAS
0.0000

Combining path parameters displayed.

ON

OFF

HOLD

CURVE

SMOOTH

LINEAR

S-LINEAR

PATH
TYPE

Combiner Background Path Menus

Path controls for combiner backgrounds are available. The Camera channel must be delegated to use these menus. See *Section 6-Run Control Menu* for more information about path control functions.

4 Channel Combiner Background Path

COMB BACKGRND PATH

Displayed: Chan 1, Krystal
Register: 1 - Register 1
Keyframe: 1 of 5
Cur.Time: [0:00]

Primary values displayed.

BOTH						CW	
PRIMARY		ON		LINEAR		CCW	
SECONDARY		OFF		S-LINEAR		SHORT	
MODIFY		HOLD WASH		WASH PATH		LONG	
				HOLD MATTE		MATTE PATH	
						HUE DIRECTION	

2 x 2 Combiner Background Path

COMB BACKGRND PATH

Displayed: Chan 1, Krystal
Register: 1 - Register 1
Keyframe: 1 of 5
Cur.Time: [0:00]

						CW	
		ON		LINEAR		CCW	
		OFF		S-LINEAR		SHORT	
		HOLD WASH		WASH PATH		LONG	
				HOLD MATTE		MATTE PATH	
						HUE DIRECTION	

User Assist Menus

Introduction

Some of the User Assist buttons, located below the Krystal Control Panel's top menu buttons, also have associated menu displays. These User Assist buttons include:

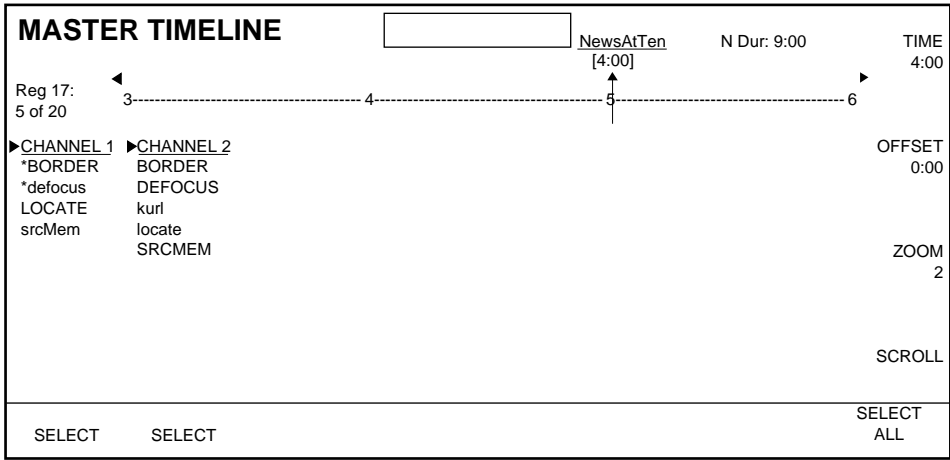
- Timeline
- Path (functions described in Section 6 - Run Control)
- Graphic Display

Timeline

Successive presses of the **Timeline** button cycles the Menu Display through the screens selected by the Control Panel's Display Options (User Tools menu). These screens include:

- Master Timeline —The Master Timeline shows the Master Timeline along with information about each delegated channel's work buffer.
- Ind. Timelines —The Independent Timelines screen shows the Master Timeline along with timelines for each function active in each delegated channel.
- Transform —The Transform screen shows the Master Timeline along with transform information for the channels at the current time in the effect.
- Clipboard —The Clipboard screen shows the contents of the Krystal system's clipboard and the Master Timeline of the current effect.

Master Timeline



The Master Timeline display gives information about each delegated channel’s work buffer at the current time in the effect.

Effect Name

The name of the current effect is displayed on the top line of the Master Timeline screen. Effect names are limited to 15 characters. If no name has been given to the effect, then the register number will be shown (ex. “Register17”).

Effect Duration

The duration of the current effect is displayed in the upper right above the Master Timeline next to the Effect Name (example: NDur: 10:00). Effect duration is based on the displayed channels’ timeline. An “N” indicates normal duration, and an “F” indicates forced duration.

Master Timeline

The top portion of the Master Timeline screen is devoted to displaying the Master Timeline. The Master Timeline graphically shows the positions of keyframes which are derived from delegated/enabled channel keyframes. The Master Timeline only reflects information from currently enabled channels. If a channel is disabled, its keyframes no longer contribute to the current effect, so the keyframes on the Master Timeline are updated.

Register Number

The register number of the current effect appears beside the Master Timeline. This number may be between 0 and 99 on the Krystal system.

Current Keyframe

The current keyframe number appears beneath the register number. The current keyframe number is determined by the position of the Time or Mark Cursor. In the example, the Time Cursor is on Keyframe 5 in the Master Timeline, so the current keyframe number is listed as 5. Since there are 20 keyframes on this timeline, the current keyframe is displayed as the fifth keyframe of 20 keyframes. The current keyframe number will be five when the Time Cursor is anywhere between the fifth and sixth keyframe. If the Time Cursor is between keyframes then a “+” character is shown after the keyframe number (ex. 5+ of 20).

Time Cursor

The Time Cursor graphically depicts the current time in the effect. When the effect is run, or the time is changed using the Time and Offset Soft Knobs, Keypad or Lever Arm, the position of the Time Cursor is moved accordingly.

Current Time

The numerical value for the current time in the effect is shown above the Time Cursor (e.g., [4:00]), and next to the **TIME** soft knob.

Time Soft Knob

This soft knob changes the current time. As you turn the knob, the cursor on the Master Timeline will follow. You can also use the **TRANSFER** button for direct Keypad entry.

Offset Soft Knob

This knob offsets the timeline from the current position through the end of the timeline. This knob expands and compresses the previous KF duration if on a KF, or the current KF duration if between KFs. If on the first KF, this knob moves the entire timeline away from zero.

Zoom Soft Knob

As keyframes are added to the Master Timeline, the display becomes more crowded. By changing the zoom value, the timeline is drawn across several screen widths. All timeline screens use the same zoom value. Once the zoom is changed in one screen, all screens will display the Master Timeline with that zoom. Zoom values are 1 through 10 where 1 = 1 screen width and 10 = 10 screen widths.

Scroll Soft Knob

Use the soft knob to scroll through the channel’s function list.

Off-screen Right and Left Indicators

The off-screen indicators appear as left and right arrows when the Master Timeline has been zoomed and there are keyframes off-screen to the right and/or left of the display.

Delegated Channel Work Buffer

The rest of the Master Timeline screen is devoted to showing the Master Timeline of each delegated channel's work buffer (as shown in the menu below). As channels are delegated and undelegated, they appear and disappear from this screen. There is space for all seven channels (Channels 1-4, Globals 1-2, and the Camera) to be delegated at the same time. Channels always appear in order from the left, with Channel 1 appearing first, then Channels 2, 3, 4, Globals 1 and 2, and then Camera.

Change Indication

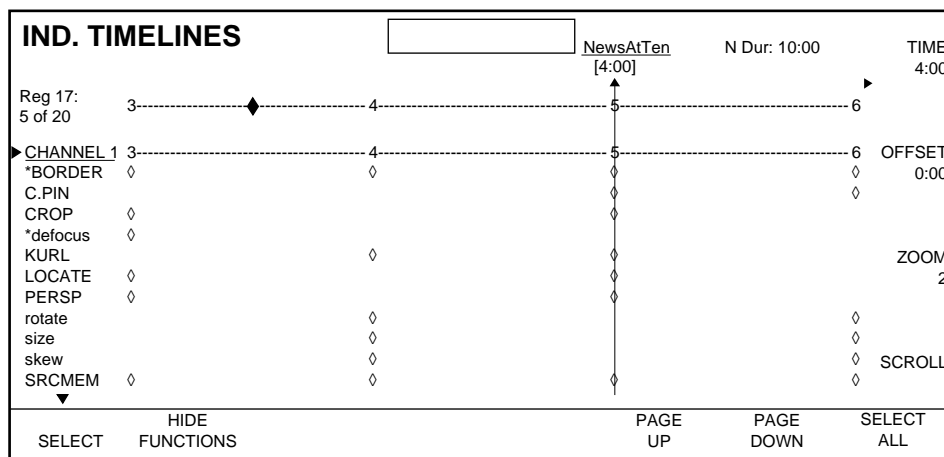
When the time is changed in the effect, values are calculated in each channel from information in keyframes and is written to the Channel work buffer. The Video Processing hardware then reads the work buffer and processes the video image accordingly.

When function values are adjusted from the control panel, the work buffer is modified. This results in a difference between the values in the work buffer and the information computed from the current effect position. The Master Timeline screen indicates this difference by displaying an asterisk (*) next to the function names whose values are different from the values at the current time in the effect.

Off-screen Indicators

When the length of the active function list is larger than the display area, off-screen indicators will appear in the display. A down arrow at the bottom of the screen indicates the list continues off the display. An up arrow beneath a channel name (not shown) indicates the list has been scrolled, and function names continue above the arrow. The scroll knob is used to bring these off-screen function names into view.

Independent Timelines



The Independent Timelines screen provides a different view of the effect. This screen displays the Master Timeline as well as a timeline for every active function in each delegated and enabled channel.

Like the Master Timeline screen, the Independent Timeline screen shows the Effect Name, Effect Duration, Master Timeline, Time Cursor, Current Time, Off-screen right and left indicators, Effect Register Number, and Current Keyframe number. As in the Master Timeline screen, Time, Offset, Zoom, Scrolling, and Selection Controls are provided. Independent Timelines are shown for both delegated and undelegated channels.

All active functions in a delegated channel are listed alphabetically below the channel name—alphabetically because this screen focuses on values set for a specific function.

Names for functions that are set at the current time (upper case) are differentiated from names of functions currently on interpolated values (lower case). The ◇'s are function keyframes as shown on your menu display.

The Independent Timeline screen shows function behavior over the length of the effect rather than a single point in time. Because more information is shown, fewer channels may be viewed at the same time. In fact, in the example, Channels 1, 2, and 3 are delegated, but only Channel 1 fits on the screen. Channel 1 may be undelegated which will bring Channels 2 and 3 into view, or the Scroll Knob or Page Up and Page Down buttons may be used. The first channel delegate button pressed becomes the display channel and appears at the top of the list. When scrolling, only channel and function names move; the Master Timeline stays in place.

Page Up and Page Down

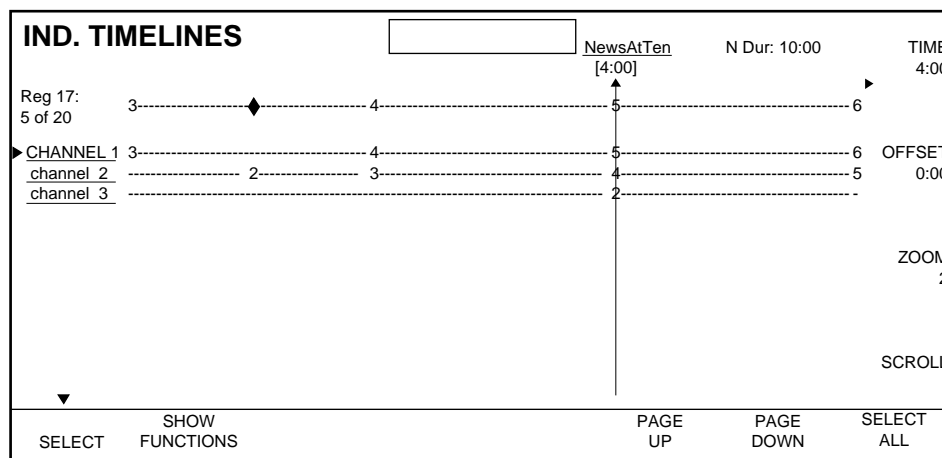
The **PAGE UP** menu button is used to quickly scroll up a screen's height of information (number of lines - 1). The **PAGE DOWN** menu button is used to move down a screen height.

Delegated vs. Non-Delegated Channel Timelines

Whether a channel is delegated or not will affect how that channel's keyframes are displayed on the master timeline. With a delegated channel, all function keyframes will be shown on the Master Timeline. With non-delegated channels, only a diamond will show up on the master timeline to indicate that there are active functions for the undelegated channels.

The **Prev.** and **Next** functions will look at both delegated and non-delegated channels' keyframes when determining where to place the cursor. However the **Insert After** and **Insert Before** functions will not consider non-delegated channels' keyframes.

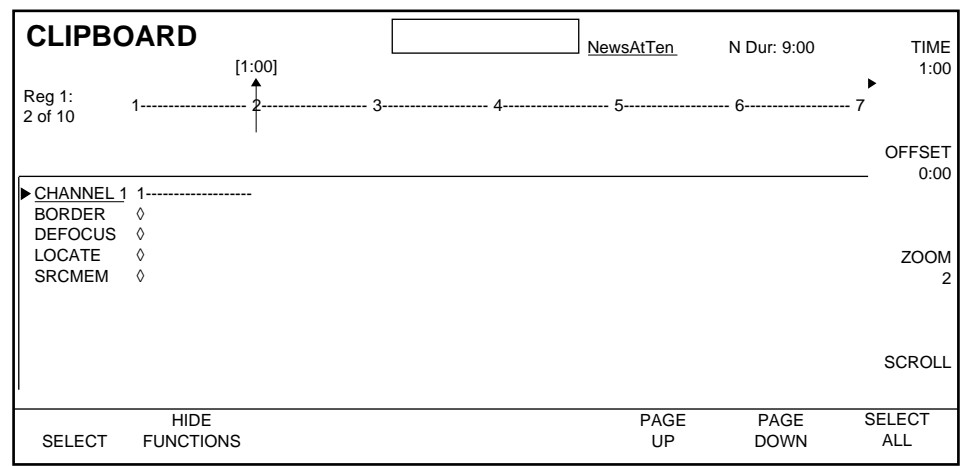
Hiding Function Timelines



The **HIDE FUNCTIONS** menu button allows you to suppress much of the detail of the Independent Timeline screen. Press the **HIDE FUNCTIONS** menu button to hide all function timelines in the display. When functions are hidden, the **SHOW FUNCTIONS** button is displayed which, when pressed, restores the screen to its previous state.

Note This screen does NOT show all active functions. If a channel is selected, then all functions active in that channel are selected as well.

Clipboard Display



The Clipboard Display screen shows the current contents of the clipboard. The names of channels and functions that have been copied into the clipboard are shown in the leftmost column. Timelines for each channel and channel function are shown next to the column of names. These timelines are drawn on the same scale as the Master Timeline.

The top of the Clipboard display includes the Master Timeline of the current effect. Generally this will be the effect from which the clipboard data below was cut or copied from, but not necessarily. Recalling a different effect register will display that new current effect master timeline on the Clipboard screen, but will not change the clipboard contents.

Graphic Display

The Graphics Display option allows the display of graphical information that can help in Krystal DPM effect editing and operation. The edges, or wireframe, of the manipulated video can be shown, and overlays can be generated to show the target space coordinate grid and safe title area. Additional information in the form of “icons” can display transform data (Source Axis, Center Locator) and Channel and Source ID information (Figure 12-1). The Graphics Display option outputs serial digital video. The graphics video is generally sent to a suitable display monitor dedicated for Krystal DPM use.

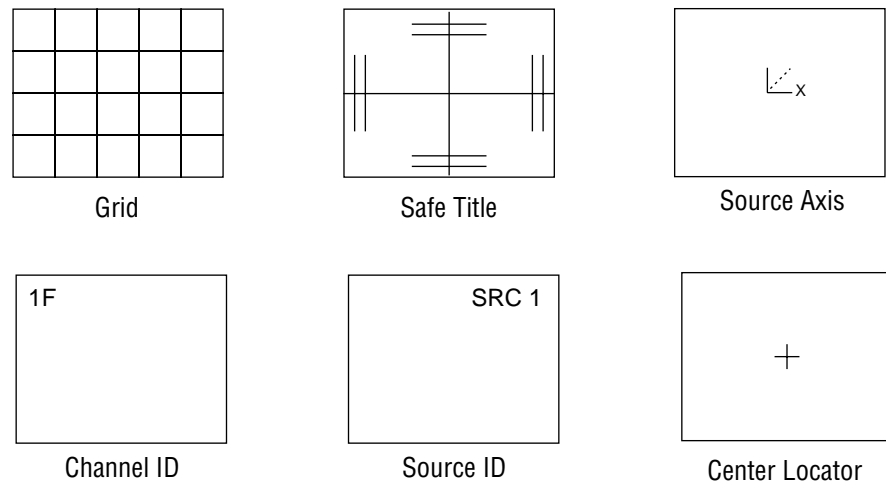


Figure 12-1. Graphic Display Overlays

Press the **Graphic Display** user assist button to display a menu similar to that shown below.

GRAPHIC DISPLAY							SIZE 100.0000
<div> <div>Displayed:</div> <div>Register:</div> <div>Keyframe:</div> <div>Cur.Time:</div> </div>							
<div> <div>BOTH</div> <div>GRID</div> </div>		<div> <div>ON</div> <div>OFF</div> </div>		<div> <div>ON</div> <div>OFF</div> </div>		<div> <div>ON</div> <div>OFF</div> </div>	
<div> <div>WIRE FRAME</div> <div>OFF</div> </div>	<div> <div>SAFE TITLE</div> <div>NONE</div> </div>	<div> <div>ON</div> <div>OFF</div> </div>	<div> <div>ON</div> <div>OFF</div> </div>	<div> <div>ON</div> <div>OFF</div> </div>	<div> <div>ON</div> <div>OFF</div> </div>	<div> <div>ON</div> <div>OFF</div> </div>	
GRAPHICS MODE	PAGE OVERLAYS	SOURCE AXIS	CHANNEL ID	SOURCE ID	CENTER LOCATOR	BACKGROUND VIDEO	

GRAPHICS MODE — when **WIREFRAME** is selected wireframes of the manipulated video edges of the delegated channels, and any selected graphic icons, are displayed. The Page Overlays and Background Video selections are *not* affected by this control.

PAGE OVERLAYS — displays the target space **GRID**, **SAFE TITLE**, or **BOTH** the Grid and Safe Title information.

SOURCE AXIS — displays an X-Y-Z icon for the source target space of each delegated channel. This icon is placed at the axis of rotation, which can be relocated with the Locate Axis transform button.

CHANNEL ID — displays the channel number of each channel selected, along with a Front or Back designator that shows which side of the current channel is facing the viewer.

SOURCE ID — displays a user input label for each delegated channel.

CENTER LOCATOR — displays the geographic center of each channel selected. This always stays at the center of the wireframe, and is not moved by the **Locate Axis** transform button.

LIGHTING SOURCE — This feature is not currently implemented.

BACKGROUND VIDEO — turns on and off the background video, leaving just the wireframes displayed. This button remains active when the **GRAPHICS PAGE** is Off.

Soft Button available for Graphics Display:

SIZE — changes the displayed size of the wireframe, icons and page overlays. This allows you to see wireframe placement even when channels have been moved off screen.

Menu Trees

Introduction

Many Krystal DPM features are accessed via software menus that can show both alphanumeric text and graphics. This section contains tree structure diagrams of these menus.

Control Panel Buttons

The menu system is divided into groups of related menus. Most groups of menus can be accessed by pressing one of the top menu buttons located on the left of the menu display. Each top menu button brings us a main menu, under which there may be sub-menus that contain additional operational parameters, and some menus provide direct access to related menus.

- You can directly access any menu by setting a DPOP for a top menu button. Make the desired menu active, hold down the **Exit** button, press the desired top menu button, and then release both buttons. Double pressing that top menu button will then display the selected menu.
- After selecting a different menu, can return to the last active menu by pressing the **Last Menu** User Assist Control Panel button.
- The Axis Lock menu can be directly accessed by double pressing the **Locate Axis** transform button. The Output Control menu can be directly accessed by double pressing the **Auto Run** button.

Soft Buttons

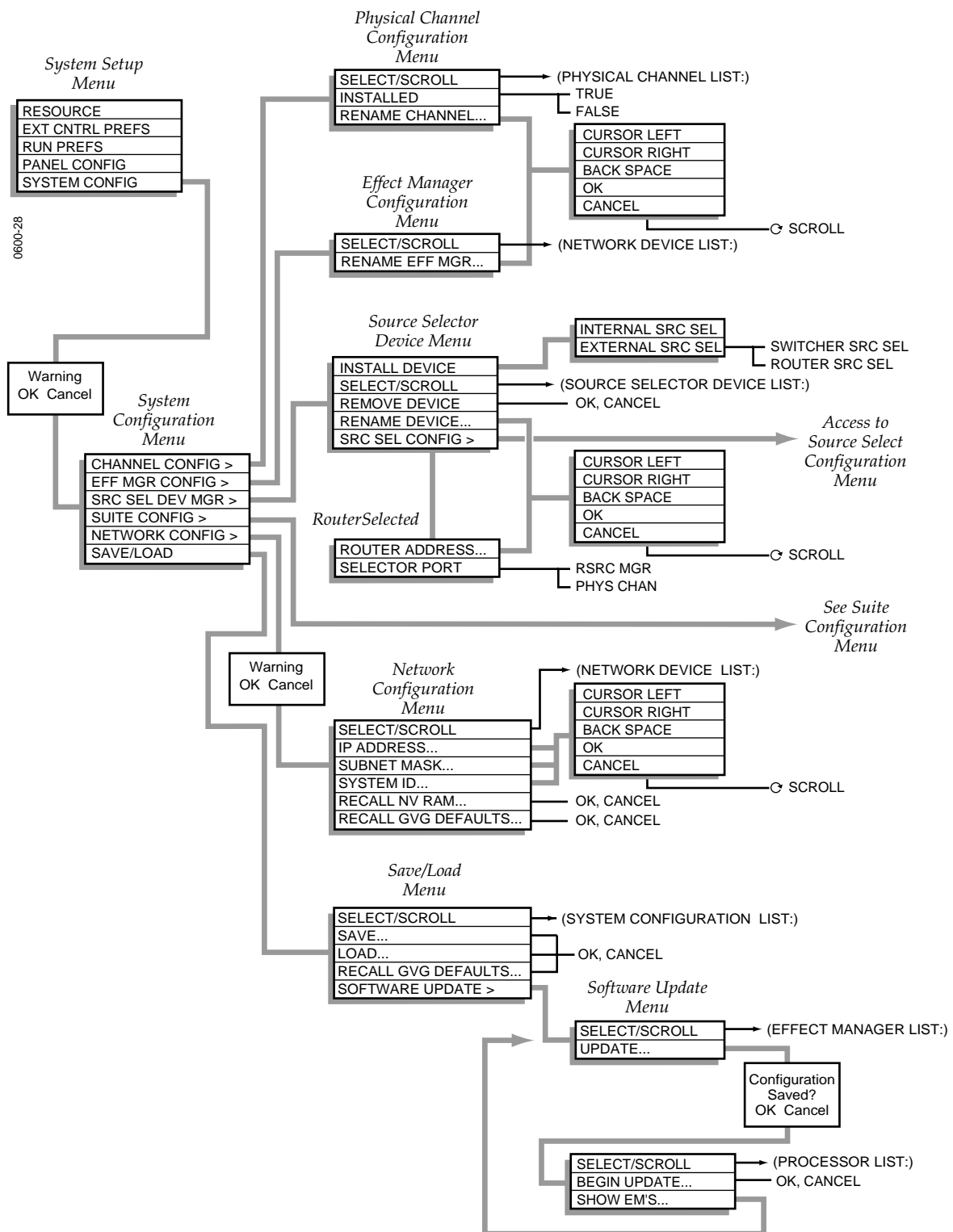
The eight soft buttons located below the menu display allow you to make function and sub-menu selections from menus displayed on the screen. The symbol ">" following the name of a soft menu button indicates pressing that soft button brings up a lower level menu.

The **Exit** button allows you to leave the menu you are in and return to the next higher menu on the tree.

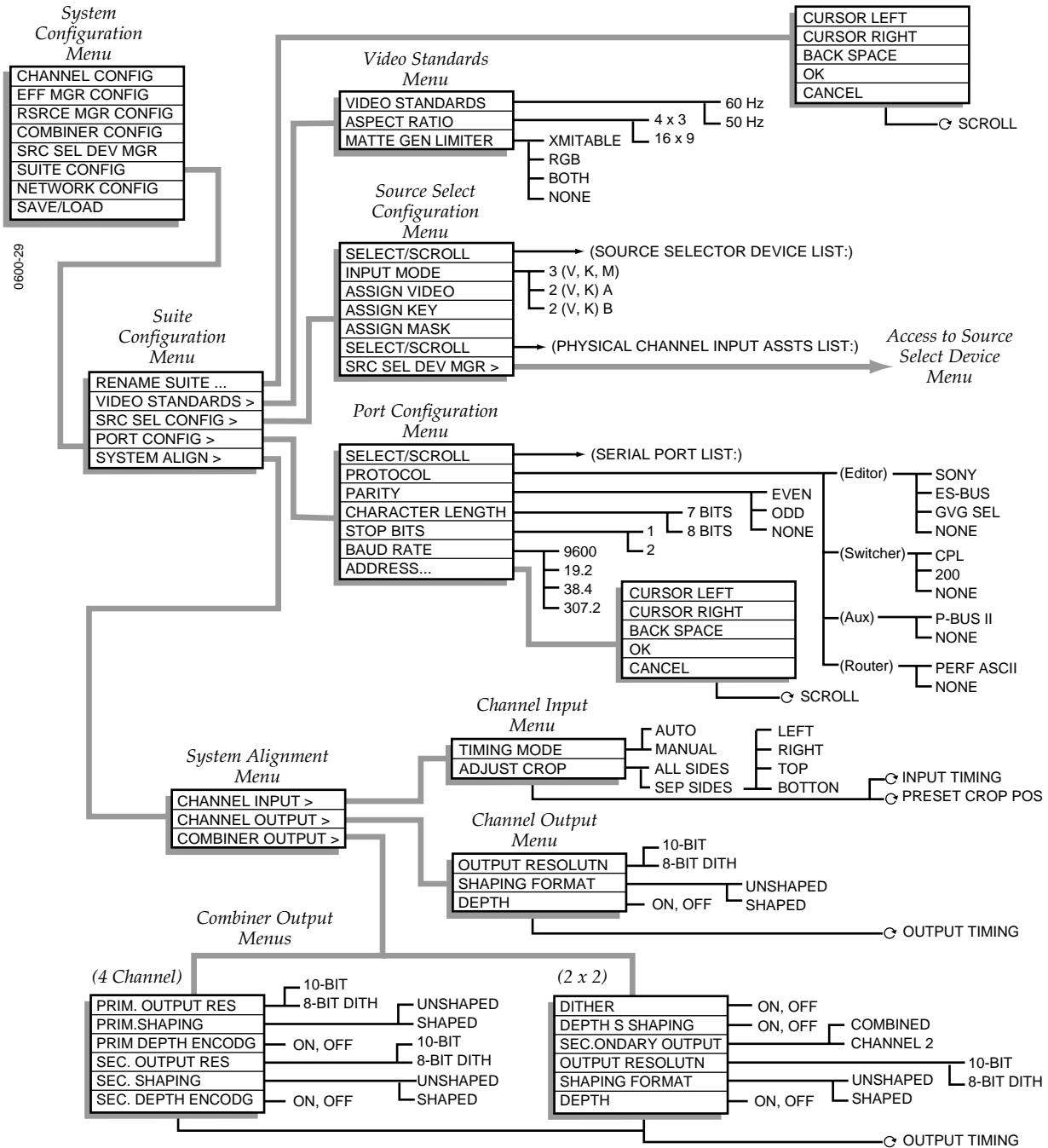
System Setup



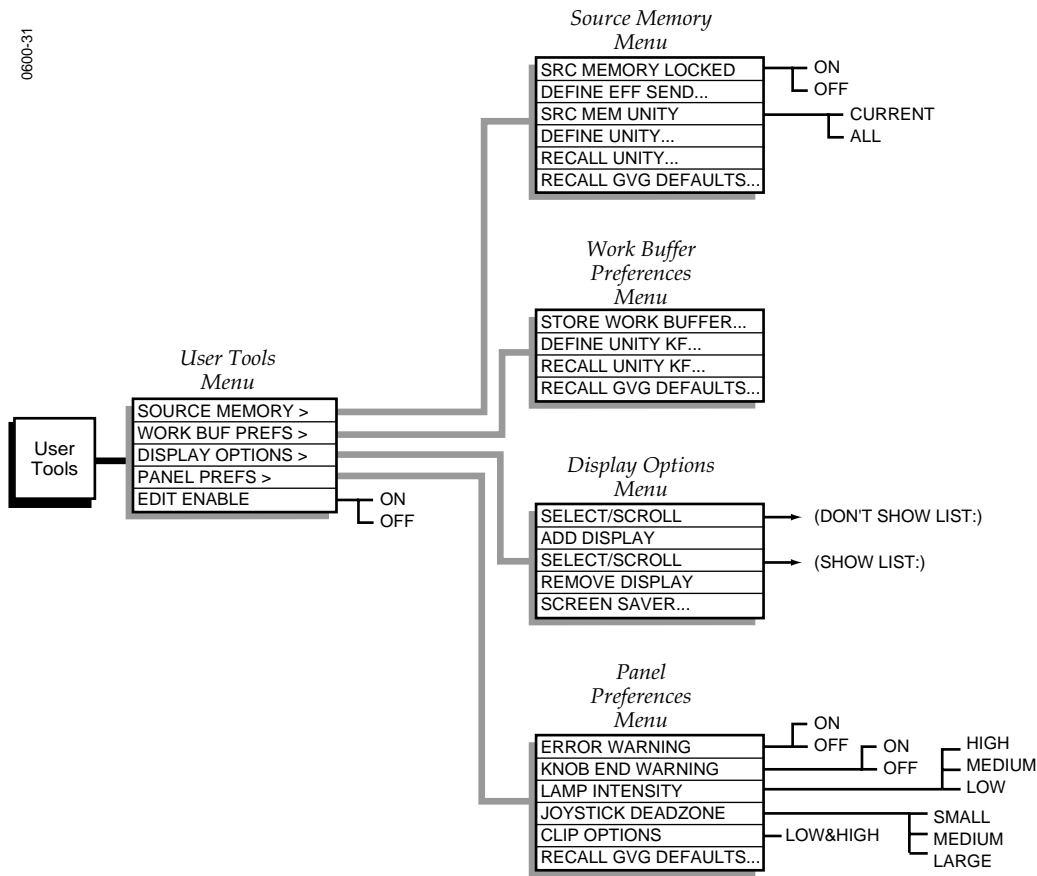
System Configuration Menu



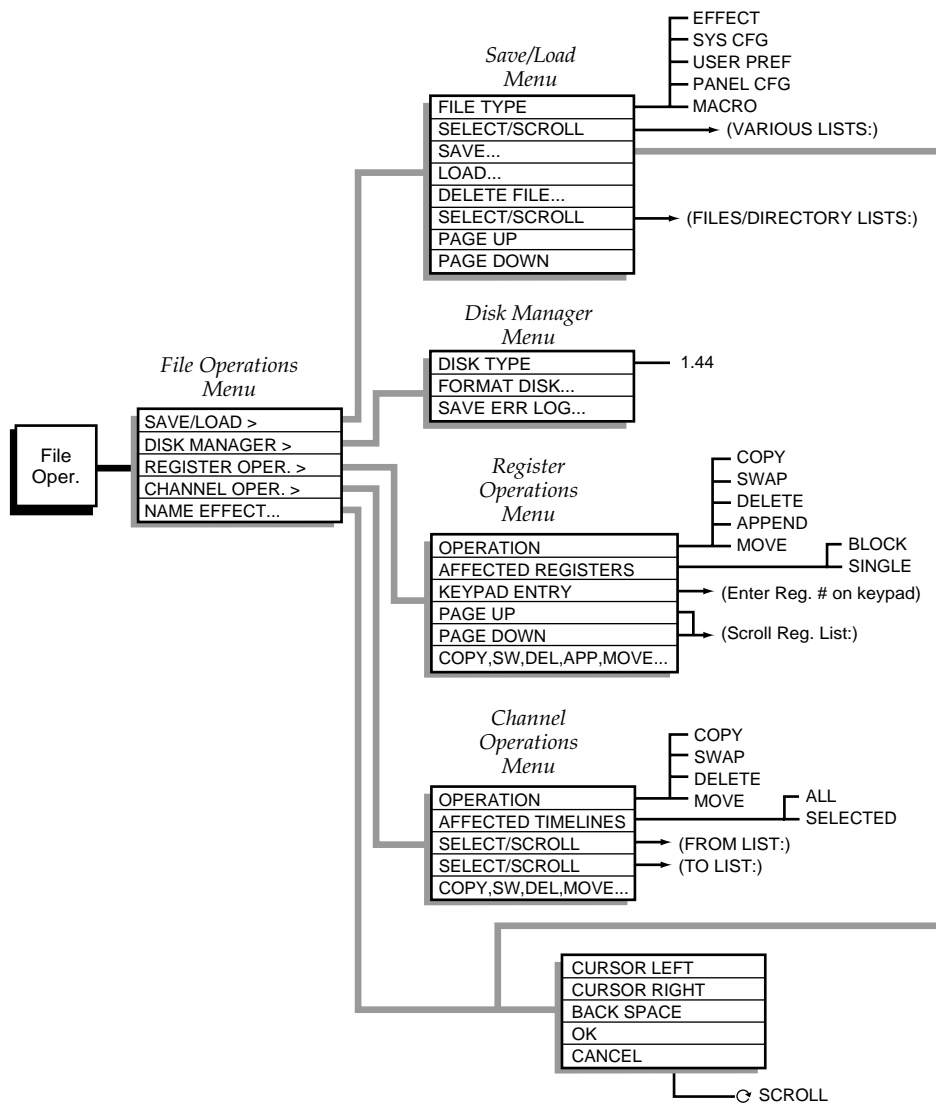
Suite Configuration Menu



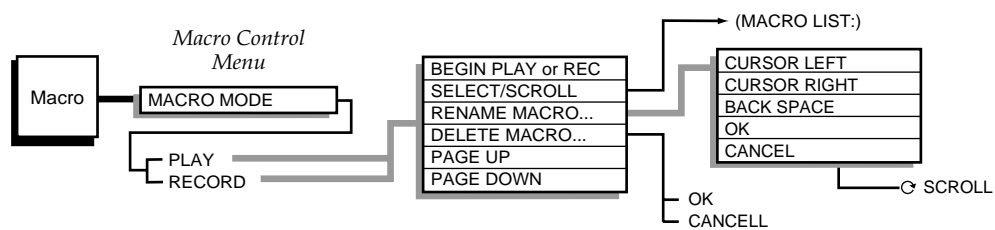
User Tools



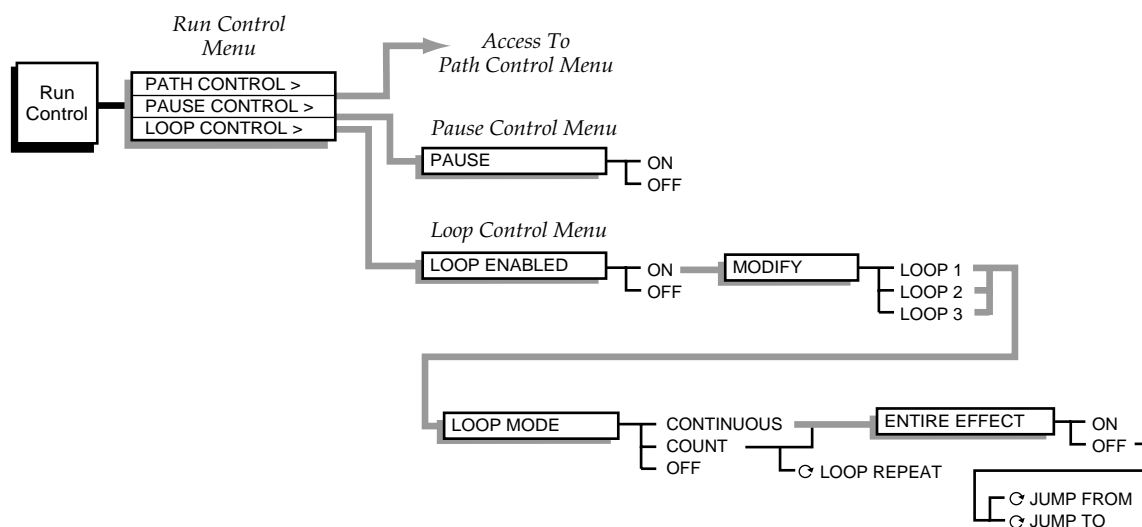
File Operations



Macro

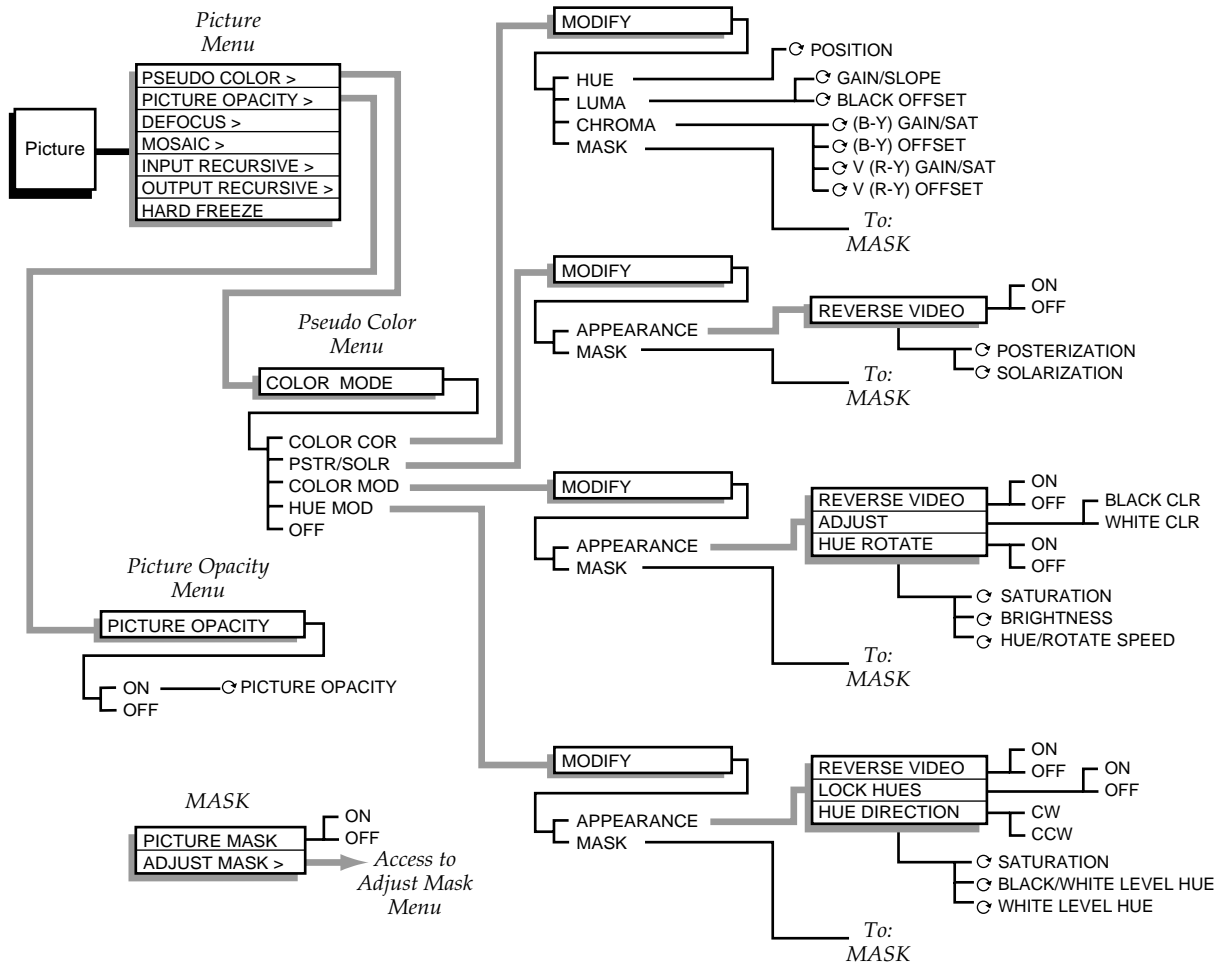


Run Control

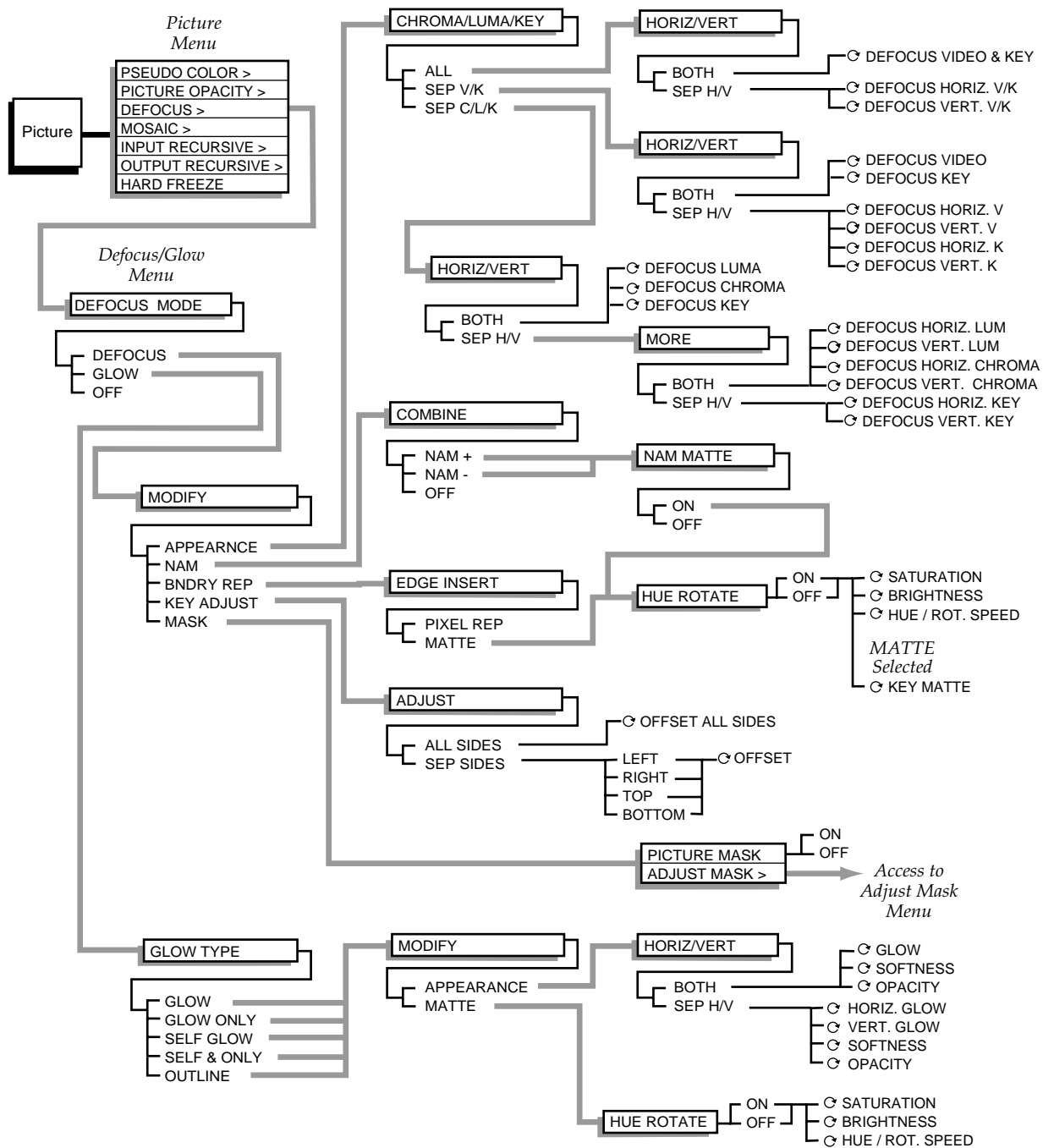


Picture

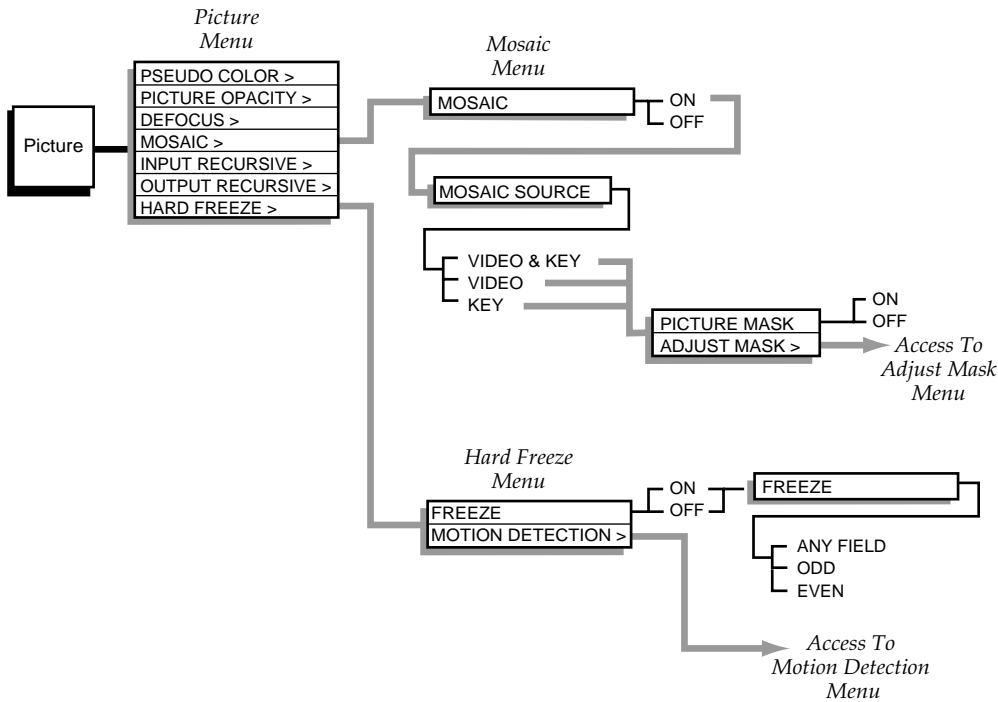
Pseudo Color, Picture Opacity Menus



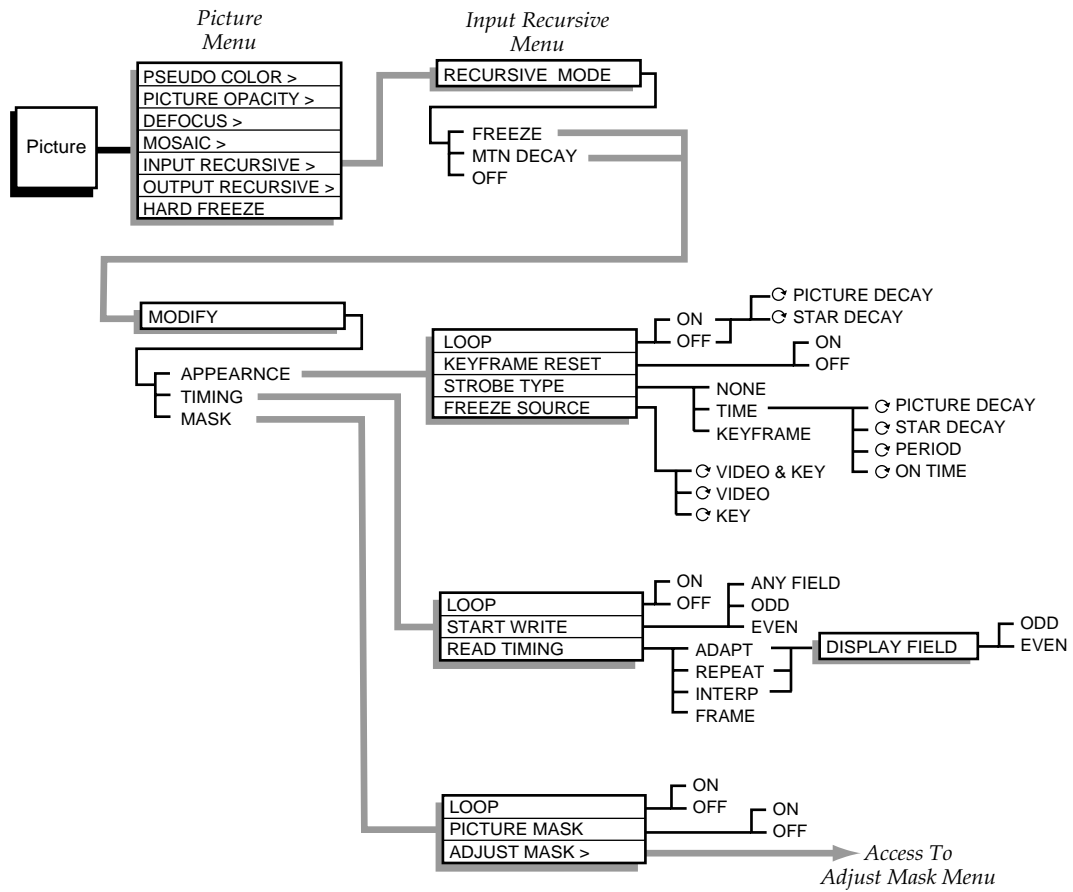
Defocus/Glow Menu



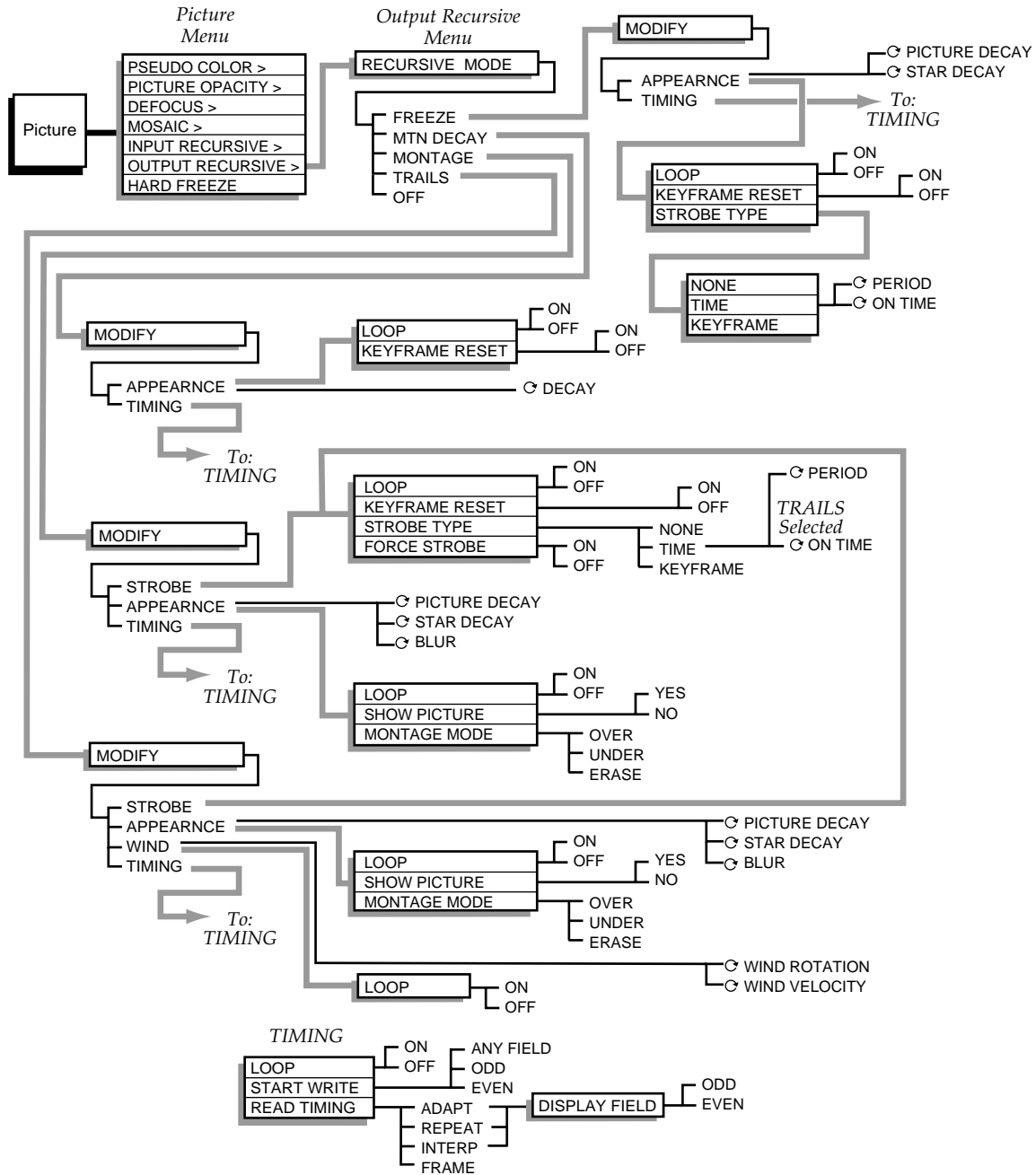
Mosaic, Hard Freeze Menus



Input Recursive Menu

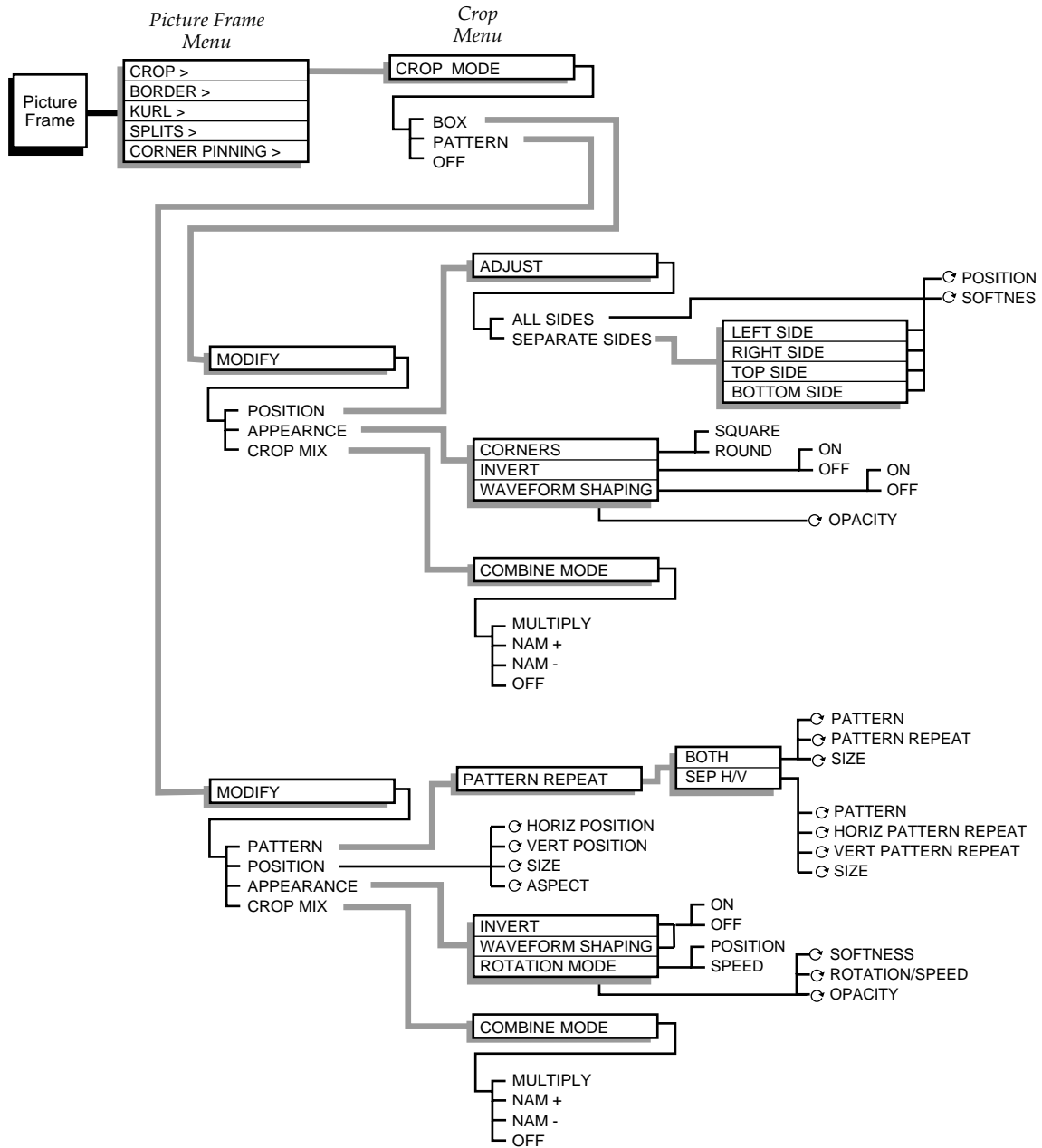


Output Recursive Menu



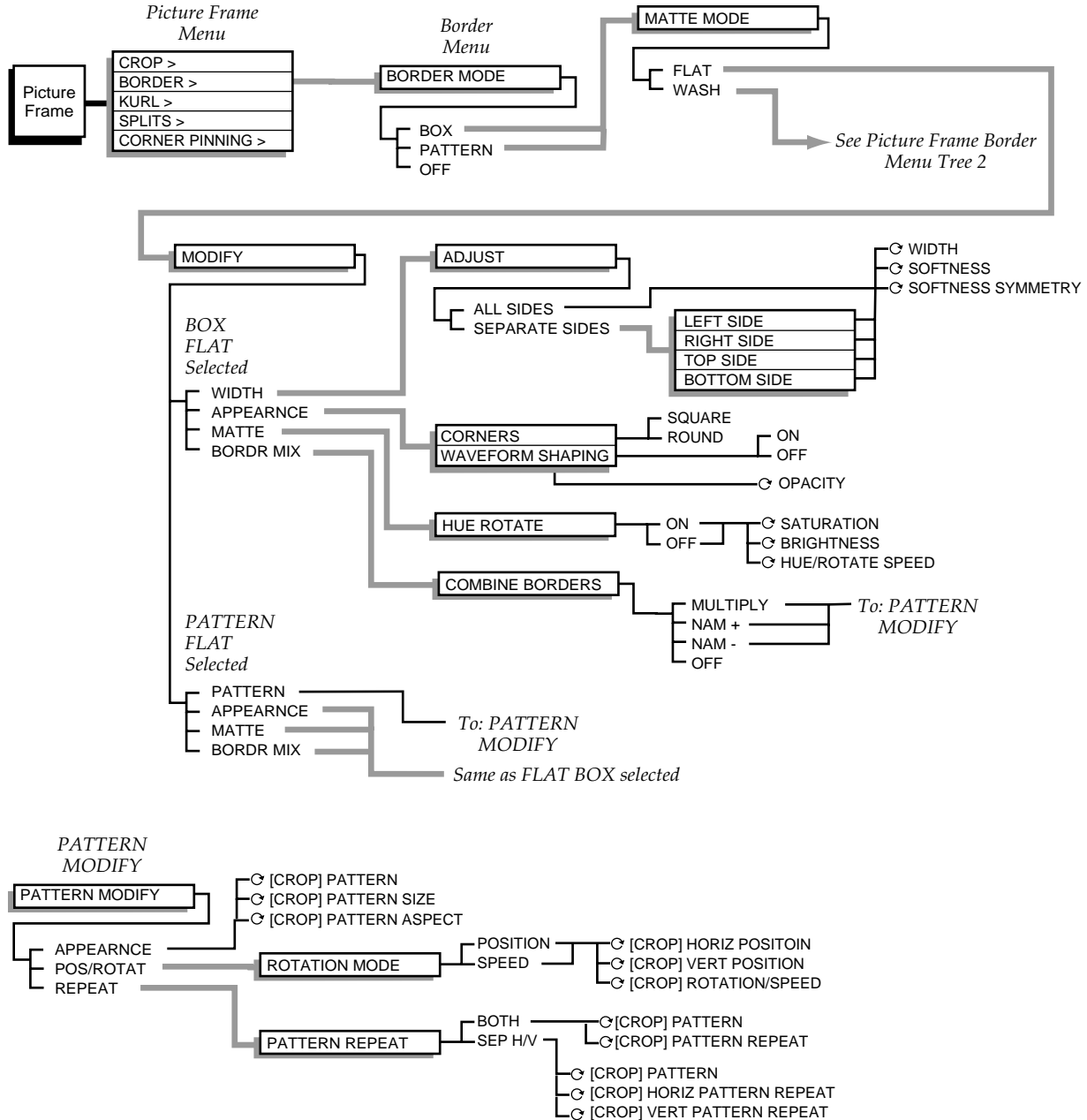
Picture Frame

Crop Menu



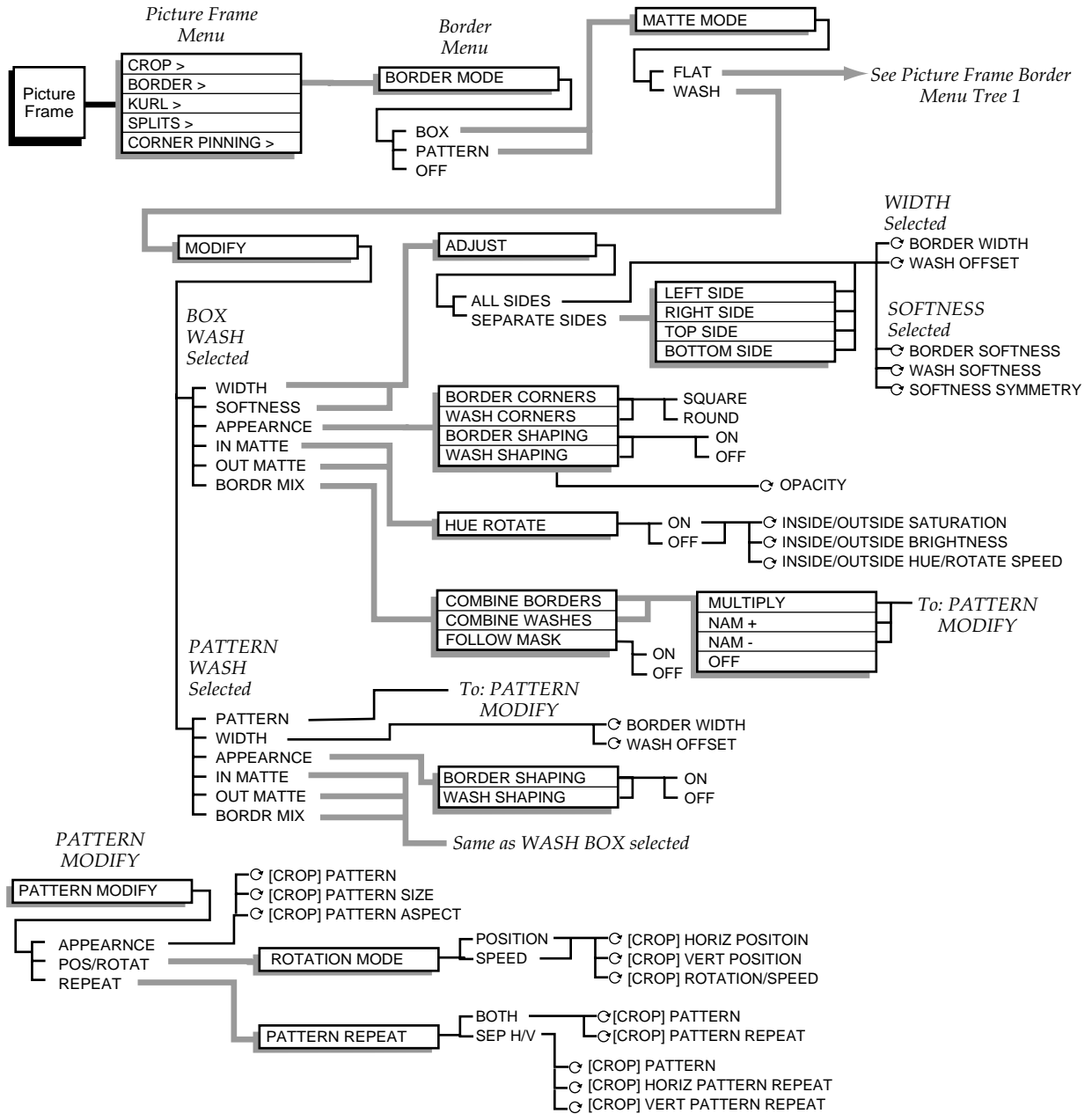
Border Menus, Flat Matte

Picture Frame Border Menu Tree 1

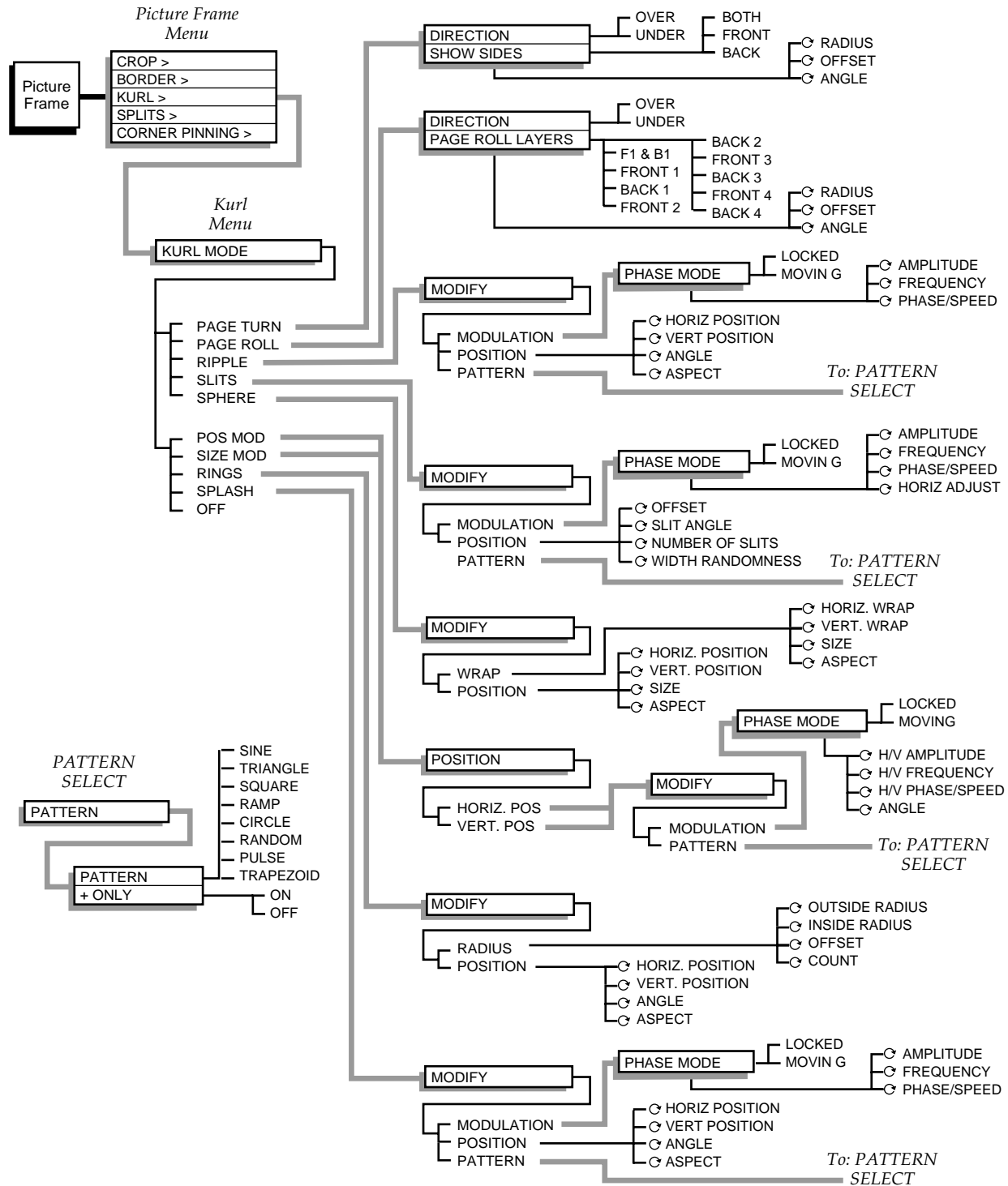


Border Menus, Wash Matte

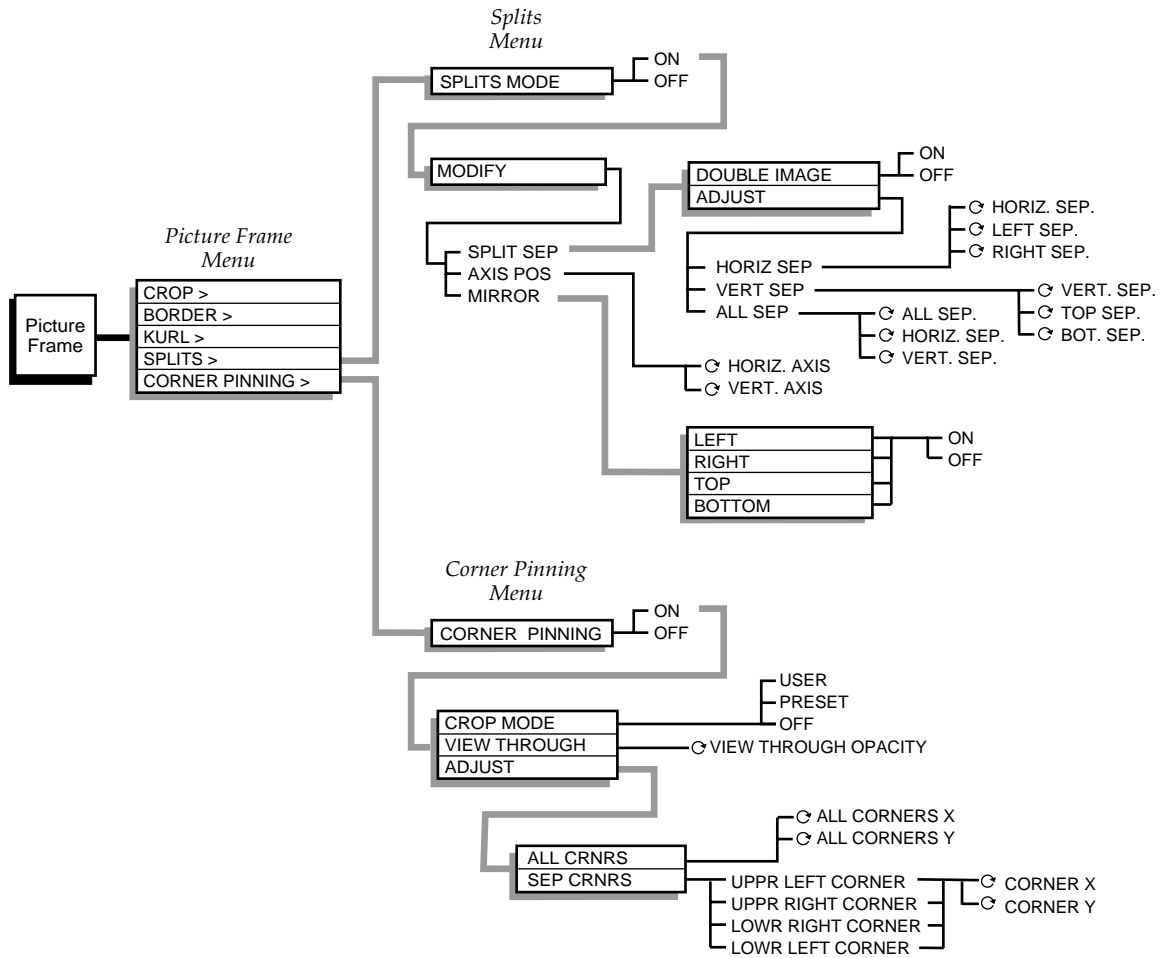
Picture Frame Border Menu Tree 2



Kurl Menu

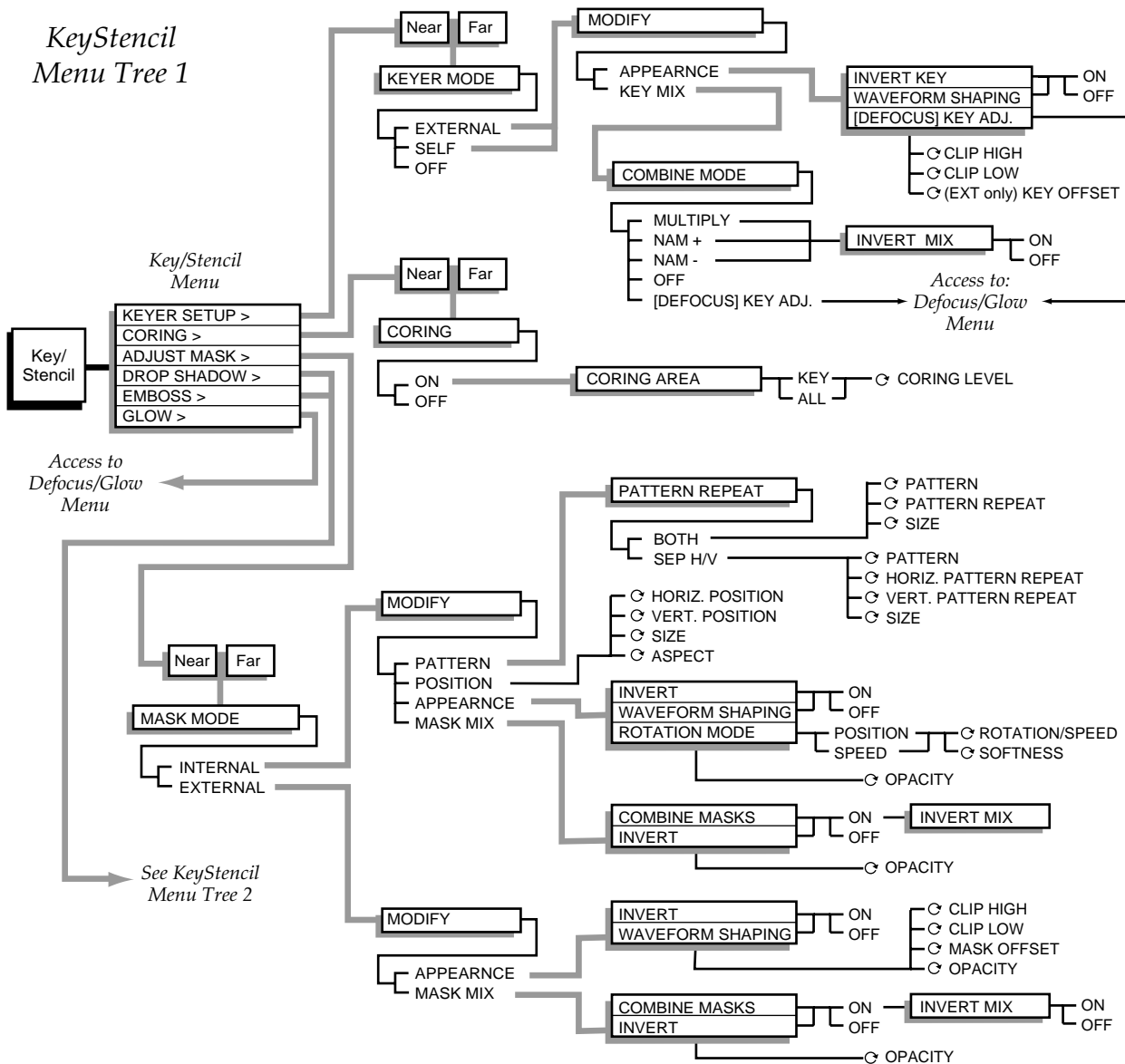


Splits, Corner Pinning Menus

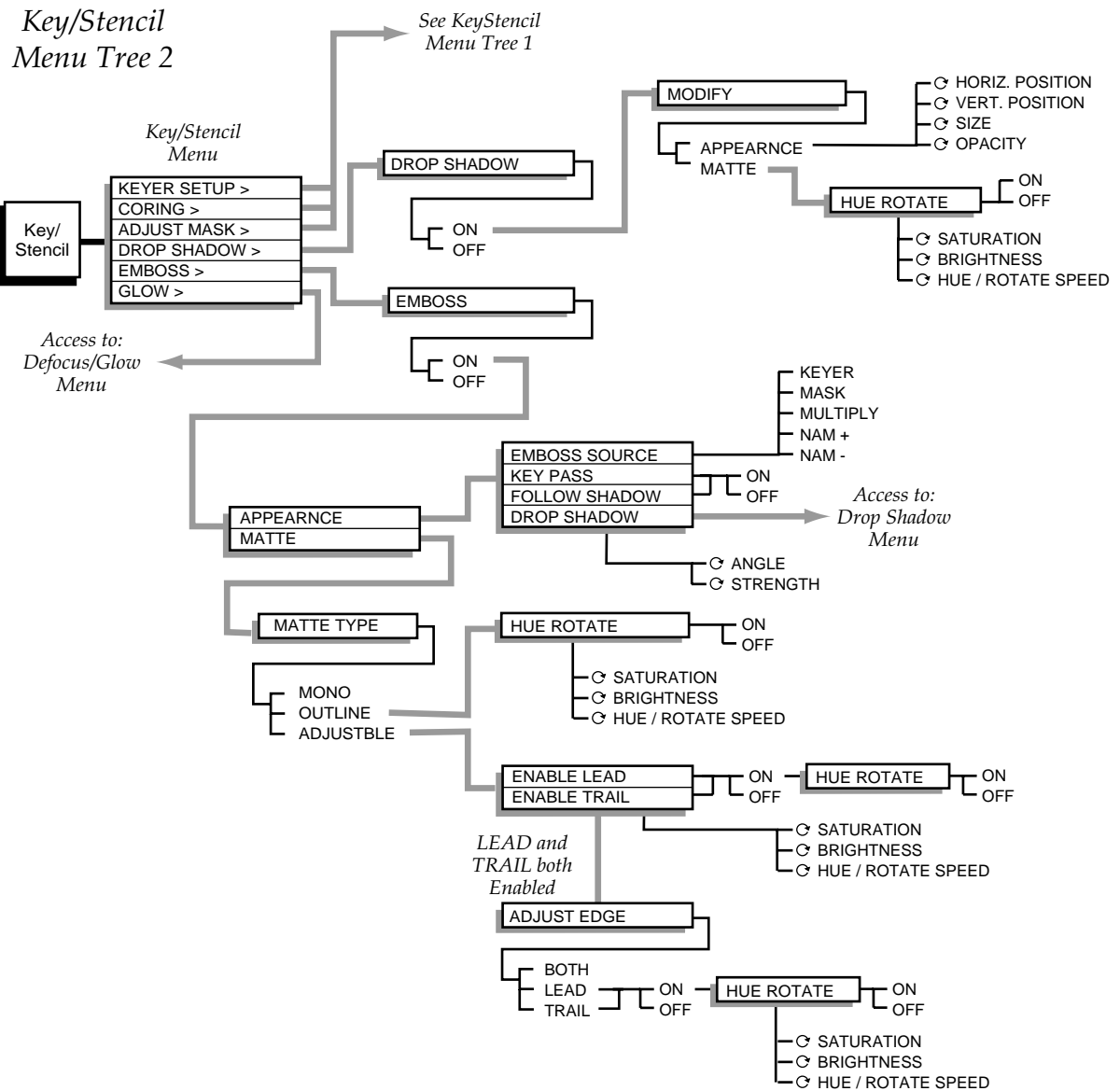


Key/Stencil

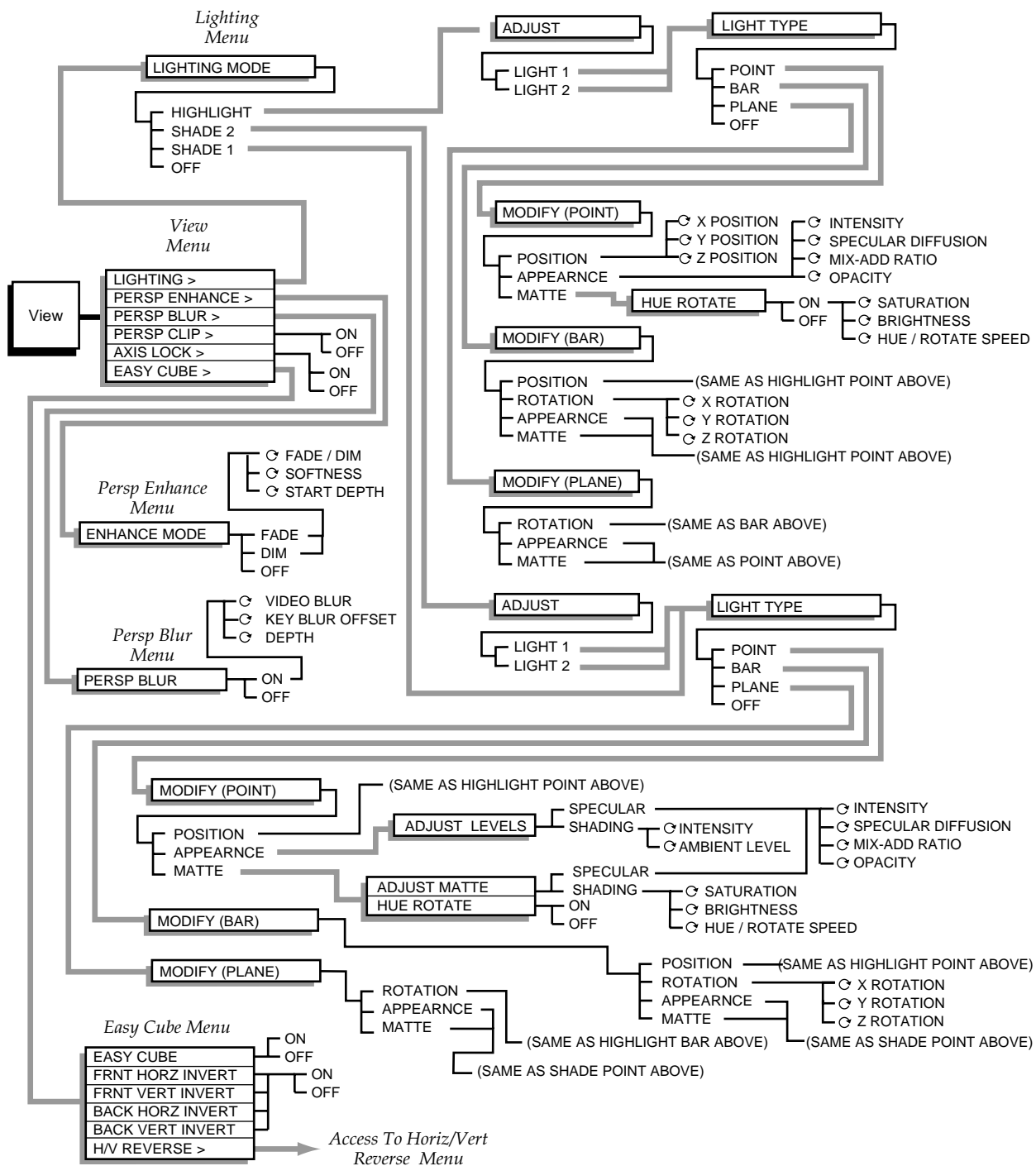
Keyer Setup, Coring, Adjust Mask Menus



Drop Shadow, Emboss Menus



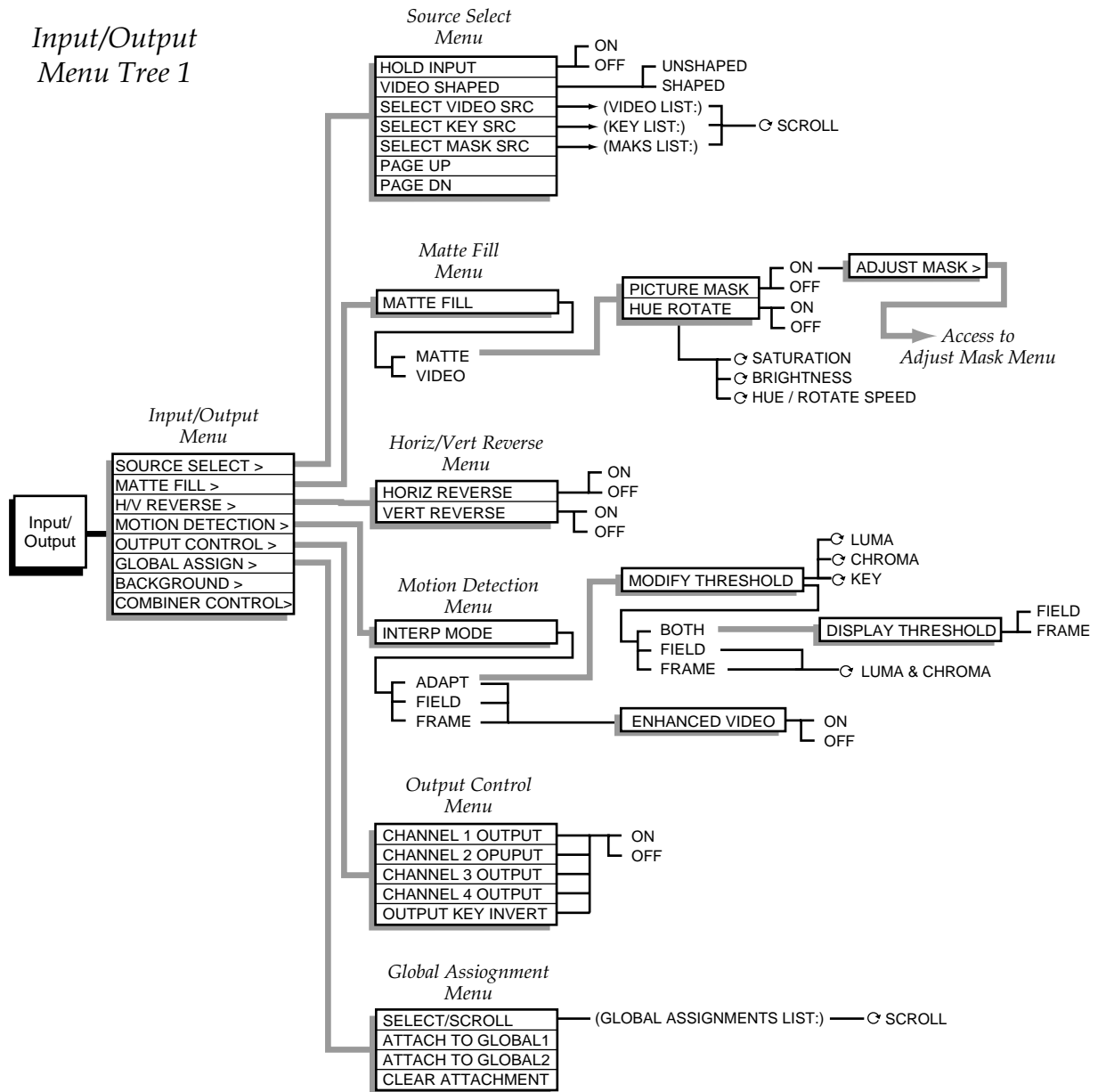
View



Input/Output

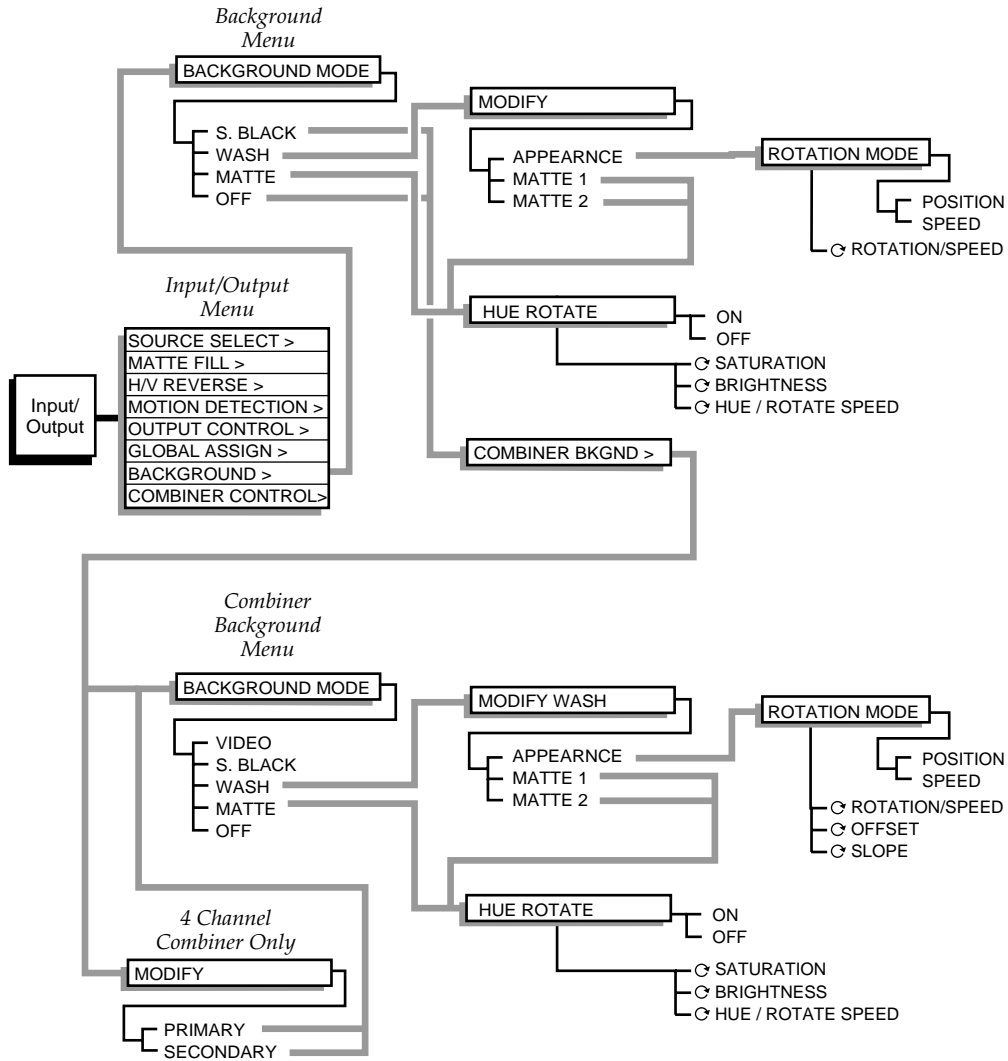
Source Select – Global Assign Menus

Input/Output
Menu Tree 1



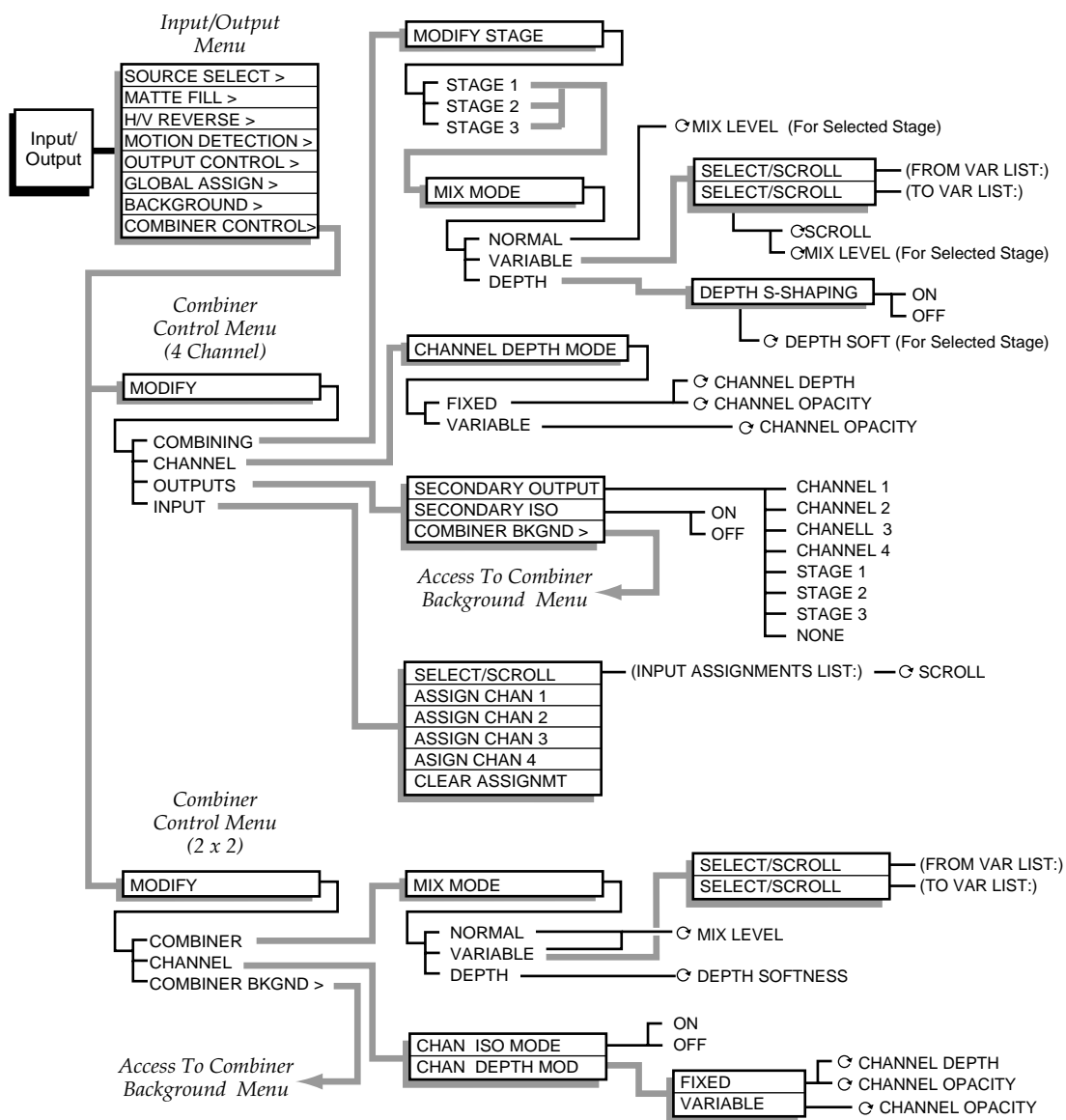
Background, Combiner Background Menus

Input/Output Menu Tree 2



Combiner Control Menus

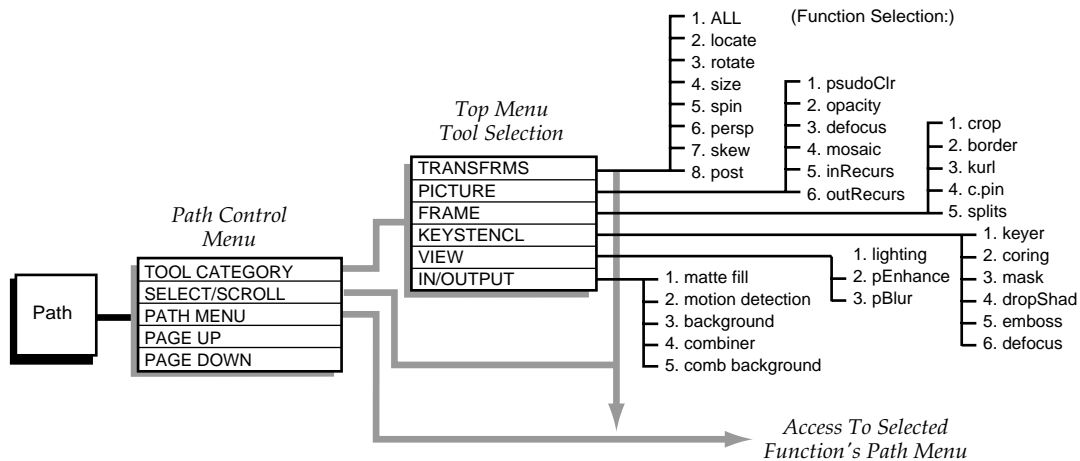
Input/Output Menu Tree 3



Path

Path menus are available for many Krystal DPM functions. Pressing the **Path** User Assist button when it is *not* illuminated takes you to the Path Control menu, from which you can select the function whose path you wish to modify.

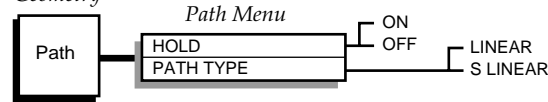
Path Control Menu



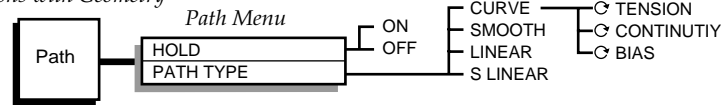
Path Function Menus

Pressing the **Path** User Assist button when it is low tally gives you direct access to the Path menu for the current menu. Double pressing a transform button takes you directly to the Path menu for that transform. Many of these menus and transforms share similar path controls, the menu trees of which are illustrated below.

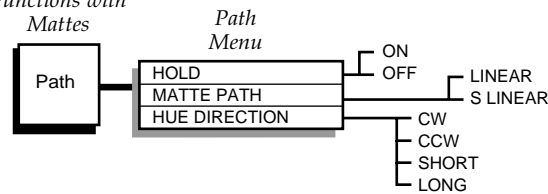
Path Menus for Functions without Geometry



Path Menus for Transforms and Functions with Geometry



Path Menus for Functions with Mattes



Some Path menus let you to assign multiple path parameter values. These menus generally contain selection stacks to the left of the path control parameters on the menu screen. Select the item you wish to modify first, then make your path parameter change.

Glossary

A

Appearance:

The “look” of the picture image itself, independent of any picture transformation.

Aspect

The ratio between the width and the height of an object such as a wipe pattern or a video screen.

Axis

The point in 3-D space around which a picture rotates. See Source Axis and Target Axis.

B

Background

- (1) External video that forms a background scene into which a key may be inserted.
- (2) Black or colored Mattes generated by the DPM for use as background video in key effects.

Bias

In path control, determines whether the path will be “pulled” towards the previous or the following keyframe.

Border

Adding matte to the edges of the holes cut by the key signal. On Krystal systems the border fills in from the outside edge of the key.

Brightness

The relative intensity of light determined by the sum of responses of the eye to the component wavelengths. Directly related to Luminance.

B-Y

The designator used to describe the Blue minus Luminance color portion of a component video signal.

C

CG

See Character Generator.

Camera Channel

Control channel that mathematically manipulates pictures to represent an observer’s viewpoint. The camera channel performs transforms and translations, and controls some Combiner functions.

Channel

A digital effects processing path for video and key signals. On Krystal systems, the term is used for several different types of channels. See Camera Channel, Control Channel, Global Channel, Logical Channel, Physical Channel, Wireframe Channel.

Combiner

Optional Krystal hardware that combines multiple sources into composite video/key signals with control of picture layering (over, under mix, etc.).

Control Channel

Control point on the Krystal Control Panel used to direct the processing of Krystal's Logical, Global, and Camera channels.

Character Generator (CG)

A computer used to generate text and graphics for video titles.

Chrominance

The colorimetric difference between any color and a reference color of equal luminance. Directly related to saturation.

Clip

A threshold level adjustment to which the key source attribute (luminance, chrominance, etc.) is compared for generating the internal key signal. The clip control sets the switching point between the background and the fill.

Clipboard

Used to store information cut, copied, or deleted from an effect. Clipboard information is overwritten when a clipboard copy or cut operation is performed.

Continuity

In path control, this adjustment determines the angle of the path into and out of the keyframe.

Contrast

Effect accomplished by adjusting the gain and offset of incoming luminance as well as control of incoming chroma levels.

Control Panel

Krystal system operator interface comprised of buttons, knobs, lever arm, joystick, menu display, and disk drive.

Coring

The threshold level below which video is replaced by black.

Corner Pinning

Method used to manipulate the edges of an image by relocating its corners. The resulting image is processed to fill the newly defined edges. Krystal corner pinning is based on source, not target, space.

Crosspoint

An electronic switch, usually part of an array of switches, that allows video or audio to pass when the switch is closed.

Current Effect

The effect in the register that was last recalled. The current effect number is displayed on the Krystal menu screen and Keypad display.

Current Time

The current position in the current effect. This time is the "glue" which binds multi-channel effects, i.e., all channels in the effect always have the same current time. The current time is expressed in terms of seconds, frames, and fields (odd or even) from the start of the effect. Negative current time values indicate times before the start of the effect.

Cursor

An indicator on a timeline representing a particular time in that effect. See Time Cursor and Mark Cursor.

CW

Clockwise.

CCW

Counter-clockwise.

D

Delegate

The Control Panel, or a section of it, is delegated to a channel or function if Control Panel changes affect parameters associated with that channel or function. For example, a control channel is delegated for control by the panel by lighting the **Deleg.** button for that channel. The joystick is delegated to a transform function by lighting a transform button.

Detent

A system defined increment of position, size, angle of rotation, or amount of perspective (usually based on screen or picture size). Pressing the **Center** button once sets the delegated transform to the closest evenly divisible detent value. For example, the spin transform detent is 0.25, resulting in detent values of 0.0, 0.25, 0.50, 0.75, 1.00, 1.25, etc.

Duration

The length of time expressed in seconds, frames, and fields (odd or even) that a particular effect or keyframe lasts.

DPM (Digital Picture Manipulator)

A video effects system which can digitally manipulate a video picture to change its size, shape, rotation in space, etc.

DPOP

Double Press Open. Double pressing a panel button to “pop” to another menu.

E

Effect

A sequence of one or more keyframes. An effect can reside in either a disk effect file or an effect register, and may be either single or multiple channel.

Effect Register

An area in memory representing one complete effect. Effect registers are referenced by a two digit number from 00 through 99.

Effect Manager

The electronics that calculates all of the parameters needed to produce an effect. These parameters are delivered to the Video Processors (up to four) which perform the actual image processing.

Enabled Channel

Channels that run as part of the current effect and can be edited. Channels are enabled by pressing the associated Control Panel **Enable** button.

Enhanced Image Fidelity

This option provides cleaner resolution by changing the way in which the luminance, chrominance, and key signals are processed.

Enhanced Video

See Enhanced Image Fidelity.

E-MEM (Effects Memory)

A Grass Valley proprietary effects-memory system capable of storing and recalling DPM and Switcher effects.

External Key

An input signal to Krystal used exclusively as a key source.

F

Field

One complete scan of the TV screen by the electron beam. In the NTSC standard, two interleaved fields of 262 and 263 raster lines make up a frame. In the PAL standard, two interleaved fields of 312 and 313 raster lines

make up a frame. The duration of a field is approximately 1/60 of a second in NTSC or 1/50 of a second in PAL (625 lines).

Flag

Control used to turn a timeline function on or off.

Frame

One complete video picture consisting of two interleaved fields. In the NTSC system, one frame makes up a complete TV scanning cycle (1/30th of a second). In the PAL system, two frames (at 1/25th of a second) are required to make up a complete TV scanning cycle.

Freeze Frame

The recording or display of a single frame of video.

Function

Data for an individual component of a digital effect. The data can contain several related parameters that specify different aspects of the function (crop, border, locate, etc.).

Function Timeline

A series of keyframes that appear along a timeline that represents a particular function (crop, border, locate, etc.)

G

Gain

An amplification adjustment of the key source attribute (chrominance, hue, luminance, etc.) to be used for keying. The gain control affects the sharpness of the key edge.

Global Channel

Control channel that mathematically manipulates one or more assigned logical channels in 2-D and 3-D space. Global channels only perform transforms and translations.

GPI (General Purpose Interface)

An electronic device containing electronic switches that can be activated by a remote data signal. GPIs allow external devices to control system components.

Gray Scale

Range of luminance levels from black to white.

H

High Tally

Buttons on the Control Panel at their brightest illumination. (When slightly dimmed they are low tally.)

Hue

The attribute of light (wavelength, frequency) which determines the color perceived (red, blue, green etc.). Specified by phase relationship to color burst in composite video. Any saturated color which is not one of the three primaries may be treated as a combination of two primaries.

I

Independent Timeline

A series of keyframes that appear along a timeline that represent a particular function (e.g., crop, border, locate, etc.) Independent timelines can be modified separately from other timelines.

Insert Key

A key in which a portion of the background signal is replaced with an insert (fill) signal.

Interpolation

Creation of intermediate values for functions between keyframes. Also known as "in-betweening".

K

Key

- (1) An effect in which a portion of the background video picture is replaced by another picture or title
- (2) The signal which is used to pass or block portions of the background and fill video signals.

Keyboard

A panel with pushbutton keys (generally alphanumeric) that provides the human interface into an electronics system.

Keyframe

A point in time during an effect where the placement and appearance of the manipulated picture is completely defined. This “frame” (or minimum unit of time) is the “key” to the make-up of the picture (and motion) at and about this instant in time. A keyframe defines all possible parameters to the system for that effect time, including: picture size and position, sources, recursive effects, background, borders, etc.

Key Fill

In a key effect, the video signal that “fills the hole” cut in background video by the key source. Key fill may be the key video or modified key video (also see Matte Fill).

Key Invert

- (1) A key mode which inverts the polarity of the key to allow dark areas of the source video to cut holes in background.
- (2) a chroma key mode which inverts the foreground and background fill positions.

Key Video

The video selected on a key bus which may be the key fill, the key source, or both.

Kurl

Special non-linear Krystal transformations that include Page Turn, Page Roll, Ripple, Slits, Sphere, Pos Mod, Size Mod, Rings, and Splash.

L

Linear

In path control, denotes a linear interpolation between keyframes; no acceleration or deceleration is applied— change is mechanical having a constant velocity.

Linear Key

A key which is processed at or near unity gain by the switcher. Clip and gain control have very small adjustment ranges, and keying is performed using the luminance values of the linear key source. Normally used when the source’s key signal has already been properly shaped.

Logical Channel

Control channels (numbered 1-4 on the panel) assignable to control Krystal physical channels.

Low Tally

Buttons on the Control Panel at lowered illumination. (When fully illuminated they are high tally.)

Luminance

The quantitative attribute of light, measured as luminous intensity. Directly related to brightness.

M

Macro

A function where sequences of button presses may be defined and recalled with a single button push.

Mark Cursor

Allows moves to be made across timeline without changing the work buffer, thus permitting you to move keyframe work buffer information from one point on the timeline to another. The mark cursor appears on timelines as a dashed vertical line.

Mask

A pattern or shape used to restrict some video processing of a selected area of the input video. For example, you can use a mask to select a portion of the source video to defocus.

Master Timeline

A series of keyframes that appear along a timeline that represents all the currently delegated channels of the current effect.

Matte

An internally-generated flat or multiple color signal which is adjustable for luminance, hue, and saturation. Mattes may be used to fill areas of keys and borders.

Matte Fill

Using matte to “fill the hole” cut in background video by the key source.

Matte Key

See Matte Fill.

Menu Display

That part of the Krystal Control Panel where menus and timelines are viewed.

Monitor

A device used for viewing video signals.

N

Noise

Interference present in a video or audio signal.

Non-Additive Mix (NAM)

A transition between two video signals in which only the signal with the largest instantaneous amplitude at any point in the picture is visible.

NV RAM

Non-volatile memory. Computer memory that persists after power to the unit has been interrupted.

O

Opacity

Degree of transparency of an image. 100% opacity is solid. 0% opacity is fully transparent.

P

Parameter

A numerical value used by a function.

Partial Keyframing Mode

A Grass Valley proprietary type of keyframing that gives greater effect control on a function by function basis, and provides improved path control. When ON, keyframes are only inserted into the timeline for functions that have changed. When OFF, traditional keyframing that inserts keyframes on all active timeline functions occurs.

Path

Refers to the manner in which interpolated values change between two keyframes. For transforms it can correspond to the “path” which the image on the screen takes to move from one keyframe to the next. The path may include size changes, picture rotation, etc., depending on the type of channel used in building the effect. Matte, softness, and other changes which do not have trajectories also

have paths. In these cases, the path determines the rate of change of the interpolated parameters.

Pattern Modulation

An oscillation or modulation of the vertical and/or horizontal dimensions of a pattern edge.

Perspective

The apparent distortion of an image as it moves toward or away from the viewer. Related to the location of the vanishing point.

Physical Channel

A Video Processor frame able to receive, manipulate, and output processed video and key sources. A physical channel can be controlled by a Logical Channel on the Krystal Control Panel.

Picture

The video image displayed on the monitor.

Posterization

Changing the appearance of the video image by modifying the luminance quantization levels.

R

R-Y

The designator used to describe the Red minus Luminance color portion of a component video signal.

RAM (Random Access Memory)

A computer memory system that allows rapid storage and retrieval of information. It is (usually) considered volatile in that the information is lost if power is interrupted. Also see NV RAM

Recursive Loop

Refers to the part of the Video Processor used to build special effects such as: Mosaic, Montage, Strobe, etc.

Register

See Effect Register.

Resource Manager

A module that routes control data from each Effect Managers to the Video Processors acquired by each Effect manager.

RGB

Red, green, blue; the three primary colors used in video transmission/reception, often referring to the three (unencoded) color component outputs of a color camera.

S

S-Linear

In path control, applies a linear or straight change between keyframes, with acceleration and deceleration applied at the beginning and end of each keyframe, respectively.

Screen

The surface of the monitor on which images are viewed.

Safe Action Area

Markers that define the area of the screen visible on most home television sets.

Safe Title Area

Markers that define the area where text can be placed and remain legible on most home television sets.

Saturation

The intensity of a color; the degree by which the eye perceives a color as departing from a gray or white scale of the same brightness. A saturated color does not contain any white.

Self Key

A key effect in which the same video signal serves as both the key source and the fill source.

Shotbox

Using the Auto Run button to provide the keypad with one button access to effect recalls and runs.

Soft Button

A Control Panel button that changes its function depending on the current menu selection. Soft buttons generally control function flags (on or off).

Soft Knob

A Control Panel knob that changes its function depending on the current menu selection. Soft knobs generally control function parameters (values).

Solarization

Changing the appearance of the video image by modifying the chrominance quantization levels.

Source

The origin of picture information. A source is composed of a video component, and generally also has a key component.

Source Axis

The point in 3-D space around which a picture rotates. The source axis is referenced to the picture itself.

Source ID

This feature identifies the source being displayed on the visible side of a wireframe.

Source Memory

The area in memory set aside for source parameters, such as Key Source, Mask, Key Clips, etc. Source memory and Unity Keyframe data is independent from one another.

Source Reference

Allows moves to be made relative to a picture's own reference axes.

Source Selection

The selection of the source material that feeds a physical channel.

System Controller

An additional frame required for multiple-channel Krystal system operation. Contains a Resource Manager module and at least one Effect Manager module used for system control communications.

T**Target Reference**

allows channel transformations to be made relative to its assigned global; when not assigned to global, transformations are made relative to the Camera reference axis.

Target Axis

The point in 3-D space around which a picture rotates. The target axis is referenced to the target, or next higher, control level (Global and Camera channels).

Tension

In path control, determines the length of the tension vector.

Time Cursor

Changes the current time position in the effect; when moved, the work buffer of each channel in the effect is changed to reflect effect values at the current time. The time cursor appears on timelines as a solid vertical line.

Timeline

A series of keyframes along a line representing time in an effect. See Master Timeline, Function Timeline.

Transfer Buttons

These buttons function to copy the parameter assigned to the adjacent soft knob to the Keypad. Transfer buttons are located to the right of the menu display next to their associated soft knobs.

Transform

Picture manipulation that includes translation, and also may include rotation, perspective changes, size changes, and aspect and key manipulations in 2-D and/or 3-D space.

Translate

Movement of the picture or screen along an X, Y, or Z axis.

Transition

An operation which changes backgrounds and/or adds or removes titles. A transition can be in the form of a wipe, mix, or cut.

U

Unity Keyframe

A part of memory used to retain user-defined parameter values, like background color, keyframe duration, etc. Unity keyframe data can be recalled to the work buffer at any time for repeated use. Unity Keyframe and Source Memory data is independent from one another.

V

Video

An electrical signal used to carry visual information.

Video Key

A self key or chroma key in which the fill signal is video from the video key source.

Video Processor

The Krystal system frame that contains all of the video processing hardware required to manipulate an individual image in 3D space.

W

Wireframe Channel

A graphical representation of a physical channel that can be used for off-line effects design when physical channels are unavailable.

Waveform Shaping

Controls the softness of the transition between the key and the video.

Work Buffer

Values for all the active functions in the current effect at the current run time of the effect.

Y

Y

The luminance (brightness) portion of a component video signal.

Y, R-Y, B-Y (Y, CR, CB)

A set of color component video signals with separate luminance and chrominance.

Index

Numerics

- 1 Channel Facility Example 1-19
- 2 Channel Facility Example 1-20
- 2 x 2 Combiner Background Menu 11-29
- 2 x 2 Combiner Menu 11-24
 - Channel 11-27
 - Channel Depth 11-27
 - Channel Depth Mode 11-27
 - Channel Iso Mode 11-27
 - Channel Opacity 11-27
 - Combiner 11-24
 - Combiner Mode 11-24
 - Depth 11-26
 - Depth Softness 11-26
 - Layering Options 11-25
 - Mix Level 11-24, 11-26
 - Mix Mode 11-24
 - Normal 11-24
 - Variable 11-25
- 4 Channel Combiner Background Menu 11-28
 - Offset 11-29
 - Slope 11-29
- 4 Channel Combiner Menu
 - Assign Chan 11-24
 - Channel 11-20
 - Channel Opacity 11-21
 - Clear Assignment 11-24
 - Combining 11-18
 - Depth 11-20
 - Depth Mode 11-21
 - Depth Soft 11-20
 - Depth S-Shaping 11-20
 - General Description 11-17
 - Input 11-23
 - Layering Options 11-19
 - Mix Level 11-18
 - Modify Stage 11-18
 - Normal 11-18
 - Outputs 11-21
 - Secondary Iso 11-21

- Secondary Output 11-21
- Variable 11-19
- 8 Channel Facility Example 1-22

A

- Acquiring Channel 3-3
- Acquiring Effect Manager 3-2
- Adapt
 - Matte Fill Menu 11-10
- Adjust
 - Crop Menu 8-3
 - Defocus 7-16
- Adjust Edge
 - Emboss Menu 9-23
- Adjust Levels
 - Lighting Menu 10-5
- Adjust Mask
 - Mosaic Menu 7-21
 - Pseudo Color Menu 7-8
- Adjust Mask Menu 9-10
 - Aspect 9-11
 - External Mask Appearance 9-14
 - External Mask Mix 9-15
 - Horizontal Position 9-11
 - Internal Mask 9-13
 - Internal Mask Appearance 9-12
 - Internal Mask Position 9-11
 - Mask Mix 9-13
 - Mask Mode 9-10
 - Mask Offset 9-14
 - Menu Tree 13-18
 - Opacity 9-13
 - Pattern 9-10
 - Pattern Repeat 9-10
 - Rotation Mode 9-12
 - Size 9-11
 - Vertical Position 9-11
- All Transform Paths Menu 6-6

- Angle
 - Emboss Menu 9-21
 - Kurl Menu 8-26
- Appearance
 - Crop Menu 8-3
 - Drop Shadow Menu 9-17
 - Emboss Menu 9-20
 - Glow 7-18
- Append
 - Register Operations 5-6
- Aspect
 - Adjust Mask Menu 9-11
 - Crop Menu 8-7
- Aspect Button 2-24
- Assign Chan
 - 4 Channel Combiner Menu 11-24
- Attach to Global
 - Global Assignment Menu 11-14
- Auto Run Button 2-17
- Axes Buttons 2-22
- Axis Lock
 - Axis Lock Menu 10-15
- Axis Lock Button
 - Pressing Twice 2-24
- Axis Lock Menu 10-15
 - Axis Lock 10-15
- Axis Pos
 - Splits Menu 8-45

B

- Back Side 11-4
- Backgrnd Mode
 - Background Menu 11-15
- Background Menu 11-15
 - Backgrnd Mode 11-15
 - Matte 11-15
 - Menu Tree 13-22
 - Rotation Mode 11-15
 - S. Black 11-15
 - Wash 11-15
 - Wash Matte 11-16
- Background Video
 - Graphics Display Menu 12-10
- Bar Graph Indicator 2-18
- Bias 6-4
- Curve Path Type 6-5
- Input Recursive Menu 7-25
- Black Clr
 - Color Modulation 7-6
- Black Level Hue
 - Hue Modulation 7-7
- Black Offset 7-4
- Blur
 - Output Recursive Menu 7-32, 7-34
- Bndry Rep
 - Defocus 7-15
- Border Menu
 - Border Mode 8-10
 - Menu Tree 1 13-14
 - Menu Tree 2 13-15
 - Pattern Flat Appearance 8-22
 - Pattern Flat Matte 8-23
 - Pattern Flat Mix 8-23
 - Pattern Wash 8-24
 - Picture Frame Menu 8-10
- Border Mode
 - Border Menu 8-10
- Border Path Menu 8-24
- Box Appearance
 - Crop Menu 8-4
- Box Position
 - Crop Menu 8-3
- Brightness
 - Color Modulation 7-6
 - Glow 7-19
- Buttons 2-15
 - Aspect 2-24
 - Auto Run 2-17
 - Center 2-23
 - Clear Entry 2-16
 - Clear Marks 2-12
 - Clear Work Buffer 2-11
 - Const. Dur. 2-17
 - Copy 2-12
 - Cut 2-12
 - Delegate 2-11
 - Delete 2-12
 - Detent 2-16
 - Effect Dur. 2-14
 - Enable 2-10
 - Enter 2-16
 - Exit 2-4

- Far 2-21, 11-4
- File Operations 2-8
- Freeze 1 2-17
- Freeze 2 2-17
- Get 2-16
- Go To KF 2-13
- Go To Time 2-13
- Graphic Display 2-9
- Help 2-9
- Hold Input 2-18
- Input/Output 2-8
- Insert After 2-14
- Insert Before 2-14
- Joystick 2-22
- Key Stencil 2-8
- Keypad 2-15
- Keypad Entry 5-5
- KF Dur. 2-14
- Knob Control 2-22
- Last Menu 2-9
- Locate 3D 2-23
- Locate Axis 2-24
- Loop 2-19
- Macro 2-8, 2-10, 5-12
- Mark 2-12
- Mark Block 2-12
- Mark Cursor 2-21
- Menu Control 2-24
- Modify 2-14
- Near 2-21, 11-4
- Next 2-13
- Partial KF 2-17
- Paste 2-12
- Path 2-9
- Persp. 2-25
- Picture 2-8
- Picture Frame 2-8
- Post Xform 2-25
- Prev. 2-13
- Put 2-16
- Recall Effect 2-16
- Restore Work Buffer 2-12
- Reverse 2-19
- Rewind 2-19
- Rotate 2-24
- Run 2-19
- Run Control 2-8
- Size/Locate 2-23
- Skew 2-24

- Soft 2-4
- Source 2-23
- Spin 2-24
- Start Time 2-14
- Stop Next 2-19
- System Setup 2-7
- Tally 2-5
- Target 2-23
- Time Cursor 2-20
- Timeline 2-9, 12-1
- Transfer 2-5
- Trim 2-16
- User Tools 2-7
- View 2-8
- X, Y, Z Axes 2-22

C

- Center Button 2-23
 - Pressing Twice 2-23
- Center Locator
 - Graphics Display Menu 12-10
- Channel
 - 2 x 2 Combiner Menu 11-27
 - 4 Channel Combiner Menu 11-20
 - Acquiring 3-3
 - Releasing 3-4
 - Resource Acquisition Menu 3-3
- Channel Depth
 - 2 x 2 Combiner Menu 11-27
- Channel Depth Mode
 - 2 x 2 Combiner Menu 11-27
 - 4 Channel Combiner Menu 11-21
- Channel ID
 - Graphics Display Menu 12-10
- Channel Iso Mode
 - 2 x 2 Combiner Menu 11-27
- Channel Opacity
 - 2 x 2 Combiner Menu 11-27
 - 4 Channel Combiner Menu 11-21
- Channel Operations
 - Copy 5-8
 - Delete 5-10
 - General Description 5-8
 - Move 5-10
 - Swap 5-9
- Channel Operations Menu 5-8

- Menu Tree 13-6
- Chroma
 - Color Correction Menu 7-4
- Chroma/Luma/Key
 - Defocus 7-13
- Clear Assignment
 - 4 Channel Combiner Menu 11-24
- Clear Attachment
 - Global Assignment Menu 11-14
- Clear Entry Button 2-16
- Clear Marks Button 2-12
- Clear Work Buffer Button 2-11
 - Pressing Twice 2-12
- Clip High
 - Keyer Setup Menu 9-3
- Clip Low
 - Keyer Setup Menu 9-3
- Clipboard Display 12-8
- Clipboard Operations Area 2-11
- Color Correction
 - Pseudo Color Menu 7-3
- Color Correction Menu
 - Chroma 7-4
 - Hue 7-3
 - Luma 7-3
- Color Mode
 - Pseudo Color Menu 7-2
- Color Modulation
 - Black Clr 7-6
 - Brightness 7-6
 - Hue 7-6
 - Hue Rotate 7-6
 - Reverse Video 7-6
 - Saturation 7-6
 - White Clr 7-6
- Color Modulation/Appearance 7-6
- Combine
 - Defocus 7-14
- Combine Mode
 - Crop Menu 8-5
- Combiner
 - 2 x 2 Combiner Menu 11-24
- Combiner Background Menu
 - Menu Tree 13-22
 - see 2 x 2 or 4 Channel Combiner Background Menu
- Combiner Background Path Menu 11-31
- Combiner Control Menu
 - Menu Tree 13-23
 - see 4 Channel Combiner Menu
- Combiner Menu
 - see 2 x 2 Combiner Menu
- Combiner Menus
 - General Description 11-17
- Combiner Mode
 - 2 x 2 Combiner Menu 11-24
- Combiner Path Menu 11-30
- Combining
 - 4 Channel Combiner Menu 11-18
- Const. Dur. Button 2-17
- Continuity 6-4
 - Curve Path Type 6-5
- Control Panel
 - Description 2-1
 - Front View Figure 1-8
 - General Description 1-8
 - Lower Area 2-2
 - Rear View Figure 1-9
 - Upper Area 2-2
- Copy
 - Channel Operations 5-8
 - Register Operations 5-5
- Copy Button 2-12
- Coring Area
 - Coring Menu 9-8
- Coring Level
 - Coring Menu 9-8
- Coring Menu
 - Coring Area 9-8
 - Coring Level 9-8
 - Menu Tree 13-18
- Coring Path Menu 9-9
- Corner Pinning Menu 8-46
 - Crop Mode 8-46
 - Joystick Control 8-47
 - Menu Tree 13-17
 - Preset 8-46
 - User 8-46
 - View Through 8-47
- Corner Pinning Path Menu 8-47
- Corners
 - Crop Menu 8-4

- Count
 - Kurl Menu 8-40
- Crop Menu
 - Adjust 8-3
 - Appearance 8-3
 - Aspect 8-7
 - Box Appearance 8-4
 - Box Position 8-3
 - Combine Mode 8-5
 - Corners 8-4
 - Crop Mix 8-3
 - Crop Mode 8-2
 - Crop Pattern Appearance 8-8
 - Invert 8-4, 8-8
 - Menu Tree 13-13
 - Opacity 8-4
 - Pattern Crop Mix 8-9
 - Pattern Position 8-7
 - Pattern Repeat 8-6
 - Pattern Selection 8-6
 - Picture Frame Menu 8-2
 - Position 8-3
 - Rotation Mode 8-8
 - Size 8-6
 - Softness 8-3
 - Vert Position 8-7
 - Waveform Shaping 8-4, 8-8
- Crop Mix
 - Crop Menu 8-3
- Crop Mode
 - Corner Pinning Menu 8-46
 - Crop Menu 8-2
- Crop Path Menu 8-9
- Current Effect
 - Naming 5-11
- Cursor
 - Mark 2-21
 - Time 2-20
- Curve
 - Path Type 6-4
- Cut Button 2-12

D

- Decay
 - Input Recursive Menu 7-25
 - Output Recursive Menu 7-30

- Defaults Preferences Menu 3-7
- Define Unity KF 4-5
- Defocus
 - Adjust 7-16
 - Appearance 7-13
 - Bndry Rep 7-15
 - Chroma/Luma/Key 7-13
 - Combine 7-14
 - Edge Insert 7-15
 - General Description 7-12
 - Horiz/Vert 7-13
 - Hue Rotate 7-14
 - Key Adjust 7-16
 - Key Matte 7-15
 - Mask 7-17
 - Matte 7-15
 - More 7-13
 - NAM 7-14
 - NAM Matte 7-14
 - Offset 7-16
 - Picture Mask 7-17
- Defocus Key Adjust
 - Keyer Setup Menu 9-3
- Defocus/Glow Menu 7-12
 - Defocus Functions 7-12
 - Glow Functions 7-18
 - Menu Tree 13-9
- Defocus/Glow Path Menu 7-20
- Delegate Area 2-10
- Delegate Buttons 2-11
- Delegating Front/Back Sides 11-4
- Delegation
 - Far Button 2-21
 - Near Button 2-21
- Delete
 - Channel Operations 5-10
- Delete Button 2-12
- Depth
 - 2 x 2 Combiner Menu 11-26
 - 4 Channel Combiner Menu 11-20
 - Perspective Blur Menu 10-12
- Depth Soft
 - 4 Channel Combiner Menu 11-20
- Depth Softness
 - 2 x 2 Combiner Menu 11-26
- Depth S-Shaping

- 4 Channel Combiner Menu 11-20
- Description
 - Physical Overview 1-3
- Detent Button 2-16
- Dim
 - Perspective Enhance Menu 10-10
- Direction
 - Kurl Menu 8-26, 8-27
- Disk Drive 2-25
- Disk Formatting 5-4
- Disk Manager
 - Disk Type 5-4
 - Format Disk 5-4
 - Save Error Log 5-4
- Disk Manager Menu 5-4
 - Menu Tree 13-6
- Disk Type 5-4
- Display
 - Clipboard 12-8
 - Ind. Timeline 12-5
 - Input Recursive Menu 7-27
 - Master Timeline 12-2
 - Output Recursive Menu 7-36
 - Transform 12-7
- Display Options Menu 4-6
 - Screen Saver 4-6
 - Selecting Timeline Displays 4-6
- Double Press 2-6
- Double Press Open 13-1
- Double Pressing 2-12
- DPOP 13-1
- Drop Shadow Menu
 - Appearance 9-17
 - Hue Rotate 9-18
 - Matte 9-18
 - Menu Tree 13-19
- Drop Shadow Path Menu 9-19
- Dual Channel Example Facility 1-20
- Duration
 - Keyframe 2-14

E

- Easy Cube
 - How to Use 10-16
 - Use with Horiz/Vert Reverse 10-17
- Easy Cube Menu 10-16
 - Menu Tree 13-20
- Edge Insert
 - Defocus 7-15
- Edit Enable 4-8
- Effect Dur. Button 2-14
- Effect Edit Area 2-13
- Effect Loop
 - Entire 6-13
 - Portion of 6-13
- Effect Manager
 - Acquiring 3-2
 - Releasing 3-3
 - Resource Acquisition Menu 3-2
- Effects
 - Saving 5-2
 - Saving All 5-2
 - Saving All Separate 5-2
- Effects Send
 - Define 4-3
 - Source Selection 11-5
- 8 Channel Facility Example 1-22
- Emboss Menu 9-20
 - Adjust Edge 9-23
 - Angle 9-21
 - Appearance 9-20
 - Emboss Source 9-20
 - Enable Lead 9-23
 - Enable Tail 9-23
 - Follow Shadow 9-21
 - Key Pass 9-21
 - Keyer 9-20
 - Mask 9-20
 - Matte 9-21
 - Matte Type 9-21
 - Menu Tree 13-19
 - Mono 9-21
 - Multiply 9-20
 - Outline 9-22
 - Strength 9-21
- Emboss Path Menu 9-24
- Emboss Source
 - Emboss Menu 9-20
- E-MEM Area 2-16
- Enable Area 2-10
- Enable Button 2-10

- Enable Lead
 - Emboss Menu 9-23
- Enable Tail
 - Emboss Menu 9-23
- Enhanced Image Fidelity Option 11-12
- Enhanced Video Option 11-12
- Enter Button 2-16
- Erase
 - Register Operations 5-6
- Error Log
 - Saving 5-4
- Exit Button 2-4
- External Cntrl Prefs
 - Defaults 3-4
 - GPI 3-4
 - Ports 3-4
- External Control Prefs Menu 3-4
- External Key 9-2
- External Keyer Appearance
 - Keyer Setup Menu 9-3
- External Mask Appearance
 - Adjust Mask Menu 9-14
- External Mask Mix
 - Adjust Mask Menu 9-15

F

- Facility
 - Dual Channel 1-20
 - Eight Channel 1-22
 - Single Channel 1-19
- Fade
 - Perspective Enhance Menu 10-10
- Far Button 2-21, 11-4
- Features
 - Fully Optioned 1-2
 - Optional 1-3
 - Packaging Changes 1-3
 - Standard 1-1
- Field Motion Detection 11-9
- File Operations
 - Disk Manager 5-4
 - Saving/Loading Files 5-1
- File Operations Menu 2-8
 - Channel Operations 5-8
 - General Description 5-1

- Menu Tree 13-6
- Register Operations 5-5
- Floppy Disk Drive 2-25
- Follow Shadow
 - Emboss Menu 9-21
- Force Strobe
 - Output Recursive Menu 7-31, 7-34
- Format Disk 5-4
- Formatting Disks 2-25
- Four Channel Combiner
 - see 4 Channel Combiner
- Frame
 - Video Processor Overview 1-10
- Frame Motion Detection 11-9
- Freeze 1 Button 2-17
- Freeze 2 Button 2-17
- Freeze Override
 - Input Recursive Menu 7-23
 - Motion Detection Menu 11-9
- Freeze Source
 - Input Recursive Menu 7-25
- Freeze/Appearance
 - Input Recursive Menu 7-24
 - Output Recursive Menu 7-29
- Front Side 11-4

G

- Gain/Sat
 - U(B-Y) 7-4
 - V(R-Y) 7-4
- Gain/Slope 7-4
- Get Button 2-16
- Global Assignment Menu 11-14
 - Attach to Global 11-14
 - Clear Attachment 11-14
- Glow
 - Appearance 7-18
 - Brightness 7-19
 - Functions 7-18
 - General Description 7-12
 - Glow Type 7-18
 - Hue 7-19
 - Matte 7-19
 - Saturation 7-19
- Glow Only 7-18

- Glow Type 7-18
 - Glow 7-18
 - Glow Only 7-18
 - Outline 7-18
 - Self Glow 7-18
 - Self Only 7-18
- Go To KF Button 2-13
- Go To Time Button 2-13
- GPI Preferences Menu 3-5
- Graphic Display Button 2-9
- Graphics Display Menu 12-9
 - Background Video 12-10
 - Center Locator 12-10
 - Channel ID 12-10
 - Graphics Mode 12-10
 - Lighting Source 12-10
 - Page Overlays 12-10
 - Size 12-10
 - Source Axis 12-10
 - Source ID 12-10
- Graphics Display Option
 - General Description 12-9
- Graphics Mode
 - Graphics Display Menu 12-10

H

- Hard Freeze Menu 7-37
 - Any Field Freeze 7-37
 - Field 1 Freeze 7-37
 - Field 2 Freeze 7-37
 - Menu Tree 13-10
 - Motion Detection 7-37
- Help Button 2-9
- Hide Functions 12-6
- Highlight
 - Lighting Menu 10-2, 10-3
- Hold
 - Path Control Menu 6-4
- Hold Input
 - Source Select Menu 11-3
- Hold Input Button 2-18
- Horiz Pos
 - Kurl Menu 8-37
- Horiz Position
 - Crop Menu 8-7

- Horiz/Vert
 - Defocus 7-13
- Horiz/Vert Reverse Menu 11-8
 - Menu Tree 13-21
- Horizontal Position
 - Adjust Mask Menu 9-11
- Hue
 - Color Correction Menu 7-3
 - Color Modulation 7-6
 - Glow 7-19
- Hue Correction 7-3
- Hue Direction
 - Hue Modulation 7-7
- Hue Modulation
 - Black Level Hue 7-7
 - Hue Direction 7-7
 - Lock Hues 7-7
 - Saturation 7-7
 - White Level Hue 7-8
- Hue Modulation Appearance
 - Reverse Video 7-7
- Hue Modulation/Appearance 7-7
- Hue Rotate
 - Color Modulation 7-6
 - Defocus 7-14
 - Drop Shadow Menu 9-18
 - Matte Fill Menu 11-6

I

- Ind. Timelines
 - Delegated vs. Non-Delegated Channel Timelines 12-6
 - Hide Functions 12-6
 - Page Up/Page Down 12-6
- Independent Timeline Display 12-5
- Input
 - 4 Channel Combiner Menu 11-23
- Input Output Menu
 - Menu Tree 2 13-22
- Input Recursive Mask
 - Input Recursive Menu 7-27
- Input Recursive Menu 7-23
 - Bias 7-25
 - Decay 7-25
 - Display 7-27

- Freeze Override 7-23
- Freeze Source 7-25
- Freeze/Appearance 7-24
- Input Recursive Mask 7-27
- Keyframe Reset 7-24, 7-26
- Loop 7-24
- Menu Tree 13-11
- Motion Decay/Appearance 7-25
- Picture Decay 7-24
- Read Timing 7-26
- Recursive Mode 7-23
- Star Decay 7-24
- Strobe Type 7-24
- Timing 7-26
- Write Start 7-26
- Input Recursive Path Menu 7-27
- Input/Output Menu 2-8, 11-8
 - 2 x 2 Combiner Background Menu 11-29
 - 2 x 2 Combiner Menu 11-24
 - 4 Channel Combiner Background Menu 11-28
 - 4 Channel Combiner Menu 11-17
 - Background Menu 11-15
 - Combiner Menus 11-17
 - General Description 11-1
 - Global Assignment Menu 11-14
 - Matte Fill Menu 11-6
 - Menu Tree 1 13-21
 - Menu Tree 3 13-23
 - Motion Detection 11-9
 - Output Control Menu 11-13
 - Source Select Menu 11-3
- Insert After Button 2-14
- Insert Before Button 2-14
- Inside Radius
 - Kurl Menu 8-40
- Internal Mask
 - Adjust Mask Menu 9-13
- Internal Mask Appearance
 - Adjust Mask Menu 9-12
- Internal Mask Position
 - Adjust Mask Menu 9-11
- Interp Mode
 - Matte Fill Menu 11-10
- Invert
 - Crop Menu 8-4, 8-8
- Invert Key
 - Keyer Setup Menu 9-3

J

- Joystick
 - Corner Pinning Menu Control 8-47
 - Menu Control 2-24
 - Post Xform Button 2-25
 - Turbo Button 2-22
 - X-,Y-, Z-Axis 2-22

K

- Key
 - External 9-2
 - Self 9-2
- Key Adjust
 - Defocus 7-16
- Key Blur Offset
 - Perspective Blur Menu 10-12
- Key Matte
 - Defocus 7-15
- Key Pass
 - Emboss Menu 9-21
- Key Stencil Button 2-8
- Key Stencil Menu
 - Menu Tree 2 13-19
- Key/Stencil Menu
 - Adjust Mask Menu 9-10
 - Coring Menu 9-8
 - Drop Shadow Menu 9-17
 - Emboss Menu 9-20
 - General Description 9-1
 - Keyer Setup Menu 9-2
 - Menu Tree 1 13-18
- Keyer
 - Emboss Menu 9-20
- Keyer Mode
 - Keyer Setup Menu 9-2
- Keyer Path Menu 9-7
- Keyer Setup Menu 9-2
 - Clip High 9-3
 - Clip Low 9-3
 - Defocus Key Adjust 9-3
 - External Keyer Appearance 9-3
 - Invert Key 9-3
 - Keyer Mode 9-2
 - Menu Tree 13-18
 - Waveform Shaping 9-3

- Keyframe Duration 2-14
- Keyframe Reset
 - Input Recursive Menu 7-24, 7-26
 - Output Recursive Menu 7-29
- Keypad 2-15
 - Numeric Entry 2-15
- Keypad Entry Button 5-5
- KF Dur. Button 2-14
- Knob Control Button 2-22
- Knobs, Soft 2-5
- Kurl Menu 8-25, 8-37
 - Angle 8-26
 - Count 8-40
 - Direction 8-26
 - Directoin 8-27
 - Horiz Pos 8-37
 - Inside Radius 8-40
 - Menu Tree 13-16
 - Modulation 8-37
 - Offset 8-26, 8-40
 - Outside Radius 8-40
 - Page Roll 8-27
 - Page Roll Layers 8-27
 - Page Turn 8-25
 - Pattern 8-37
 - Phase Mode 8-37
 - Pos Mod Pattern 8-38
 - Pos Mod Position 8-37
 - Position 8-36
 - Position Modulation 8-37
 - Radius 8-26
 - Rings 8-40
 - Rings Position 8-41
 - Rings Radius 8-40
 - Ripple 8-28
 - Ripple Modulation 8-29
 - Ripple Position 8-30
 - Show Sides 8-26
 - Size Mod 8-39
 - Size Modulation Pattern 8-39
 - Slits 8-32
 - Slits Modulation 8-33
 - Slits Pattern 8-35
 - Slits Position 8-34
 - Sphere 8-36
 - Splash 8-42
 - Vert Pos 8-37
 - Wrap 8-36

- Kurl Path Menu
 - Path
 - Kurl 8-43

L

- Large System Controller
 - Description 1-12
 - Front View Figure 1-13
 - Rear View Figure 1-13
- Last Menu Button 2-9, 13-1
- Layering Options
 - 2 x 2 Combiner Menu 11-25
 - 4 Channel Combiner Menu 11-19
- Lever Arm 2-18
- Light Type
 - Lighting Menu 10-3
- Lighting Menu 10-2
 - Adjust Levels 10-5
 - Highlight 10-2, 10-3
 - Light Type 10-3
 - Lighting Mode 10-2
 - Matte 10-7
 - Menu Tree 13-20
 - Position 10-4
 - Rotation 10-4
 - Shade 1 10-3, 10-7
 - Shade 2 10-3, 10-5
 - Shading 10-5
 - Shading Appearance 10-6
 - Specular 10-5
 - Specular Appearance 10-5
- Lighting Mode
 - Lighting Menu 10-2
- Lighting Path 10-9
- Lighting Source
 - Graphics Display Menu 12-10
- Linear
 - Path Type 6-4
- Loading Files 5-1
- Locate 3D Button 2-23
- Locate Axis Button 2-24
 - Double Pressing 13-1
- Lock Hues
 - Hue Modulation 7-7
- Locked

- Source Memory 4-3
- Loop
 - Entire Effect 6-13
 - Input Recursive Menu 7-24
 - Output Recursive Menu 7-30
 - Portion of Effect 6-13
- Loop Button 2-19
- Loop Control 6-12
- Loop Control Menu 6-12
 - Menu Tree 13-7
- Luma
 - Color Correction Menu 7-3

M

- Macro Area 2-10
- Macro Buttons 2-10
- Macro Control Menu 5-12
 - Menu Tree 13-7
- Macro Top Menu Button 2-8, 5-12
- Macros 5-12
 - Naming 5-12
 - Playing 5-13
 - Record 5-12
 - Saving 5-2
- Mark Block Button 2-12
- Mark Button 2-12
- Mark Cursor Button 2-21
- Mask
 - Defocus 7-17
 - Emboss Menu 9-20
- Mask Mix
 - Adjust Mask Menu 9-13
- Mask Mode
 - Adjust Mask Menu 9-10
- Mask Offset
 - Adjust Mask Menu 9-14
- Mask Path Menu 9-16
- Master Timeline
 - Change Indication 12-4
 - Current Keyframe 12-3
 - Current Time 12-3
 - Delegated Channel Work Buffer 12-4
 - Effect Duration 12-2
 - Effect Name 12-2
 - Master Timeline 12-2
- Off-screen Indicators 12-4
- Off-Screen Right/Left Indicators 12-4
- Offset Soft Knob 12-3
- Register Number 12-2
- Scroll Soft Knob 12-3
- Time Cursor 12-3
- Time Soft Knob 12-3
- Zoom Soft Knob 12-3
- Master Timeline Display 12-2
- Matte
 - Background Menu 11-15
 - Defocus 7-15
 - Drop Shadow Menu 9-18
 - Emboss Menu 9-21
 - Glow 7-19
 - Lighting Menu 10-7
- Matte Fill
 - Matte Fill Menu 11-6
- Matte Fill Menu 11-6
 - Adapt 11-10
 - Hue Rotate 11-6
 - Interp Mode 11-10
 - Matte Fill 11-6
 - Menu Tree 13-21
 - Modify Threshold 11-10
 - Picture Mask 11-6
- Matte Fill Path Menu 11-7
- Matte Path Control Menu 6-9
- Matte Type
 - Emboss Menu 9-21
- Menu
 - 2 x 2 Combiner 11-24
 - 2 x 2 Combiner Background 11-29
 - 4 Channel Combiner 11-17
 - 4 Channel Combiner Background 11-28
 - Adjust Mask 9-10
 - All Transform Paths 6-6
 - Background 11-15
 - Combiner Background Path 11-31
 - Combiner Control
 - Combiner Path 11-30
 - Coring 9-8
 - Corner Pinning 8-46
 - Crop 8-2
 - Defaults Prefs 3-7
 - Defocus/Glow 7-12
 - Defocus/Glow Path 7-20
 - Disk Manager 5-4

- Display Options 4-6
- Drop Shadow 9-17
- Ext Cntrl Prefs 3-4
- Global Assignment 11-14
- GPI Preferences 3-5
- Graphics Display 12-9
- Hard Freeze 7-37
- Horiz/Vert Reverse 11-8
- Input Recursive 7-23
- Input Recursive Path 7-27
- Keyer Setup 9-2
- Lighting 10-2
- Loop Control 6-12
- Macro Control 5-12
- Matte Fill 11-6
- Mosaic 7-21
- Mosaic Path 7-22
- Motion Detection 11-9
- Multiple Parameter Path Control 6-10
- Non-Transformation Path Control 6-8
- Output Control 11-13
- Output Recursive 7-28
- Output Recursive Path 7-37
- Panel Prefs 4-7
- Path Control 6-2
- Pause Control 6-11
- Perspective Blur 10-13
- Picture 7-1
- Picture Opacity 7-10
- Picture Opacity Path 7-11
- Pseudo Color 7-2
- Pseudo Color Path 7-9
- Register Operations 5-5
- Resource Acquisition 3-2
- Run Control 6-1
- Run Prefs 3-8
- Serial Ports Prefs 3-4
- Source Memory 4-2
- Source Select 11-3
- Spin Path Control 6-7
- Splits 8-44
- System Config 3-10
- System Setup 3-1
- Work Buf Prefs 4-4
- Menu Control Button 2-24
- Menu Display
 - General Description 2-3
- Menu Trees

- Introduction 13-1
- Mezzanine
 - Table of Part Numbers 1-17
- Mirror 8-45
- Mix Level
 - 2 x 2 Combiner Menu 11-24, 11-26
 - 4 Channel Combiner Menu 11-18
- Mix Mode
 - 2 x 2 Combiner Menu 11-24
- Mode Area 2-17
- Modify Button 2-14
 - Pressing Twice 2-14
- Modify Stage
 - 4 Channel Combiner Menu 11-18
- Modify Threshold
 - Matte Fill Menu 11-10
- Modulation
 - Kurl Menu 8-37
- Module
 - Table of Part Numbers 1-17
- Mono
 - Emboss Menu 9-21
- Montage Mode
 - Output Recursive Menu 7-32
- Montage/Appearance
 - Output Recursive Menu 7-32
- Montage/Strobe
 - Output Recursive Menu 7-31
- More
 - Defocus 7-13
- Mosaic 7-21
- Mosaic Menu 7-21
 - Adjust Mask 7-21
 - Menu Tree 13-10
 - Mosaic Source 7-21
 - Picture Mask 7-21
 - Tile Aspect 7-21
 - Tile Randomness 7-21
 - Tile Size 7-21
- Mosaic Path Menu 7-22
- Mosaic Source
 - Mosaic Menu 7-21
- Motion Decay/Appearance
 - Input Recursive Menu 7-25
 - Output Recursive Menu 7-30
- Motion Detection

- Field 11-9
- Frame 11-9
- Hard Freeze Menu 7-37
- Motion Detection Menu 11-9
 - Freeze Override 11-9
 - Menu Tree 13-21
- Move
 - Channel Operations 5-10
 - Register Operations 5-7
- Multi Channel System
 - Large System
 - Block Diagram 1-7
 - Figure 1-7
 - Small System
 - Block Diagram 1-6
 - Figure 1-5
- Multiple Parameter Path Control Menu 6-10
- Multiply
 - Emboss Menu 9-20

N

- NAM
 - Defocus 7-14
- NAM Matte
 - Defocus 7-14
- Naming Current Effect 5-11
- Near Button 2-21, 11-4
- Next Button 2-13
- Non-Transformation Path Control Menu 6-8
- Normal
 - 2 x 2 Combiner Menu 11-24
 - 4 Channel Combiner Menu 11-18
- Numeric Entry 2-15

O

- Offset
 - 4 Channel Combiner Background Menu 11-29
 - Defocus 7-16
 - Kurl Menu 8-26, 8-40
 - U(B-Y) 7-4
 - V(R-Y) 7-4
- 1 Channel Facility Example 1-19
- Opacity
 - Adjust Mask Menu 9-13

- Crop Menu 8-4
- Multiplication 7-10, 8-4, 8-8, 8-47, 11-21, 11-27
- Picture 7-10
- Optional Features 1-3
- Outline 7-18
 - Emboss Menu 9-22
- Output Control Menu 11-13
 - Menu Tree' Global Assign Menu
 - Menu Tree 13-21
 - Output Key Invert 11-13
- Output Key Invert
 - Output Control Menu 11-13
- Output Recursive 7-28
- Output Recursive Menu 7-28
 - Blur 7-32, 7-34
 - Decay 7-30
 - Display 7-36
 - Force Strobe 7-31, 7-34
 - Freeze/Appearance 7-29
 - Keyframe Reset 7-29
 - Loop 7-30
 - Menu Tree 13-12
 - Montage Mode 7-32
 - Montage/Appearance 7-32
 - Montage/Strobe 7-31
 - Motion Decay/Appearance 7-30
 - Output Recursive Menu
 - Trails/Wind 7-35
 - Picture Decay 7-29, 7-32
 - Read Timing 7-36
 - Show Picture 7-32, 7-34
 - Star Decay 7-29, 7-32, 7-34
 - Start Write 7-36
 - Strobe Type 7-29, 7-31, 7-33
 - Timing 7-36
 - Trail Decay 7-34
 - Trail Mode 7-34
 - Trails 7-35
 - Trails/Appearance 7-34
 - Trails/Strobe 7-33
 - Wind 7-35
- Output Recursive Path Menu 7-37
- Outputs
 - 4 Channel Combiner Menu 11-21
- Outside Radius
 - Kurl Menu 8-40
- Override Area 2-17

P

- Page Overlays
 - Graphics Display Menu 12-10
- Page Roll
 - Kurl Menu 8-27
- Page Roll Layers
 - Kurl Menu 8-27
- Page Turn
 - Kurl Menu 8-25
- Panel CFG
 - Saving 5-2
- Panel Configuration Menu 3-9
- Panel Preferences Menu 4-7
- Panel Prefs
 - Clip Options 4-7
 - Error Warning 4-7
 - Joystick Deadzone 4-7
 - Knob End Warning 4-7
 - Lamp Intensity 4-7
- Partial KF Button 2-17
- Paste Button 2-12
- Path
 - Border 8-24
 - Combiner 11-30
 - Combiner Background Path 11-31
 - Coring 9-9
 - Corner Pinning 8-47
 - Crop 8-9
 - Defocus/Glow 7-20
 - Drop Shadow 9-19
 - Emboss 9-24
 - Input Recursive 7-27
 - Keyer 9-7
 - Lighting 10-9
 - Mask 9-16
 - Matte Fill 11-7
 - Mosaic 7-22
 - Output Recursive 7-37
 - Perspective Enhance 10-11
 - Picture Opacity 7-11
 - Pseudo Color 7-9
 - Wash Background 11-16
- Path Button 2-9
- Path Control
 - Tension/Continuity/Bias 6-4
 - Tool Categories 6-2
- Path Control Menu 6-2
 - All Transform Paths 6-6
 - Hold 6-4
 - Matte 6-9
 - Menu Tree 13-24
 - Multiple Parameter 6-10
 - Non-Transformation 6-8
 - Spin Path Control 6-7
 - Transformation 6-4
- Path Functions
 - Menu Tree 13-25
- Path Type
 - Curve 6-4
 - Linear 6-4
 - Path Control Menu 6-4
 - S-Linear 6-4
 - Smooth 6-4
- Path Vectors 6-5
- Pattern
 - Adjust Mask Menu 9-10
 - Kurl Menu 8-37
- Pattern Appearance
 - Crop Menu 8-8
- Pattern Crop Mix
 - Crop Menu 8-9
- Pattern Flat Appearance
 - Border Menu 8-22
- Pattern Flat Matte
 - Border Menu 8-23
- Pattern Flat Mix
 - Border Menu 8-23
- Pattern Position
 - Crop Menu 8-7
- Pattern Repeat
 - Adjust Mask Menu 9-10
 - Crop Menu 8-6
- Pattern Selection
 - Crop Menu 8-6
- Pattern Wash
 - Border Menu 8-24
- Pause Control 6-11
- Pause Control Menu 6-11
 - Menu Tree 13-7
- Persp Blur Menu
 - Menu Tree 13-20
- Persp Clip

- Perspective Blur Menu 10-14
- Persp Enhance Menu
 - Menu Tree 13-20
- Perspective Blur Menu 10-12
 - Depth 10-12
 - Key Blur Offset 10-12
 - Persp Clip 10-14
 - Video Blur 10-12
- Perspective Blur Path Menu 10-13
- Perspective Button 2-25
- Perspective Clip Menu 10-14
- Perspective Enhance Menu 10-10
 - Dim 10-10
 - Fade 10-10
 - Start Depth 10-10
- Perspective Enhance Path Menu 10-11
- Phase Mode
 - Kurl Menu 8-37
- Physical Description
 - Overview 1-3
- Picture Button 2-8
- Picture Decay
 - Input Recursive Menu 7-24
 - Output Recursive Menu 7-29, 7-32
- Picture Frame Button 2-8
- Picture Frame Menu 8-25
 - Border Menu 8-10
 - Crop Menu 8-2
 - General Description 8-1
 - Kurl Menu 8-25
 - Menu Tree 13-13
- Picture Mask
 - Defocus 7-17
 - Matte Fill Menu 11-6
 - Mosaic Menu 7-21
 - Pseudo Color Mask 7-8
- Picture Menu
 - General Description 7-1
 - Menu Tree 13-8
- Picture Opacity Menu 7-10
 - Final Picture Opacity 7-10
 - Menu Tree 13-8
- Picture Opacity Path Menu 7-11
- Pos Mod Pattern
 - Kurl Menu 8-38
- Pos Mod Position

- Kurl Menu 8-37
- Position
 - Crop Menu 8-3
 - Kurl Menu 8-36
 - Lighting Menu 10-4
- Position Modulation 8-37
- Post Xform Button 2-25
- Posterization 7-5
- Posterization/Solarization
 - Reverse Video 7-5
- Posterization/Solarization Appearance 7-5
- Preferences
 - Work Buffer 4-4
- Preset
 - Corner Pinning Menu 8-46
- Prev. Button 2-13
- Private
 - Session Mode 3-3
- Pseudo Color Mask
 - Picture Mask 7-8
 - Pseudo Color Menu 7-8
- Pseudo Color Menu 7-2
 - Adjust Mask 7-8
 - Color Correction 7-3
 - Color Mode 7-2
 - Color Modulation/Appearance 7-6
 - Hue Modulation/Appearance 7-7
 - Menu Tree 13-8
 - Posterization/Solarization 7-5
- Pseudo Color Path Menu 7-9
- Public
 - Session Mode 3-3
- Put Button 2-16

R

- Radius
 - Kurl Menu 8-26
- Read Timing
 - Input Recursive Menu 7-26
 - Output Recursive Menu 7-36
- Recall Effect Button 2-16
- Recall GVG Defaults 4-5
- Recall Unity KF 4-5
- Recursive

- Input 7-23
- Output 7-28
- Recursive Mode
 - Input Recursive Menu 7-23
- Register Operations
 - Append 5-6
 - Copy 5-5
 - Erase 5-6
 - Move 5-7
 - Swap 5-6
- Register Operations Menu 5-5
 - Menu Tree 13-6
- Releasing Channel 3-4
- Releasing Effect Manager 3-3
- Resource Acquisition
 - Session Mode 3-2
- Resource Acquisition Menu 3-2
 - Channel 3-3
 - Effect Manager 3-2
- Restore Work Buffer Button 2-12
- Reverse Button 2-19
- Reverse Video
 - Color Modulation 7-6
 - Hue Modulation Appearance 7-7
 - Posterization/Solarization 7-5
- Rewind Button 2-19
- Rings
 - Kurl Menu 8-40
- Rings Position
 - Kurl Menu 8-41
- Rings Radius
 - Kurl Menu 8-40
- Ripple
 - Kurl Menu 8-28
- Ripple Modulation
 - Kurl Menu 8-29
- Ripple Position
 - Kurl Menu 8-30
- Rotate Button 2-24
- Rotation
 - Lighting Menu 10-4
- Rotation Mode
 - Adjust Mask Menu 9-12
 - Background Menu 11-15
 - Crop Menu 8-8
- Run Area 2-18

- Run Button 2-19
- Run Control Button 2-8
- Run Control Menu 6-1
 - Menu Tree 13-7
- Run Preferences Menu 3-8
- Running Effects
 - Bar Graph Indicator 2-18
 - Lever Arm 2-18
 - Reverse 2-19
 - Rewind 2-19
 - Run Button 2-19
 - Stop Next 2-19

S

- S. Black
 - Background Menu 11-15
- Saturation
 - Color Modulation 7-6
 - Glow 7-19
 - Hue Modulation 7-7
- Save Effect File
 - All 5-2
 - All Separate 5-2
- Save Error Log 5-4
- Save/Load File Types
 - Effects 5-2
 - Macros 5-2
 - Panel CFG 5-2
 - System Config 5-2
 - User Pref 5-2
- Save/Load Menu
 - Menu Tree 13-6
- Saving/Loading Files 5-1
- Screen Saver 4-6
- Secondary Iso
 - 4 Channel Combiner Menu 11-21
 - Example 11-22
- Secondary Output
 - 4 Channel Combiner Menu 11-21
 - Example 11-22
- Select Key Src
 - Source Select Menu 11-4
- Select Mask Src
 - Source Select Menu 11-4
- Select Video Src

- Source Select Menu 11-3
- Selecting Timeline Displays 4-6
- Self & Only 7-18
- Self Glow 7-18
- Self Key 9-2
- Serial Ports Preferences Menu 3-4
- Session Mode
 - Private 3-3
 - Public 3-3
 - Resource Acquisition 3-2
- Shade 1
 - Lighting Menu 10-3, 10-7
- Shade 2
 - Lighting Menu 10-3, 10-5
- Shading
 - Lighting Menu 10-5
- Shading Appearance
 - Lighting Menu 10-6
- Shaped Video 11-3
- Show Picture
 - Output Recursive Menu 7-32, 7-34
- Show Sides
 - Kurl Menu 8-26
- Single Channel System
 - Block Diagram 1-4
 - Example Facility 1-18
 - Figure 1-4
- Size
 - Adjust Mask Menu 9-11
 - Crop Menu 8-6
 - Graphics Display Menu 12-10
- Size Mod
 - Kurl Menu 8-39
- Size Modulation Pattern
 - Kurl Menu 8-39
- Size/Locate Button 2-23
- Skew Button 2-24
- S-Linear
 - Path Type 6-4
- Slits
 - Kurl Menu 8-32
- Slits Modulation
 - Kurl Menu 8-33
- Slits Pattern
 - Kurl Menu 8-35

- Slits Position
 - Kurl Menu 8-34
- Slope
 - 4 Channel Combiner Background Menu 11-29
- Small System Controller
 - Description 1-14
 - Figure 1-5
 - Front View Figure 1-14
 - Rear View Figure 1-14
- Smooth
 - Path Type 6-4
- Soft Buttons 2-4, 13-1
- Soft Knob 2-5
- Softness
 - Crop Menu 8-3
- Solarization 7-5
- Source Axis
 - Graphics Display Menu 12-10
- Source Button 2-23
- Source ID
 - Graphics Display Menu 12-10
- Source Memory
 - Locked 4-3
 - Parameters 4-2
 - Unity 4-3
- Source Memory Menu 4-2
- Source Select Menu 11-3
 - Hold Input 11-3
 - Menu Tree 13-21
 - Select Key Src 11-4
 - Select Mask Src 11-4
 - Select Video Src 11-3
 - Video Shaped 11-3
- Source Selection
 - Effects Send 11-5
- Spash
 - Requirements 8-42
- Specular
 - Lighting Menu 10-5
- Specular Appearance
 - Lighting Menu 10-5
- Sphere
 - Kurl Menu 8-36
- Spin Button 2-24
- Spin Path Control Menu 6-7
- Splash

- Functions 8-42
- Kurl Menu 8-42
- Split Sep
 - Splits Menu 8-44
- Splits and Mirrors 8-44
- Splits Menu 8-44
 - Axis Pos 8-45
 - Menu Tree 13-17
 - Mirror 8-45
 - Split Sep 8-44
- Standard
 - Features 1-1
- Star Decay
 - Input Recursive Menu 7-24
 - Output Recursive Menu 7-29, 7-32, 7-34
- Start Depth
 - Perspective Enhance Menu 10-10
- Start Time Button 2-14
- Start Write
 - Output Recursive Menu 7-36
- Starting Field
 - Any, Odd, Even 3-8
- Stop Next Button 2-19
- Strength
 - Emboss Menu 9-21
- Strobe Type
 - Input Recursive Menu 7-24
 - Output Recursive Menu 7-29, 7-31, 7-33
- Suite Configuration Menu
 - Menu Tree 13-4
- Super Black 11-15
- Swap
 - Channel Operations 5-9
 - Register Operations 5-6
- System
 - Overview 1-1
- System Config
 - Saving 5-2
- System Configuration Menu 3-10
 - Menu Tree 13-3
- System Controller Frame 1-12
- System Setup 3-1-3-10
- System Setup Menu 2-7, 3-1
 - General Description 3-1
 - Menu Tree 13-2

T

- Tally, Buttons 2-5
- Target Button 2-23
- Tension 6-4
 - Curve Path Type 6-5
- Tension/Continuity/Bias
 - Path Vectors 6-5
- Tile Aspect
 - Mosaic Menu 7-21
- Tile Randomness
 - Mosaic Menu 7-21
- Tile Size
 - Mosaic Menu 7-21
- Time Cursor Button 2-20
- Timeline Button 2-9, 12-1
- Timelines
 - Independent 12-5
 - Master 12-2
- Timing
 - Input Recursive Menu 7-26
 - Output Recursive Menu 7-36
- Top Menu Area 2-7
- Trail Decay
 - Output Recursive Menu 7-34
- Trail Mode
 - Output Recursive Menu 7-34
- Trails
 - Output Recursive Menu 7-35
- Trails/Appearance
 - Output Recursive Menu 7-34
- Trails/Strobe
 - Output Recursive Menu 7-33
- Trails/Wind 7-35
- Transfer 2-15
- Transfer Buttons 2-5, 2-15
- Transform Area 2-20
- Transform Display 12-7
- Transformation
 - Path Control Menu 6-4
- Trim Button 2-16
- Turbo Button
 - Joystick 2-22
- 2 Channel Facility Example 1-20

U

- U(B-Y) Gain/Sat 7-4
- U(B-Y) Offset 7-4
- Unity KF 4-5
- Unshaped Video 11-3
- User
 - Corner Pinning Menu 8-46
- User Assist Area 2-9
- User Pref
 - Saving 5-2
- User Tools Button 2-7
- User Tools Menu
 - Display Options 4-6
 - Edit Enable 4-8
 - General Description 4-1
 - Menu Tree 13-5
 - Source Memory 4-2
 - Work Buf Prefs 4-4

V

- V(R-Y) Gain/Sat 7-4
- V(R-Y) Offset 7-4
- Variable
 - 2 x 2 Combiner Menu 11-25
 - 4 Channel Combiner Menu 11-19
- Vert Pos
 - Kurl Menu 8-37
- Vert Position
 - Crop Menu 8-7
- Vertical Position
 - Adjust Mask Menu 9-11
- Video
 - Shaped 11-3
 - Unshaped 11-3
- Video Blur
 - Perspective Blur Menu 10-12
- Video Processor Frame
 - Front View Figure 1-11
 - Overview 1-10
 - Rear View Figure 1-11
- Video Shaped
 - Source Select Menu 11-3
- View Button 2-8
- View Menu

- Axis Lock Menu 10-15
- Easy Cube Menu 10-16
- General Description 10-1
- Lighting Menu 10-2
- Menu Tree 13-20
- Perspective Blur Menu 10-12
- Perspective Clip Menu 10-14
- Perspective Enhance Menu 10-10
- View Through
 - Corner Pinning Menu 8-47

W

- Wash
 - Background Menu 11-15
- Wash Background Path Menu 11-16
- Wash Matte
 - Background Menu 11-16
- Waveform Shaping
 - Crop Menu 8-4, 8-8
 - Keyer Setup Menu 9-3
- White Clr
 - Color Modulation 7-6
- White Level Hue
 - Hue Modulation 7-8
- Wind
 - Output Recursive Menu 7-35
- Work Buf Prefs
 - Define Unity KF 4-5
 - Menu 4-4
 - Recall GVG Defaults 4-5
 - Recall Unity KF 4-5
- Wrap
 - Kurl Menu 8-36
- Write Start
 - Input Recursive Menu 7-26

