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A **BELDEN** BRAND

# K-FRAME

KAYENNE/KARRERA/GV KORONA  
VIDEO PRODUCTION CENTER



User Manual

Software Version 10.6

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2017-04-01

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# Contents

Copyright & Trademark Notice .....	4
Grass Valley Web Site .....	4
Grass Valley Technical Support .....	4
Corporate Head Office .....	4
Recycling .....	4
<b>Preface</b> .....	<b>19</b>
About This Manual .....	19
Standard Documentation Set .....	19
Other Documentation .....	19
<b>Section 1 — Introduction</b> .....	<b>21</b>
Overview .....	21
Features .....	22
General .....	22
K-Frame Standard Frame .....	23
K-Frame Compact Frame .....	23
K-Frame Compact S-series Frame (Differences) .....	24
K-Frame Video Processor .....	24
K-Frame Control Surfaces .....	24
Kayenne Control Surface .....	24
Flat or Curved Control Panel Orientation .....	26
Control Panel Stripes .....	27
Touch Screen Menu Panel .....	27
Basic Single Suite Kayenne Panel System .....	28
Multiple Suite Kayenne Panel System Example .....	28
Karrera Control Surface .....	29
Touch Screen Menu Panel Option .....	30
Basic Single Suite Karrera Panel System .....	31
Multiple Suites and Control Surfaces Example .....	31
GV Korona Control Surfaces .....	33
Basic Single Suite GV Korona Panel System Example .....	34
Multiple Suites and Control Surfaces Example .....	34
Supported Control Protocols .....	35
<b>Section 2 — Setting Panel Preferences</b> .....	<b>37</b>
Control Panel Source Select Button Mapping .....	37
GV Korona K-Frame Aux Delegate Mapping .....	37
The Button Mapping Menu .....	38
Default Control Panel Source Select Button Mapping .....	41
Setting Control Panel Source Select Button Mapping Preferences .....	42
Assigning Colors to Control Panel Source Select Buttons .....	43
Assigning User-defined Colors .....	44

Mapping Remote Aux Panel Source Select Buttons on the Control Panel . . . . . 45  
 Mapping Remote Aux Panel Delegation Buttons . . . . . 46

**Section 3 — Setting Suite Preferences . . . . . 47**

Source Patching . . . . . 47  
     Engineering Names, Eng IDs, and Logical IDs . . . . . 48  
     Alternative Source Names. . . . . 48  
     Multiple Suites and Source Names . . . . . 49  
     Source Name Display Hierarchy . . . . . 49  
     Source Patching and Effects Portability . . . . . 50  
 Patching Engineering and Fixed Sources to Logical IDs . . . . . 51  
     Enable Source Correction on any Source (Globally) . . . . . 52  
 Patch a Key Input from One Source to a Different Source Using Patch Key . . . 53  
 Default Keyframe . . . . . 54  
 Learning a Default Keyframe . . . . . 54  
 Preview Prefs . . . . . 55  
     Safe Area . . . . . 56  
     Crosshair . . . . . 56  
     ME Viewer . . . . . 56  
 Multiviewer Preferences . . . . . 57  
     Set Multiviewer Layout Preferences . . . . . 58  
 File Operations . . . . . 59  
     Features . . . . . 60  
     Introduction. . . . . 60  
         GV Switcher Drive Access . . . . . 60  
         File Storage Organization . . . . . 60  
 Managing Files Using the Utilities Pane Buttons in the File Ops Menus . . . . . 61  
     Copy/Pasting Files. . . . . 62  
         Deleting Files . . . . . 63  
         Creating a Folder. . . . . 63  
         Renaming Files . . . . . 63  
 GV Switcher File Type Extensions. . . . . 64  
 Show Files . . . . . 64  
     Show File Buttons. . . . . 64  
     Create a Show File . . . . . 66  
     Load a Show File. . . . . 67  
     Load a Show from the Show Load History. . . . . 68  
     Updating a Show File. . . . . 69  
 All File Type and Directory Management . . . . . 71  
 Saving Panel Prefs and Suite Prefs Files . . . . . 72  
 Loading Panel Prefs and Suite Prefs Files. . . . . 72  
 Saving Source Tables . . . . . 73  
 Loading Source Tables. . . . . 75  
 Register Files . . . . . 75  
 Saving Register Files . . . . . 76  
 Loading Register Files . . . . . 78  
     Loading to a Different Set of Registers . . . . . 79  
 Saving Source Rules Files . . . . . 80  
 Loading Source Rules Files. . . . . 81  
 Saving Eng Setup Files . . . . . 82  
 Loading Eng Setup Files . . . . . 83  
 File Translation K-Frame Classic . . . . . 84  
     K-Frame Show Files . . . . . 84



Loading an Earlier Kayenne/Karrera Show into a K-Frame ..... 84  
 Importing Kalypso Image Store File Types into K-Frame..... 87

**Section 4 — Video Mix/Effects** ..... 89

- MEs and Keyers..... 89
- Chroma Key ..... 89
  - Chroma Key Auto Setup ..... 90
  - Manual Chroma Key Adjustments..... 90
  - Access Keyer Menu and Delegate Keyer ..... 91
  - Primary Suppression..... 91
  - Extra Chroma Key Controls..... 93
- Setting Up a Chroma Key ..... 94
  - Using Auto Setup ..... 94
  - Reshaping a Chroma Key Using Auto Setup ..... 95
  - Adjusting Chroma Key Controls..... 95
  - Reshaping Chroma Key ..... 97
  - Applying Chroma Key Secondary Color Suppression ..... 97
- Generating Background Mattes ..... 99
- Splitting a Key ..... 100
- Setting Keyer Priority ..... 101
  - Transitioning Between Different Keyer Priorities ..... 102
- Key Store..... 104
  - Keystore and 1080sf Mode..... 105
  - Grabbing a Key Store Image ..... 105
- Setting a Pattern Mix ..... 106
- Source Memory ..... 108
  - Learning Source Memory for a Keyer ..... 109
  - Deleting Source Memory from a Keyer ..... 110
  - Learn Source Memory from the Control Panel..... 111
- Acquiring DPMs ..... 111
  - Acquire an ME Resource for eDPM ..... 112
  - Release/Acquire DPM Resources between eDPMs/iDPMs..... 113
- Enable/Delegate DPM Channels ..... 113
  - Kayenne K-Frame Control Panel..... 113
    - Enable DPMs ..... 113
    - Delegate eDPM Channels..... 114
    - Enable a 2D DPM on a Keyer..... 114
  - Karrera K-Frame Control Panel..... 114
    - Enable an iDPM on a Keyer ..... 114
    - Delegate eDPM Channels..... 114
    - Enable a 2D DPM on a Keyer..... 114
  - Enable DPMs from the Menu ..... 115
- DPMs..... 116
  - 2D DPM..... 116
- Kayenne K-Frame (only) Parameter and Soft Knob Controls ..... 116
- DPM Source and Target Space Explained..... 118
  - Tally and DPM..... 118
  - DPM Transform Menu ..... 118
  - Enable DPM Transforms in the Menu ..... 118
  - DPM Global Channel Assignments ..... 118
  - Key Off Control ..... 120
  - Easy Cube Control..... 121
  - Transform Controls..... 121

Crop Controls . . . . .	121
Reverse Controls . . . . .	121
Path Controls . . . . .	122
Clear Transforms . . . . .	122
Border Menu . . . . .	122
iDPM Borderline Menu . . . . .	123
Shadow Controls . . . . .	123
iDPM Shadow Crop Controls . . . . .	123
Glow Pane Controls . . . . .	124
Glow Color . . . . .	125
Glow Path Control Pane . . . . .	125
iDPM/2D DPM Film Look Menus . . . . .	125
iDPM Kurl Menu . . . . .	125
Kurl Position/Size Modulation Mode . . . . .	126
Modulation Pane . . . . .	126
Mod Type Pane . . . . .	127
Pattern Pane . . . . .	127
Page Turn/Roll Mode . . . . .	127
Page Turn Pane . . . . .	128
Show Sides Pane . . . . .	128
Ripple Mode . . . . .	129
Slits Mode . . . . .	130
Sphere Mode . . . . .	130
iDPM Splits Mirrors Menu . . . . .	131
Splits Pane . . . . .	131
Splits & Mirrors Modifiers Pane . . . . .	131
iDPM Defocus Menu . . . . .	132
Defocus Pane . . . . .	132
NAM Matte Pane . . . . .	132
iDPM Lighting Menu . . . . .	133
Shadow Control Pane . . . . .	133
Light Type Pane . . . . .	133
Light Type . . . . .	133
Light Control Pane . . . . .	134
Lighting Path Controls . . . . .	135
Lighting with Page Turn/Roll Effects . . . . .	135
Lighting and Post Transform Space . . . . .	135
Output Recursive Menu . . . . .	135
Output Recursive Presets . . . . .	135
Output Recursive Modes . . . . .	136
Motion Decay Mode . . . . .	136
Freeze Mode . . . . .	137
Montage Mode . . . . .	138
DPM Global Channel Control Over Multiple MEs . . . . .	141
Set Up a DPM Secondary Global Channel . . . . .	141
Adjust iDPM/2D DPM Border Edges . . . . .	142
iDPM/2D DPM Border Color . . . . .	142
Adjust iDPM/2D DPM Border Edges . . . . .	143
eDPMs . . . . .	144
eDPM and Effects . . . . .	144
eDPM Partitioning . . . . .	145
eDPM Definable Sub-levels . . . . .	146
Assign Sources . . . . .	146
Button Mapping eDPMs to an ME . . . . .	147



eDPM Mode Menus . . . . .	147
eDPM 2DPM Menu . . . . .	147
Enabling eDPM 2D DPMs . . . . .	147
eDPM Effects Menus . . . . .	147
eDPM Category Menus . . . . .	148
File Ops Menu . . . . .	148
E-MEM & Timeline Menu . . . . .	149
Source Ops Menu . . . . .	150
Picture Menu . . . . .	150
<b>Section 5 — Switcher Control . . . . .</b>	<b>153</b>
Basic E-MEM Operations . . . . .	153
Time Value Entry . . . . .	153
Learning E-MEM Registers from the Control Panel . . . . .	154
Learn a Register in the Current Bank . . . . .	154
Learn a Register to a Different Bank . . . . .	154
Copying E-MEM Timeline Information with Get and Put . . . . .	155
Recalling E-MEM Registers from the Control Panel . . . . .	156
GV Korona E-MEM Run from the Control Panel . . . . .	156
Clearing E-MEM Registers . . . . .	158
Running an E-MEM Effect and Auto Run . . . . .	158
Learning E-MEM Sequences . . . . .	159
Advanced E-MEM Operations: Define E-MEM/Partial Keyframe Settings . . . . .	159
Macros . . . . .	160
Macro Recording . . . . .	160
Macro Playback . . . . .	161
Macro Attachments . . . . .	162
“Disabled” is the Default for the Macro Attachable Control Panel Preference	162
Macro Attachments and Importing Show Files . . . . .	162
Kayenne K-Frame Macro Operations . . . . .	163
Macro Control Button Group . . . . .	163
Macro Button Function Summary . . . . .	163
Record a Macro . . . . .	164
Insert a Macro Delay . . . . .	164
Playback a Macro Register . . . . .	165
Pre-Attach a Macro . . . . .	165
Post-Attach a Macro . . . . .	165
Attach Multiple Macros to the Same Button . . . . .	165
Remove a Macro Attachment . . . . .	166
Append to a Macro . . . . .	166
K-Frame Karrera Macro Operations . . . . .	166
Macro Control Button Group . . . . .	166
Macro Button Function Summary . . . . .	168
Record a Macro . . . . .	168
Insert a Macro Delay . . . . .	169
Recall a Macro Register . . . . .	169
Pre-Attach a Macro . . . . .	169
Post-Attach a Macro . . . . .	169
Attach Multiple Macros to the Same Button . . . . .	170
Remove a Macro Attachment . . . . .	170
Append to a Macro . . . . .	170
GV Korona K-Frame Macro Operations . . . . .	171
Recording Macros with GV Korona . . . . .	171

Record a Macro . . . . .	171
Attach a macro to a Control Panel Button . . . . .	172
Recall a Macro Register . . . . .	172
Performing Macro Operations from the Menu . . . . .	172
Recording a Macro . . . . .	172
Enter a Macro Panel Name . . . . .	173
Attaching a Macro . . . . .	174
Playing an Attached Macro . . . . .	175
Appending to a Macro . . . . .	175
Appending a Macro to Another Macro in the Menu . . . . .	175
Saving Macro Registers . . . . .	175
Loading Macro Registers . . . . .	176
Macros for Multiple Copies or Swaps . . . . .	176
Macros and E-MEMs . . . . .	176
E-MEM Recalls in a Macro . . . . .	176
Macros, Suites, and Surfaces . . . . .	177
GPI Macros . . . . .	177
Source Select Button Row Mode Delegation . . . . .	178
Delegate a Switcher Mode to a Source Select Button Row . . . . .	178
Source Select Button Row to Aux Mode Delegation . . . . .	179
Delegate a Kayenne Source Select Button Row to Aux Mode . . . . .	179
Delegate a Karrera Source Select Button Row to Aux Mode . . . . .	179
Delegate a GV Korona Source Select Button Row to Aux Mode . . . . .	179
K-Frame Panel Memory and P-MEM Registers . . . . .	179
Learn a Kayenne P-MEM Register . . . . .	180
Recall a Kayenne P-MEM Register . . . . .	180
Learn a Karrera/GV Korona P-MEM Register . . . . .	181
Recall a Karrera/GV Korona P-MEM Register . . . . .	181
Panel Memory Default Setting . . . . .	181
Source Rules . . . . .	182
Create a Source Rules Pattern . . . . .	183
Store a Source Rules Pattern . . . . .	183
Apply a Source Rules Pattern to other Sources . . . . .	184
Source Rules Hold . . . . .	184
Bus Linking . . . . .	184
Bus Linking Examples . . . . .	184
Bus Linking Menu . . . . .	185
Bus Linking Source Substitution Tables . . . . .	187
Linked Source Buttons . . . . .	187
Configuring a Source Table with Source Substitutions . . . . .	188
Storing (Copying) Source Table Substitutions to another Source Table . . . . .	189
Changing Source Tables for a Bus Link . . . . .	189
Source Table File Operations . . . . .	190
Linking Busses one-to-one . . . . .	190
Creating Parallel Bus Links . . . . .	191
Creating Cascading Bus Links . . . . .	192
Bus Linking Rules and Restrictions . . . . .	194
Bus Linking Management . . . . .	194
<b>Section 6 — Device Control . . . . .</b>	<b>197</b>
Device Control with the Menu . . . . .	197
Clip Loading . . . . .	198
Clip Directory (AMP Protocol) . . . . .	199

Timeline Event Information and Work Buffer Values . . . . .	199
Preparing the External Device for Control . . . . .	200
Controlling an External Device (Example) . . . . .	201
Controlling an External Device Using Timeline Events and E-MEM . . . . .	202
Playing a Video and Key Pair of Sources in Sync from an External Device . . . . .	203
Loading a Clip to Play On Air Later with Auto Start . . . . .	204
Building an Event List . . . . .	205
E-MEM Control of External Devices . . . . .	205
Introduction . . . . .	205
Configuration . . . . .	206
Operation . . . . .	206
Timecode Entry . . . . .	207
Multiple Events on the Same Keyframe . . . . .	207
RossTalk XPression Device Control . . . . .	208
Configure an External Device for XPression Control . . . . .	208
Take XPression IDs . . . . .	209
Using Extended GFX XPression Controls . . . . .	210
Fire XPression GPI Sets . . . . .	210
Kayenne K-Frame Device Control from the Control Panel . . . . .	211
System Bar . . . . .	212
Local Aux Module . . . . .	212
Ganging . . . . .	212
Multi-Function Module . . . . .	214
Single . . . . .	214
Multiple . . . . .	218
GOTO Mode . . . . .	219
Device Control Module . . . . .	220
Device Selection . . . . .	221
Gangs . . . . .	222
Q-MEM . . . . .	222
Learning a Q-MEM Register with a Single Device . . . . .	224
Learning a Q-MEM Register with Multiple Devices . . . . .	224
Learning Devices with Letter Buttons . . . . .	224
Learning Additional Devices . . . . .	224
Learning Only Device Associations into a Register . . . . .	225
Learning Clips for Devices without Affecting Letter Button Associations . . . . .	226
Cues and Gangs . . . . .	226
Status Display . . . . .	226
Karrera K-Frame Device Control from the Control Panel . . . . .	227
Router Interface Operation . . . . .	229
Introduction . . . . .	229
Features . . . . .	230
Menu Panel Router Interface Operation . . . . .	230
Router Indexing . . . . .	233
Add Router Indexing to Shows Created with Earlier Versions . . . . .	233
Router Control of Aux Buses . . . . .	233
Controlling Aux Bus Source Selections from a Router . . . . .	234
R-MEM . . . . .	235
Introduction . . . . .	235
Features . . . . .	235
R-MEM Menu Operation . . . . .	236
E-MEM Control of R-MEM . . . . .	238
Introduction . . . . .	238
E-MEM Prefs Assignment . . . . .	239

- Learning R-MEMs on the Control Panel . . . . . 239
- Changing R-MEM on an Existing E-MEM Register. . . . . 240
- Loading R-MEM Registers. . . . . 241
- Empty R-MEM Keyframes. . . . . 241
- Camera Control with Ethernet Camera Tally . . . . . 241
  - Camera Operations. . . . . 242
    - Source Ops . . . . . 242
- Newton Modular Control . . . . . 245
  - Introduction. . . . . 245
  - Installation on GV Switcher . . . . . 245
  - Newton Controls Configuration. . . . . 246
  - External Device Newton Menu Description. . . . . 247
    - Delegation Pvw Bus . . . . . 248
    - Input Selection. . . . . 248
    - Setup Selector. . . . . 248
    - Newton Channel Information. . . . . 248
    - Newton Controls. . . . . 248

**Section 7 — Switching Basics** . . . . . 249

- Switching . . . . . 249
- Kayenne K-Frame Control Panel Overview . . . . . 249
  - Panel Saver Mode . . . . . 251
  - Module Overview. . . . . 251
    - Transition Module. . . . . 251
      - Lever Arm and Bar Graphs . . . . . 252
      - Transition Module Status Display . . . . . 253
      - Function Buttons . . . . . 253
      - Next Transition Buttons . . . . . 254
      - Cut and Auto Buttons. . . . . 254
      - Additional Buttons . . . . . 255
  - Local E-MEM Module . . . . . 255
  - Master E-MEM Module . . . . . 258
  - Multi-Function Module . . . . . 259
  - Source Select Module . . . . . 261
    - Text Display Outlines. . . . . 262
    - Source Name Text Wraps. . . . . 262
    - Source Select Device Input Name Modifiers. . . . . 262
    - Source Select Motion Control Symbols . . . . . 263
    - Notification Symbols . . . . . 263
    - Source Select Buttons and SND. . . . . 263
    - Function and Delegation Buttons . . . . . 264
    - Split OLED Source Select Display States . . . . . 265
  - Local Aux Module . . . . . 266
  - System Bar . . . . . 268
    - Switched Preview Button Group . . . . . 268
    - Macro Editing Button Group. . . . . 269
    - Device Control Groups. . . . . 270
  - Device Control Module . . . . . 270
    - Device Control Functionality . . . . . 271
    - Device Control Module Organization . . . . . 271
- Kayenne K-Frame Delegation. . . . . 273
  - ME Delegation. . . . . 273
  - DELG Button . . . . . 273



Exchange ME . . . . .	273
Automatic Delegation . . . . .	274
Multiple Keyer Delegations . . . . .	274
DPOP and SPOP Menu Delegation . . . . .	274
Menu Panel and Touch Screen Overview . . . . .	276
Touch Screen . . . . .	276
Menu Selection . . . . .	276
Soft Knobs . . . . .	276
Data Pads and Touch Buttons . . . . .	277
GV Korona K-Frame Menu and Joystick Control . . . . .	278
Menu Screen Organization and Components . . . . .	279
History Mode . . . . .	281
Favorites Mode . . . . .	282
Creating a Last Menu Assignment in Favorites Mode . . . . .	283
Quick Tabs . . . . .	283
Delegation Group . . . . .	285
Parameter Control Area . . . . .	285
Numeric Keypad . . . . .	285
Alphanumeric Keypad . . . . .	286
Scrolling Lists . . . . .	286
Menu and Panel Interactions . . . . .	287
Transitions . . . . .	289
Wipes . . . . .	289
Other Wipe Pattern Generator Uses . . . . .	289
4K Quadrant Mode Wipe Limitations and Supported Wipe Patterns . . . . .	289
Manual Transitions . . . . .	291
Kayenne K-Frame Transition Module . . . . .	291
Manual Transitions . . . . .	291
To Perform a Lever Arm Transition . . . . .	292
To Perform an Auto Transition . . . . .	293
Performing a Mix Through Video Transition . . . . .	293
NAM and FAM Mixed Transitions . . . . .	294
Aux Bus Transitions . . . . .	295
Trans Lock Button . . . . .	296
Setting Wipe Transition Parameters . . . . .	297
Allocating Resources and Setting up the Transition . . . . .	297
Performing Aux Bus Transitions . . . . .	298

**Section 8 — Advanced Operations . . . . . 299**

Effect Editing with E-MEM & Timeline . . . . .	299
Insert a Keyframe . . . . .	299
Insert on a Keyframe With Insert After . . . . .	299
Insert on a Keyframe With Insert Before . . . . .	300
Insert After or Insert Before on a Keyframe . . . . .	301
Insert on the Path . . . . .	301
Building an Effect By Inserting a Keyframe on the Path . . . . .	302
Delete a Keyframe . . . . .	302
Keyframe Durations . . . . .	303
Changing the Duration of a New Keyframe . . . . .	303
Modifying an Existing Keyframe Duration . . . . .	304
Restoring KF Duration Default to the Keypad . . . . .	305
Effect Duration Editing . . . . .	305
Editing Effect Duration with the Control Panel . . . . .	305

Editing Effect Duration with the Menu Panel . . . . .	306
Editing Effect Durations of Individual Levels . . . . .	306
E-MEM Modify All Operations . . . . .	307
Performing a Modify All Operation . . . . .	308
E-MEM Learn Auto Recall . . . . .	309
Update E-MEM Register Header Information . . . . .	309
Set the Enable Groups Associated with Auto Recall . . . . .	309
Set the Effect Dissolve Rate for Auto Recall in an E-MEM Register . . . . .	309
Change Path Control Values in an Effect . . . . .	310
General Curve Tips . . . . .	311
Cutting and Pasting Path Values . . . . .	311
Controlling Smooth Path Windup . . . . .	311
E-MEM Transitions . . . . .	312
E-MEM Transition Rules . . . . .	312
Building Background E-MEM Transitions . . . . .	313
Building Keyer E-MEM Transitions . . . . .	314
Changing the Length of an E-MEM Transition . . . . .	315
Preventing Elements from Transitioning in E-MEMs . . . . .	315
Return to Normal Technique . . . . .	315
Source Holds in Effects . . . . .	316
Setting a Source Hold in a New Effect . . . . .	316
Setting a Source Hold in an Existing Effect . . . . .	317
Reusing Effects . . . . .	317
E-MEM and Macro Interaction . . . . .	318
Macros in an E-MEM . . . . .	319
E-MEM Prefs Macro Sub-level Assignment . . . . .	319
Preventing Assigned Macros from Running . . . . .	320
Adding a Macro to an E-MEM . . . . .	320
Partial Keyframing . . . . .	321
Excluding Sub-Levels in a Level . . . . .	322
Rules and Options for Excluding Sub-levels . . . . .	323
Define E-MEM . . . . .	324
Making E-MEM Sub-levels Definable to Other Levels . . . . .	324
Moving Currently Defined Sub-levels . . . . .	326
E-MEM Enables Tab . . . . .	328
Assignable Sub-levels . . . . .	328
Definable Sub-levels . . . . .	329
Effects Editing in the E-MEM Enables Tab . . . . .	329
Enabling E-MEM Levels from the E-MEM Enables Tab . . . . .	330
Additive Keyers . . . . .	331
Using Additive Keyer From the Menu . . . . .	331
Super Additive . . . . .	332
Using Additive Keyer From the Control Panel . . . . .	333
Macro Editor . . . . .	334
Macro Editor Columns and Rows . . . . .	335
Macro Line Editing . . . . .	336
Build a New Macro with Macro Builder . . . . .	337
Edit Macro Builder Created Macros . . . . .	339
Insert a Macro Delay . . . . .	340
Insert External Device Control Commands in Macros . . . . .	341
Creating a New Complex Macro . . . . .	341
Editing Complex Macros . . . . .	342
Edit Values . . . . .	344
Frame Simulator and Macro Editing/Building . . . . .	345

Set the Line Rate for the Frame Simulator . . . . .	345
Offline Macro Editing with the Frame Simulator . . . . .	346
Configure the Frame Simulator . . . . .	346
Configuring the GV Switcher Menu . . . . .	347
Transition Chaining . . . . .	348
Key Chaining . . . . .	349
Creating Chains . . . . .	349
Using Key Cut/Auto Control Panel Buttons with Key Chaining . . . . .	350
Key Chaining on a Single ME . . . . .	351
Key Chaining Across MEs . . . . .	352
Background Transition Chaining . . . . .	353
Partition Sync Mode . . . . .	354
Partition Sync . . . . .	355
Operations . . . . .	355
Creating Primary and Secondary MEs (Dual Feed) . . . . .	355
Multiple Feed . . . . .	356
Including Source Substitutions . . . . .	356
ME Split Mode . . . . .	357
ME Split Mode from the Menu . . . . .	358
Keyer Partition Visibility . . . . .	359
ME Split Mode from the Control Panel . . . . .	359
Secondary Partition Only . . . . .	359
ME Partition Preview . . . . .	359
Transitions in Split Mode . . . . .	360
Correcting Split ME Mode Out of Sync Transition Lever Arm . . . . .	360
Local E-MEM in Split Mode (Kayenne/Karrera) . . . . .	360
Master E-MEM in Split Mode . . . . .	361
Split MEs and E-MEM Control . . . . .	361
ME Copy in Split Mode . . . . .	361
Partition Boundaries . . . . .	361
E-MEM Level Assignments in Split Mode . . . . .	362
Partition Boundary Control . . . . .	362
Split Layered Mode . . . . .	363
Split Layered Mode Menu Controls . . . . .	364
Keyer Transforms and Effects . . . . .	365
4K Video Frame Operating Modes . . . . .	365
4K Transmission . . . . .	365
1080P ME Resources Available in 4K Frame Operating Mode . . . . .	365
4K System Configuration . . . . .	365
4K Video and Key Sources . . . . .	366
4K 2D-DPMs . . . . .	366
iDPM Support for Full 4K 2SI Effects . . . . .	366
4K Mode and Image Store . . . . .	367
Importing Images with Audio to Image Store . . . . .	367
4K 2SI (2 Sample Interleave) Modes and 2D-DPMs . . . . .	367
Enable a 2D-DPM Effect in 4K 2SI Mode . . . . .	368
Enable a 4K 2SI iDPM in the Menu . . . . .	368
Enable a 4K 2SI iDPM from the Control Panel . . . . .	368
4K Quad Modes and 2D-DPMs . . . . .	369
4K Quad Mode and 1080p Keyers . . . . .	369
4K Quad Mode and 4K Keyers . . . . .	369
4K 2K-DPM Quad Offset Borders and Cropping . . . . .	370
Create a 4K 2D-DPM Effect in 4K Quad Mode . . . . .	370
Corner Pinning . . . . .	373

Corner Pinning and Cropping . . . . .	374
Corner Pinning Menus . . . . .	375
Create a Corner Pinning Effect (Example) . . . . .	376
Corner Pinning from the Kayenne K-Frame Control Panel . . . . .	379
2D-DPM Edge Pinning . . . . .	382
Create an Edge Pinning Effect (Example) . . . . .	383
Adjusting a 2D-DPM Image with Edge Pinning Pan and Scan . . . . .	384
Using Edge Pinning with the Kayenne Multi-Function Module . . . . .	384
Using Pan and Scan to Adjust a 2D-DPM Image with the Kayenne Multi-Function Module . . . . .	386
Copy/Swap . . . . .	387
Copy Swap Menus . . . . .	387
Copy Swap ME Menu . . . . .	389
Copy Swap Wipes Menu . . . . .	389
Copying Transition Wipes . . . . .	390
Copy a Key wipe to a Key wipe . . . . .	391
Copying Between Transition and Key Wipes . . . . .	391
Copy a Transition Wipe to a Keyer Wipe (and Vice Versa) . . . . .	391
Copy an eDPM Wipe . . . . .	391
Copy Swap Mattes Menu . . . . .	392
Copy Swap Keyer Menu . . . . .	393
Copy Swap Macro Menu . . . . .	393
Copy Swap Timeline Menu . . . . .	394
Copy a Timeline with Copy/Swap . . . . .	396
Copy/Swap with the Multi-Function Module . . . . .	397
Copy an ME . . . . .	397
Swap MEs . . . . .	398
Copy a Keyer . . . . .	398
Copy e-DPMs . . . . .	399
Swap e-DPM Channels . . . . .	399
Image Store Options . . . . .	400
Image Store Memory . . . . .	400
Image Store Images Menus . . . . .	400
Image Store Quick Tabs . . . . .	401
Image Store Stills . . . . .	402
Local Still File Format . . . . .	402
Imported Still File Formats . . . . .	403
Operating the Menu Panel . . . . .	403
Modifying/ Adding Image Descriptions . . . . .	403
Configure Image Store Resources . . . . .	403
Release/ Acquire Image Store Memory for Suites . . . . .	404
Map Image Store Input Delegates . . . . .	405
Capture a Still from Input Video . . . . .	406
Create a Split Key for a Still Store Still . . . . .	409
Create an Image Store Still with another Video (Not Key) . . . . .	410
Still Playback from the Menu . . . . .	412
Load a still . . . . .	412
Modify a Still . . . . .	413
Set Freeze Mode . . . . .	413
Kayenne K-Frame Image Store Device Control . . . . .	415
Kayenne K-Frame System Bar Control . . . . .	416
Image Store Movies Option . . . . .	417
Image Store Movie File Formats Supported . . . . .	418
Recording Image Store Movies Longer than Maximum Lengths . . . . .	418

Image Store Movie Maximum Length . . . . .	418
Image Store Movie Storage Capacity . . . . .	419
Image Store maximum storage capacity of movies saved to disk for 16GB, 32GB, or 64GB licensed memory.. . . . .	419
Image Store Movies Feature Configuration. . . . .	420
Prerequisites . . . . .	420
License the Image Store Option. . . . .	420
Movie Playback with the Menu Application. . . . .	420
Movie Cueing and Playback Controls . . . . .	420
Movie Playback with the System Bar . . . . .	421
E-MEM Keyframe Triggers for Image Store Movies . . . . .	421
Load a Movie . . . . .	423
Create an E-MEM Keyframe Trigger . . . . .	423
Create an E-MEM Trigger Cue . . . . .	424
Record a Movie . . . . .	425
Name a Movie . . . . .	428
Select a Thumbnail . . . . .	428
Trim a Movie . . . . .	428
Split an Image Store Movie . . . . .	430
Join Image Store Movies and Stills . . . . .	431
Image Store Build Edit . . . . .	432
Built Movie Length . . . . .	432
Build Edit Default Settings. . . . .	433
Build Edit Menu Button Descriptions . . . . .	433
Copy a Movie with Build Edit. . . . .	436
Build a Movie Using a Key and Video from Different Movies. . . . .	436
Build a Movie With Video from One Channel as the Key for Another. . . . .	437
Offset an Image Store Key/Cut Signal with Build Edit. . . . .	437
Build a Movie Using Audio and Video/Key from Different Movies . . . . .	438
Offset Image Store Audio with Build Edit. . . . .	439
Creating a Sequenced Movie . . . . .	440
Create a Still Sequenced Movie . . . . .	440
Image Store Record Modes . . . . .	443
Normal Record Mode . . . . .	443
Timed Record Mode . . . . .	443
Loop Record Mode . . . . .	443
Delay Line Record Mode . . . . .	443
Audio Offset with Delay Line Record Mode. . . . .	444
Synchronizing Video and Audio with Delay Line Mode . . . . .	444
Using Delay Line Mode for Censorship. . . . .	444
Image Store Audio Levels in Loop Mode. . . . .	444
Create a Movie from Continuously Streaming Video with Loop Mode. . . . .	445
Create a Movie including a Delay with Delay Line Mode . . . . .	445
Image Store Audio Support. . . . .	446
Video Standards Supporting Image Store Audio . . . . .	447
Image Store Supports Audio for SD . . . . .	447
Image Store Audio. . . . .	447
Image Store Audio Requirements . . . . .	447
Importing Movies with Audio to Image Store . . . . .	447
Import Formatting for Image Store Audio. . . . .	447
Image Store Supports Audio for SD . . . . .	448
Image Store Audio Levels in Loop Mode. . . . .	448
Configure Image Store Audio Outputs . . . . .	448
Record Image Store Movies with Audio . . . . .	448

- Set the Image Store Movie Audio Offset . . . . . 449
- Delete Audio from an Image Store Movie . . . . . 450
- Image Store Library . . . . . 450
  - Conversion Requirements for Transferring External Image Files. . . . . 451
    - Image Store Still File Formats Supported . . . . . 451
    - Image Store Movie File Formats Supported . . . . . 451
  - Importing Kalypso File Types. . . . . 452
- Transfer Files . . . . . 453
- Backup & Restore . . . . . 454
- Configure a Networked PC for Image Store File Sharing Windows . . . . . 457
  - Create an Images Directory and Configure it for Sharing . . . . . 457
  - Set Network and Sharing Settings . . . . . 457
- ClipStore . . . . . 458
  - Summit/Solo Software Version . . . . . 458
    - ClipStore as an External Device . . . . . 459
  - Control Panel Operation . . . . . 460
  - ClipStore Menu Operations . . . . . 460
    - Clip Replay . . . . . 460
  - Load a ClipStore Clip . . . . . 462
    - Clip Cueing and Playback Controls . . . . . 464
    - E-MEM Keyframe Triggers for ClipStore . . . . . 465
  - Create a ClipStore E-MEM Keyframe Trigger . . . . . 465
  - Recording Clips. . . . . 466
  - Record a ClipStore Clip . . . . . 468
    - Editing Clips . . . . . 468
  - Mark a ClipStore thumbnail . . . . . 469
  - ClipStore Trim and Remove . . . . . 470
  - Make Sub-clips from the Current ClipStore Clip. . . . . 471
  - Cut Editing while Recording . . . . . 472
  - Build Editing . . . . . 473
  - Mark In/Out . . . . . 476
  - Mark a Thumbnail . . . . . 476
  - Make the Sub-Clip . . . . . 477
    - Make the Sub-Clip. . . . . 479
  - Join Edit . . . . . 480
    - File Operations . . . . . 481
  - Creating a Shared Folder for External USB Disk Drives. . . . . 482
    - Device Control. . . . . 483

**Glossary** . . . . . 485

**Index**. . . . . 493



# Preface

## About This Manual

The *K-Frame Kayenne/Karrera/GV Korona User Manual* is designed for operators of K-Frame systems.

## Standard Documentation Set

The standard K-Frame documentation set consists of a:

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

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

The *K-Frame Installation & Service Manuals* contains information about installing, configuring, and maintaining the system.

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

The *K-Frame Release Notes Addenda* contain corrected and known issues about the system software.

## Other Documentation

The *Switcher Products Protocols Manual* is available for developers and software engineers to use to design interfaces to the K-Frame systems.

The K-Frame Ethernet Tally is a proprietary protocol that provides all of the switcher status information required to calculate the Tally state of the switcher. The K-Frame Ethernet Tally Software Development Kit (SDK) is

available to approved vendors who need to interface with the Ethernet Tally system of the K-Frame. Contact Grass Valley Product Management for more information on this SDK.

The *KSP Graphical User Interface Instruction Manual* provides information, requirements, and instructions for operating the 1-ME switcher Soft Panel GUI on a touch screen or regular PC, including the optional customized keyboard.

The *Switcher Concepts Manual* provides an overview of switcher operation and describes basic switcher fundamentals.

# *Introduction*

## **Overview**

The Grass Valley K-Frame family of multi-format digital production switchers provides powerful, ground-breaking features designed to meet the widest range of requirements for live studio, mobile, and post-production applications.

The K-Frame Video Processor is the heart of the system, providing extensive video switching and signal processing capabilities. This functionality is controlled using:

- a Kayenne control surface,
- a Karrera control surface,
- GV Korona surface
- the Soft Panel (KSP option), and/or
- the Menu application running on a PC.

In addition, a K-Frame system supports direct control of external devices (DDRs, Servers) and bi-directional control to and from routing and automation systems.

# Features

## General

- Fully digital 10-bit 4:2:2 video switcher including Future-Ready 4K and 1080p (level A or B) support.
- Optional smart I/O modules provide up/down/cross-conversion when licensed with SetDef and MatchDef.
- The K-FRM-IO-10GE IP I/O board for the K-Frame video processing engine offers Video-Over-IP connectivity for all K-Frame Video Production Switchers, using either uncompressed SMPTE 2022-6 or 4K 1-wire compressed IP.
- Integrated Macro Builder/Editor allows users to edit macros online or offline on a PC running the menu application.
- Optional DoubleTake™ (split M/E mode) effectively increases the number of M/Es and adds flexibility to Suites operation while FlexiKey™ programmable clean feed mode supports separately programmable configurations of keyers from four M/E outputs.
- Aux bus transitions for dissolves and wipes on aux bus outputs.
- Interfaces with Grass Valley routers and Kaleido Multiviewers and their control systems.
- Optional Integrated Image Store capable of delivering up to 32 GB and 64GB storage of Stills (3,000/6,000 images) or “Movies” (a total of 50 seconds or 1 minute 40 seconds) of 1080p video.
- LDK Series and LDX Series camera control with Ethernet tally via Connect Gateway.
- Optional integrated external ClipStore provides multiple channels of video/key pairs for up to 10+ hours of nonvolatile video/key/audio clip content.
- 999 macros with many new ways to recall macros from the Control Panel.
- 1,000 E-MEM registers with Define E-MEM for fine control in creation and editing of effects.
- Optional M/E Previewer provides a method to check and monitor any input to an M/E.
- VDCP Ethernet connection for stadium applications.
- Ethernet tally connection for integration with external tally systems.
- Optional RGB color correction on M/E buses and aux bus outputs.

- Source Rules:
  - Links keyers to sources.
  - Settings for On/Off/Left Alone on every M/E.
  - Full look-ahead preview of rules.
- Hot-swappable, front/rear removable modules and power supplies.
- Optional multiple Multiviewer capability with 5 pre-configured layouts (maximum 14 panes per layout) with On-Air and Preview tally.

## K-Frame Standard Frame

- Up to 192 inputs and 96 outputs.
- Up to 9 M/Es, accessible across two suites—by using DoubleTake this may be increased to 18 virtual M/Es.
- Every M/E has six keyers with standard keying modes including Chroma Key, a pool of floating 3D iDPMs, and two frame stores per keyer—the Controller M/E cannot use floating 3D iDPMs.
- 2D-DPMs (resizers) on every keyer, with 6 pairs per M/E so iDPMs can be utilized for more complex effects.
- The Controller M/E has a complement of 6 full keyers with Chroma Key and 2D-DPMs.
- Up to 16 iDPMs (Integrated Digital Picture Manipulators), assigned as either floating iDPMs or within an eDPM at user’s discretion.

## K-Frame Compact Frame

- Up to 80 inputs and 48 outputs.
- Up to 5 M/Es, accessible across two suites, increased to 10 virtual M/Es by using DoubleTake.
- Every M/E has six keyers with standard keying modes including Chroma Key, two frame stores per keyer—every keyer except for Controller M/E can use the pool of floating 3D iDPMs.
- 2D-DPMs (resizers) on every keyer.
- The Controller M/E has a complement of 6 full keyers with Chroma Key and 2D-DPMs.
- Up to 8 iDPMs (Integrated Digital Picture Manipulators), assigned as either floating iDPMs or within an eDPM at user’s discretion.

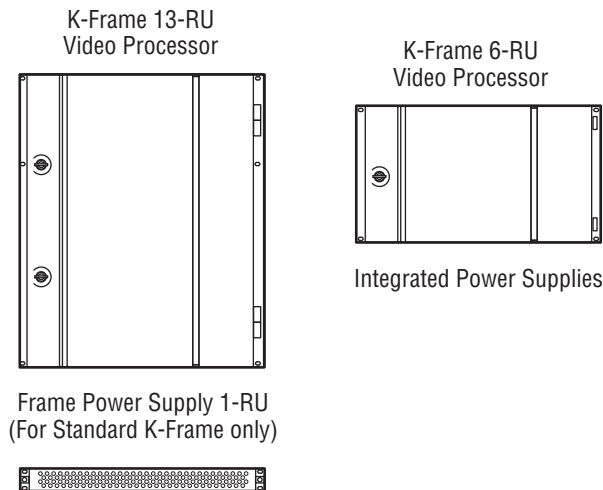
## K-Frame Compact S-series Frame (Differences)

- Up to 6 M/Es, accessible across two suites, increased to 12 virtual M/Es by using DoubleTake.
- Every M/E has four keyers with standard keying modes including Chroma Key and every keyer can use the pool of floating 3D iDPMs (Key Stores are not available).
- 2D-DPMs (resizers) on every keyer.
- Two built-in multiviewers with five pre-configured layouts (maximum 14 panes per layout) and On-Air/Preview tally.

## K-Frame Video Processor

The K-Frame Video Processor is available in two sizes, the 13RU Standard and the 6RU Compact. The number of licensed boards present in the frame determines the number of MEs available, as well as the number of video inputs, outputs, GPIOs and Relay Tallies.

Figure 1. K-Frame Video Processors



## K-Frame Control Surfaces

### Kayenne Control Surface

A Kayenne control surface typically consists of a Control Panel, a Menu Panel with an included articulated support arm, a Panel Control Unit (PCU) frame, and optional Satellite Panels. This control surface has an



innovative modular design. Representative Kayenne control surfaces are shown in the following illustrations.

Figure 2. Kayenne 4-ME 35 Control Surface

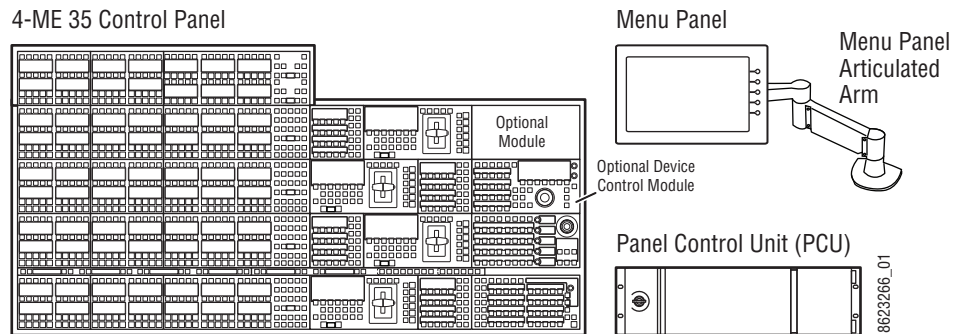


Figure 3. Kayenne 3-ME 35 Control Surface

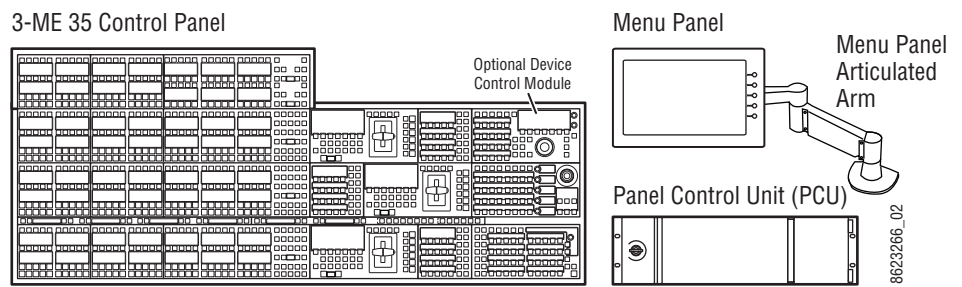


Figure 4. Kayenne 2-ME 25 Control Surface

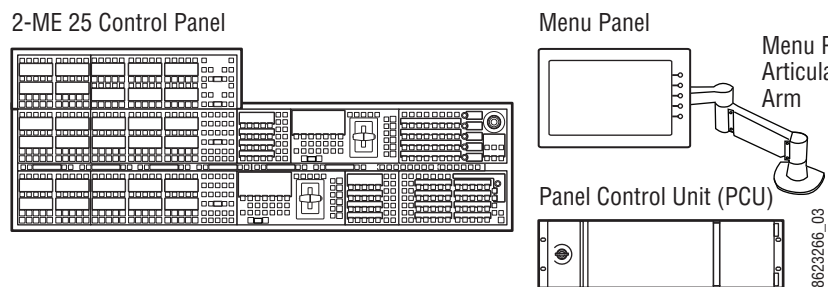
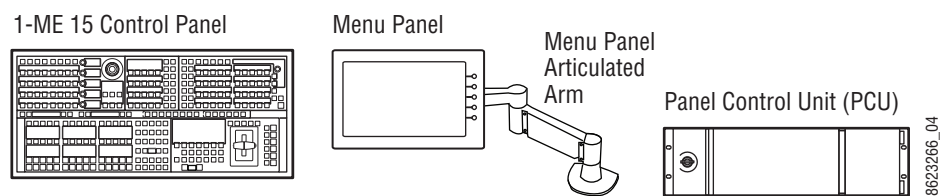


Figure 5. Kayenne 1-ME 15 Control Surface



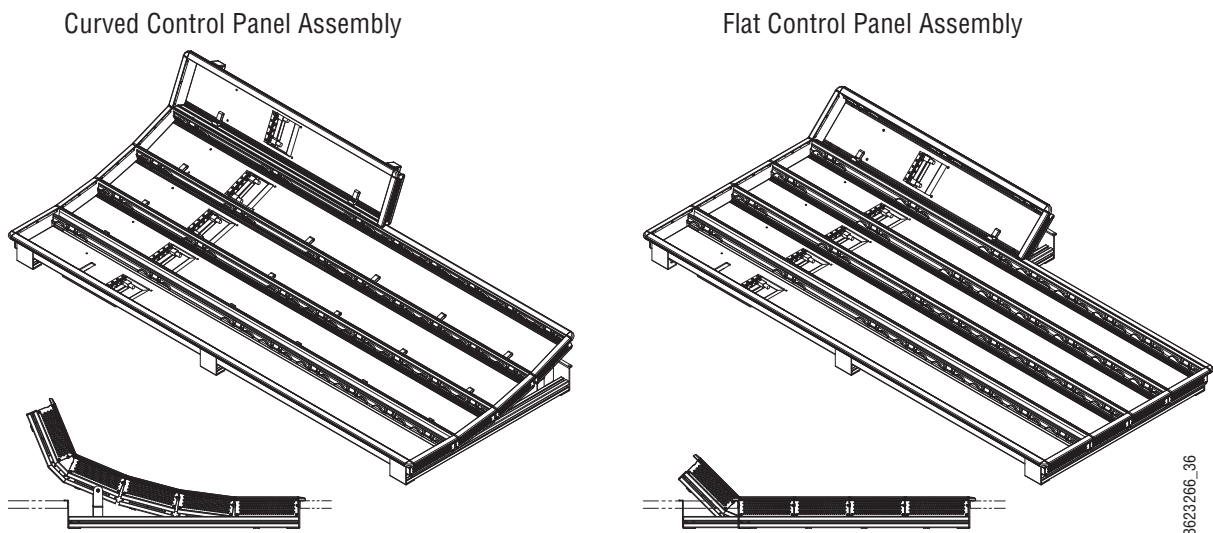
The modular design and use of a separate PCU supports the hot-replacement of individual Control Panel components, if necessary, while the rest of the system remains operational.

**CAUTION** Do not connect or disconnect the PCU to Control Panel cables while the system is powered on.

## Flat or Curved Control Panel Orientation

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

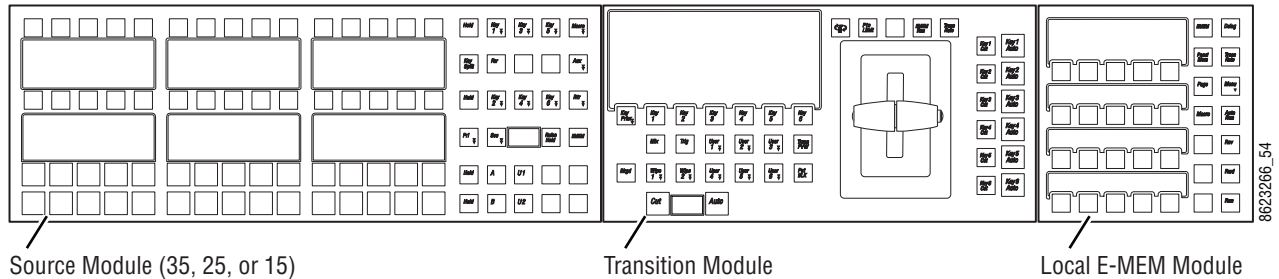
Figure 6. Curved and Flat Control Surface Installations



## Control Panel Stripes

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

Figure 7. Portion of Control Panel ME Stripe

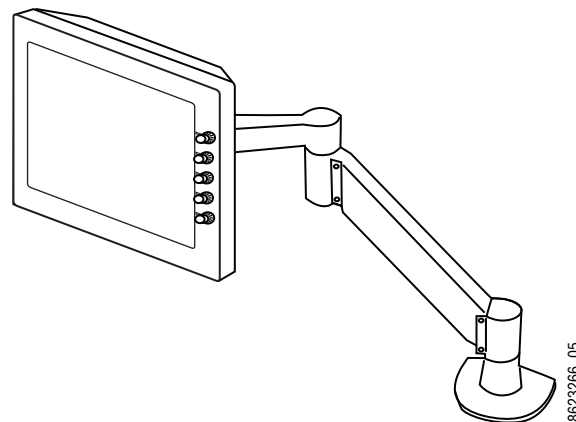


## Touch Screen Menu Panel

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

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

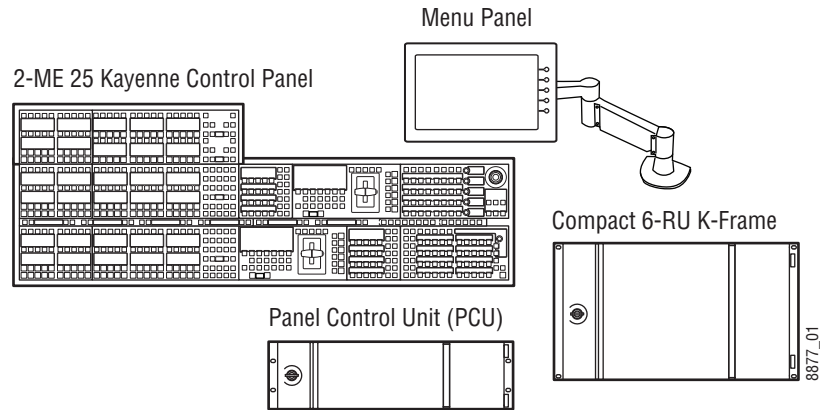
Figure 8. Menu Panel with Articulated Arm



## Basic Single Suite Kayenne Panel System

A basic K-Frame system consists of a Control Panel, a Menu application running on a touch screen Menu Panel, and a Video Processor Frame. The Control Panel and Menu application make up a control surface associated with that frame. The Kayenne Control Panel and Menu Panel have associated active electronics housed in the Panel Control Unit (PCU).

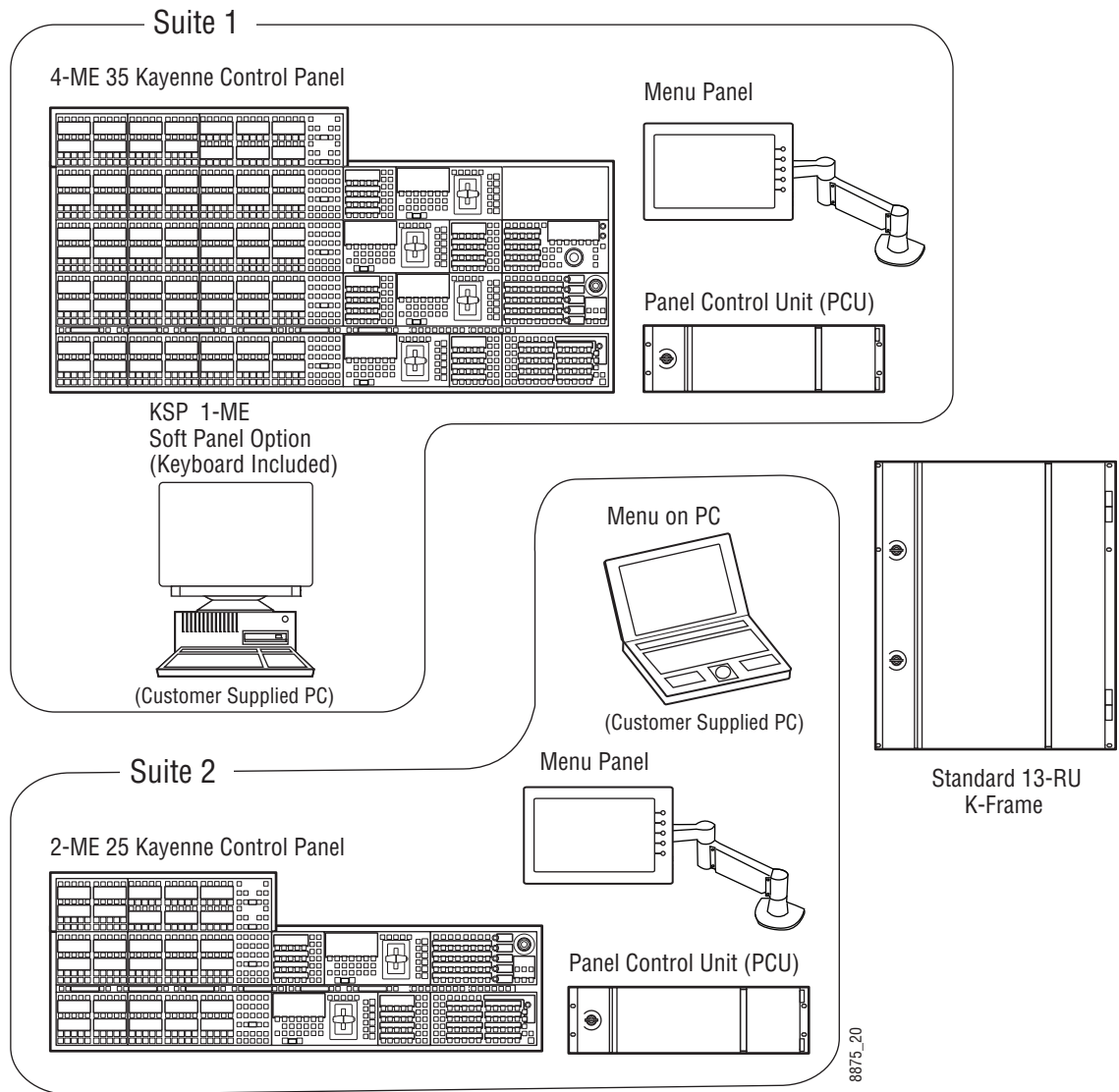
Figure 9. Kayenne Single Suite Compact Frame Example



## Multiple Suite Kayenne Panel System Example

A K-Frame system can be subdivided into two suites, if desired, each of which can have two control surfaces (Surface A and Surface B). Each surface has its own set of Panel Preferences for configuration of the control panel behavior and independent macro systems to allow for independent building and running of macros by each operator at the control surface. Hardware resources in the Video Processor Frame can be assigned to an individual suite during configuration, essentially creating two separate switchers sharing one frame.

Figure 10. Kayenne Multi-Suite Standard Frame Example

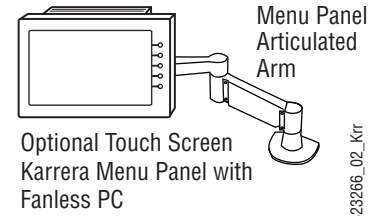
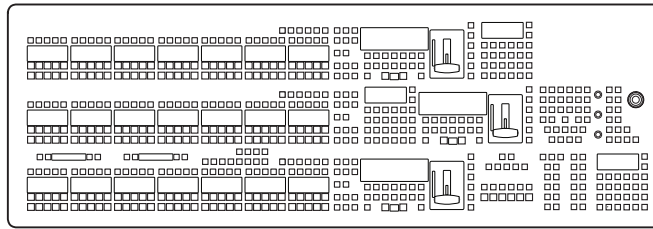


## Karrera Control Surface

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

Figure 11. Karrera 3-ME 35 Control Surface

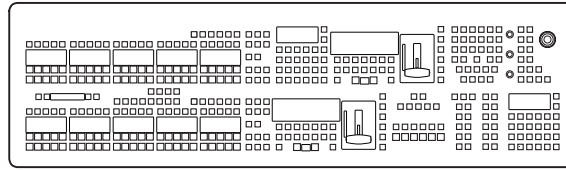
Karrera 3-ME 35 Control Panel



8623266\_02\_Krr

Figure 12. Karrera 2-ME 25 Control Surface

Karrera 2-ME 25 Control Panel



Karrera Menu on PC



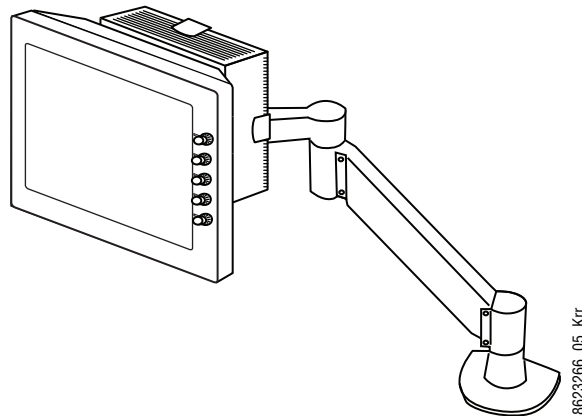
(Customer Supplied PC)

8623266\_03\_Krr

## Touch Screen Menu Panel Option

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

Figure 13. Menu Panel with Articulated Arm



The Menu Panel has a standard VESA-75 hole pattern and M4 threads, compatible with this and many other mounting devices. The Menu Panel also has four USB ports, two on the right side edge of the panel and two on the back for keyboard and mouse (wired or wireless are supported).

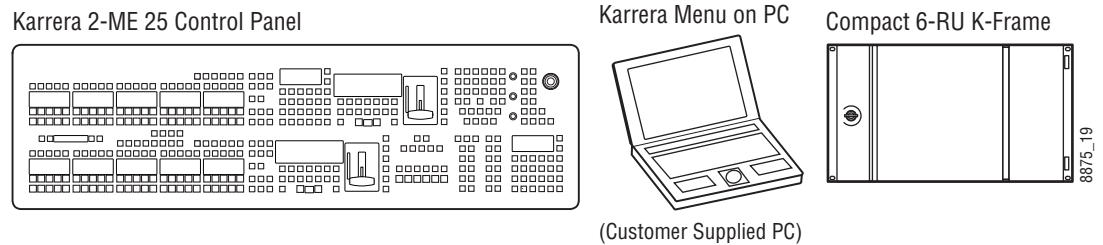
A fanless PC, running Windows OS, is available which mounts behind the Menu Panel.



## Basic Single Suite Karrera Panel System

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

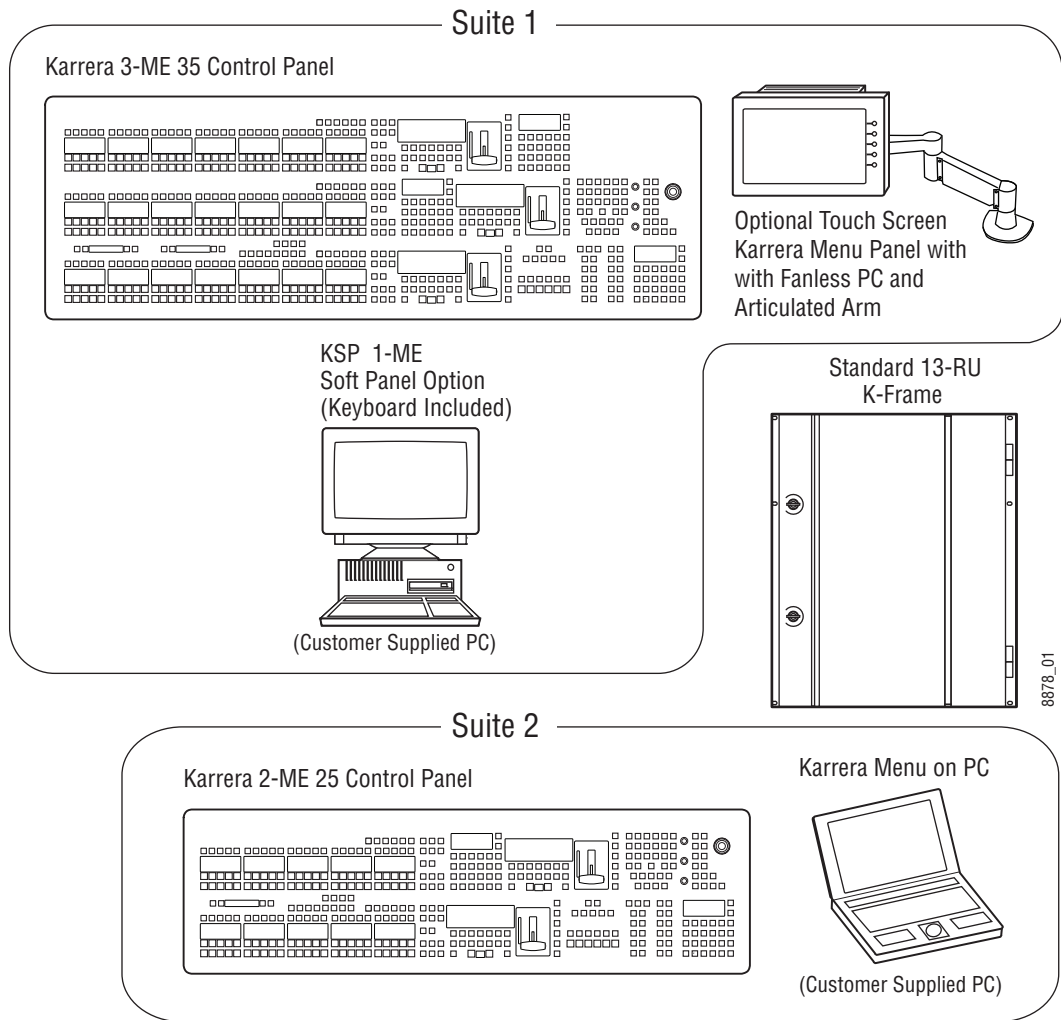
Figure 14. Karrera Single Suite Compact Frame Example



## Multiple Suites and Control Surfaces Example

A K-Frame system can be subdivided into two suites, if desired, each of which can have two control surfaces. Hardware resources in the Video Processor Frame can be assigned to an individual suite during configuration, essentially creating two separate switchers sharing one K-Frame.

Figure 15. Karrera Multi-Suite Standard Frame Example



## GV Korona Control Surfaces

A GV Korona control surface consists of:

- A Control Panel with stripes of buttons,
- System Control area with a Device Control area,
- Switched preview,
- Alternate bus and Aux bus delegation,
- Macro controls,
- Controls for background and keyer source selection,
- Multi-Function and E-MEM area,
- Horizontal keyer cut/mix,
- Multi-function keypad and display, and
- Includes a built-in multi-touch display and menu system.

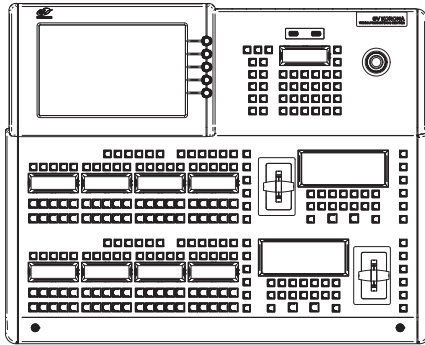


GV Korona Control Surfaces

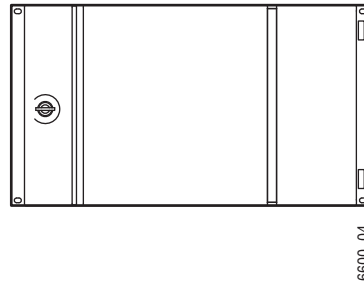
## Basic Single Suite GV Korona Panel System Example

A Basic K-Frame GV Korona system consists of a Control Panel with a fully integrated multi-touch menu system and an S-series 6RU Frame.

GV Korona 2-ME 20 Control Panel



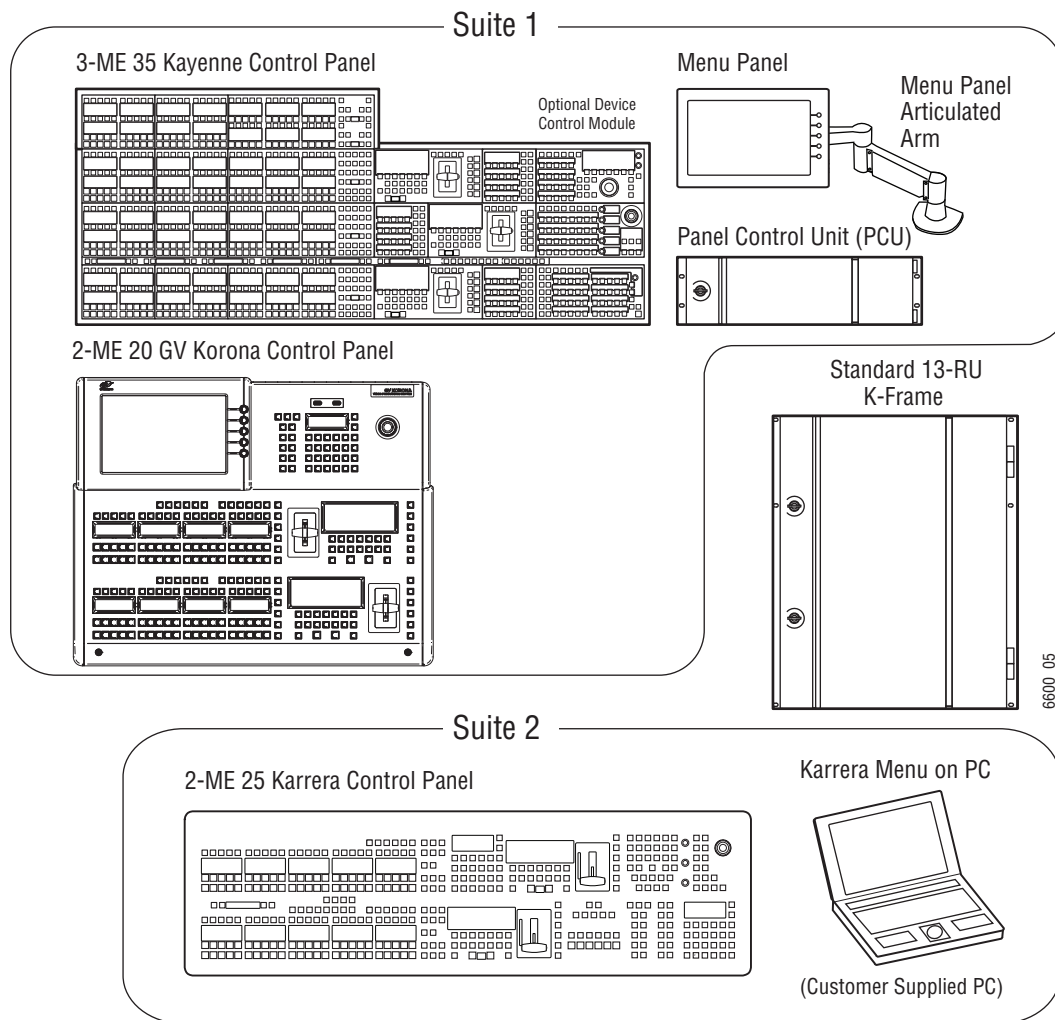
K-Frame S-series 6-RU



GV Korona Single Suite S-Series Frame Example

## Multiple Suites and Control Surfaces Example

Any K-Frame Kayenne, Karrera, or GV Korona Control Panel can be configured with any K-Frame Video Processor. The K-Frame system can be subdivided into two suites and each suite can have up to two control surfaces. Hardware resources in the Video Processor Frame can be assigned to an individual suite during configuration, essentially creating two separate switchers sharing one Frame. See the K-Frame Installation & Service Manual for suite configuration information.



K-Frame Multi-Suite Frame Example

## Supported Control Protocols

- Ethernet
- PBus II
- GPI Inputs and Outputs
- Serial BVW-75 for VTR control
- Odetics protocol for VTR control
- AMP (advanced media protocol) for Profile PVS, Profile XP Media Platform, K2, M-Series, Turbo iDDR, and T2 iDDR systems over Ethernet

- Grass Valley Native Protocol for routers/routing control systems (Trinix/Trinix NXT, Venus™, Triton™, and third-party routers; Jupiter NV9000 and NV920, and Encore router control systems)
- Tally (contact closure)
- K-Frame Ethernet Tally protocol
- Ethernet CPL to control Grass Valley external remote AUX Panels
- Grass Valley Editor protocol
- SNMP system monitoring
- Serial and Ethernet VDCP
- LDK Series & LDX Series™ camera control with Ethernet tally via Connect Gateway

# Setting Panel Preferences

## Control Panel Source Select Button Mapping

Video sources can be assigned or “mapped” to Control Panel Source Selection buttons, referred to as “Button Mapping”, on each Control Panel Mix/Effects (ME) bank and the Local Aux Panel. The same source can be mapped to one or many buttons. Button mapping is also used to assign Aux buses to delegation buttons, referred to as “Aux Delegate Button Mapping”.

Source Select buttons on the Grass Valley Video Production Control Panel and Local Aux can be changed from the defaults to best suit how you work. operators often map groups of sources together, like cameras, character generators, Image Store and ClipStore Channels, and other kinds of like sources, or an operator may setup the source select buttons in the order they plan to switch a show.

Button mapping settings are included as part of Panel Preferences, and can be saved and instantly loaded for use at any time from the File Ops, User Setups menu.

**Note** If a GV Switcher system’s NV memory is cleared, the button mapping for the Control Panel and Local Aux will revert to the factory defaults.

## GV Korona K-Frame Aux Delegate Mapping

Use the Aux button on the Control Panel to delegate Aux bus control.



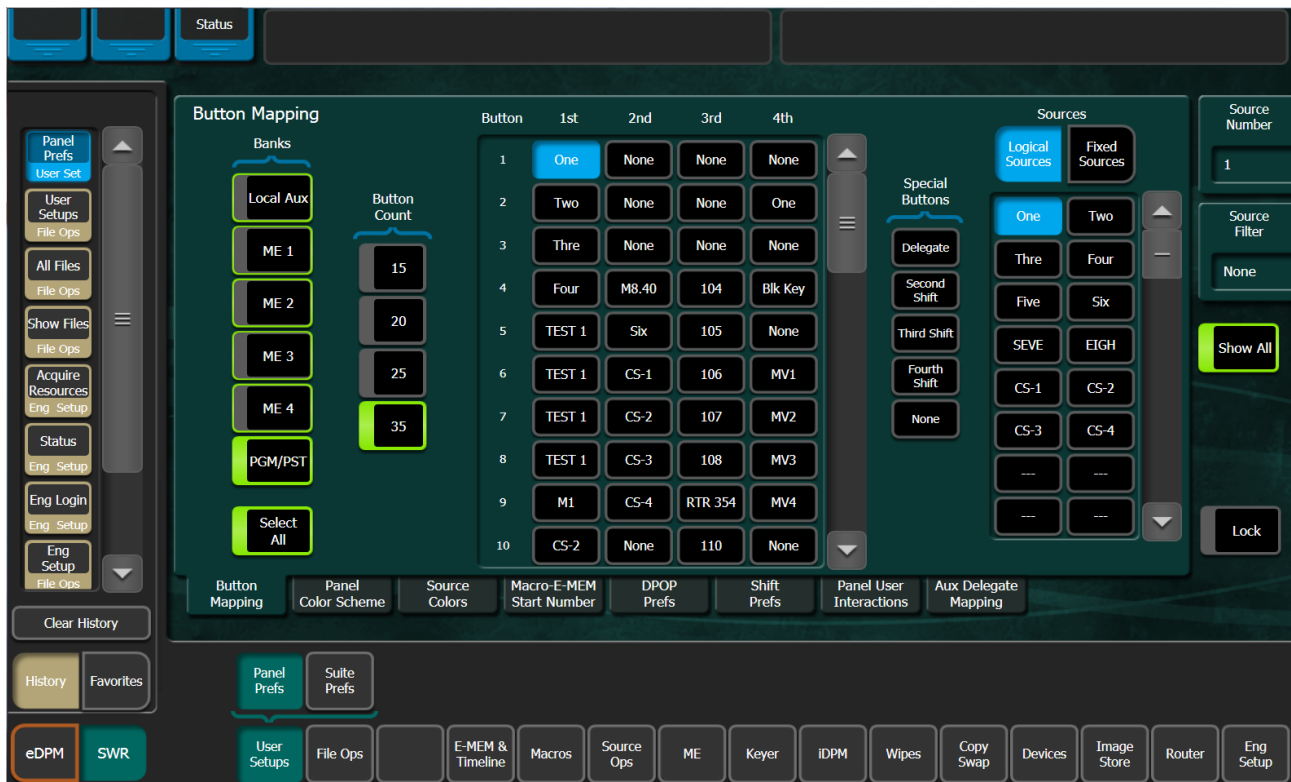
- Press the Aux button once to delegate a bus row to Aux, you can then assign sources to the Aux buttons.
- Press and hold, then release and select a delegated Aux button to control that Aux input, for example Image Store.

Aux bus delegation is displayed in the OLED at the far right of the right-hand display.

## The Button Mapping Menu

Access the Button Mapping menu by selecting **User Setups**, **Panel Prefs**, **Button Mapping**.

Figure 16. Button Mapping Menu, Logical Sources



The following describes the menu area and button functions of the Button Mapping menu:

- Bank toggle buttons are used to select one, several, or all MEs and/or Local Aux (includes the **Select All** button). Logical/Fixed sources selected are assigned to any Banks buttons toggled to on in the Banks button row.
- Whichever Bank buttons are on when a Logical or Fixed Source is selected for assignment, the source select buttons for those banks are assigned that selection.



- Button Count buttons (**15**, **25**, and **35**) are used to select the button count for the Control Panel. For example if the menu has not been associated with a Control Panel or if using a 15 or 25 button Control Panel with a 35 button Aux Panel, the button count can be selected manually (this selection is automatic if a panel has been associated in the **Associated Panel** data pad, in the Eng Setup, Node Settings, Frame Suite Nodes & ID menu). The Source Select button scrolling list allows you to select a source select button to assign a source from the Logical/Fixed Sources list.

Special Buttons are used to assign Delegate and Shifted Levels to Source Select buttons:

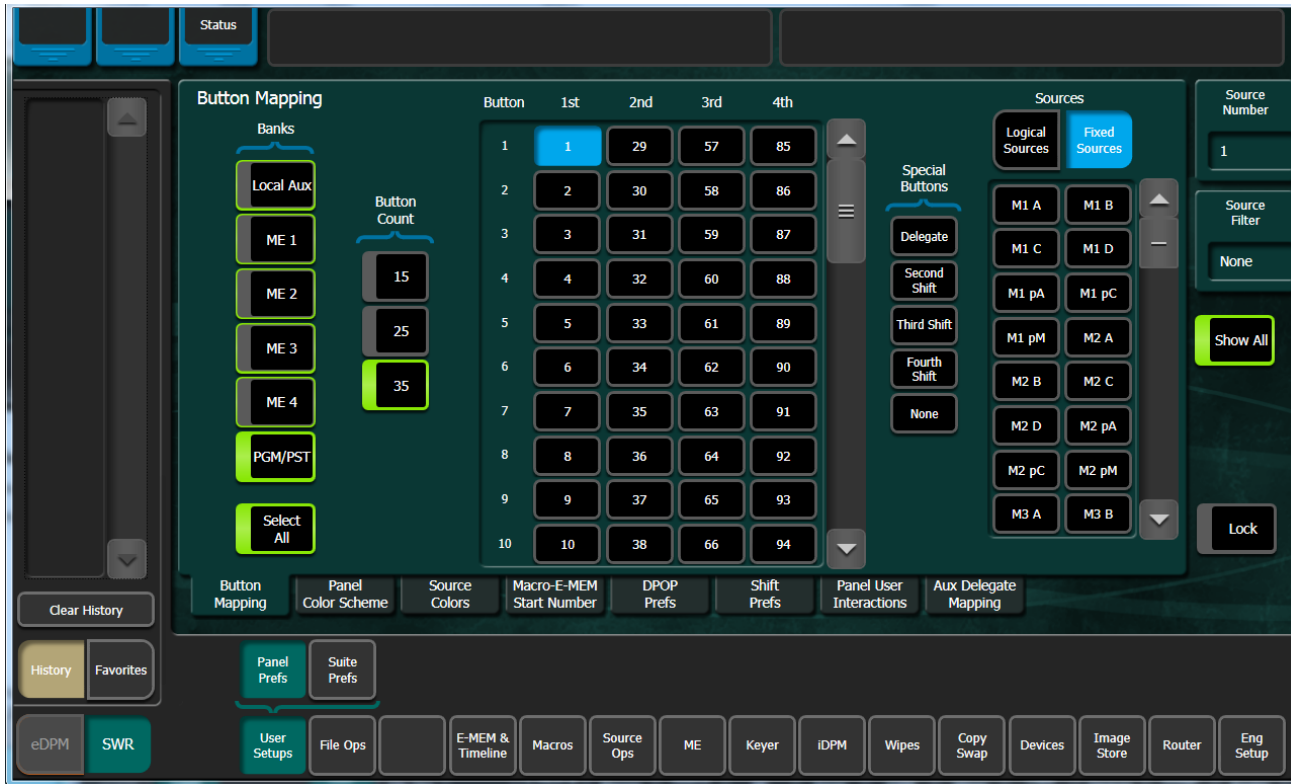
- **Delegate** button is used to assign the Keyer and Bus Row delegations to source select buttons.
- **Second Shift**, **Third Shift**, and **Fourth Shift** buttons are used to assign those shift levels to source select buttons.
- **Same as 1st** button is used to assign the source from the first level on a bus to another shifted level for that bus (Second, Third, or Fourth).
- **None** button assigns the selected source select button as unmapped.

When a Special Button is selected as a mapped source for a Source Select button, that assignment will be given to each level of that bus; each can be changed individually afterward.

The Logical/Fixed Sources section is used to search and assign sources:

- **Sources** scrolling list is used to locate assignable sources. You can choose from Logical Sources, or Fixed Sources.

Figure 17. Button Mapping Menu, Fixed Sources



- **Source Number** data pad displays a data entry pop-up when selected and is used to assign a Logical source number to a source select button.
- **Source Filter** data pad displays a data entry pop-up when selected and is used to perform an alpha-numeric, case sensitive search of Logical or Fixed sources.
- **Show All** button displays all sources in the scrolling list.
- **Lock** button locks the scrolling list; helpful for selecting multiple, adjacent sources.

# Default Control Panel Source Select Button Mapping

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

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

3rd shifted level.

Table 2. 3-ME/35 Factory Configured Source to Button Mapping 3rd Level

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

4th shifted level.

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

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

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

Table 4. 2-ME/25 Factory Configured Source to Button Mapping 1st and 2nd Levels

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

Table 4. 2-ME/25 Factory Configured Source to Button Mapping 1st and 2nd Levels

Panel Button (25)	1st (Unshifted)	2nd
Button 23, 24	Shift, Shift	Shift, Shift
Button 25	Delegate	Delegate

The source to button mapping for the 3rd level for a 25 button 2ME system.

Table 5. 2-ME/25 Factory Configured Source to Button Mapping 3rd Level

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

The source to button mapping for the 4th level for a 25 button 2ME system.

Table 6. 2-ME/25 Factory Configured Source to Button Mapping 4th Level

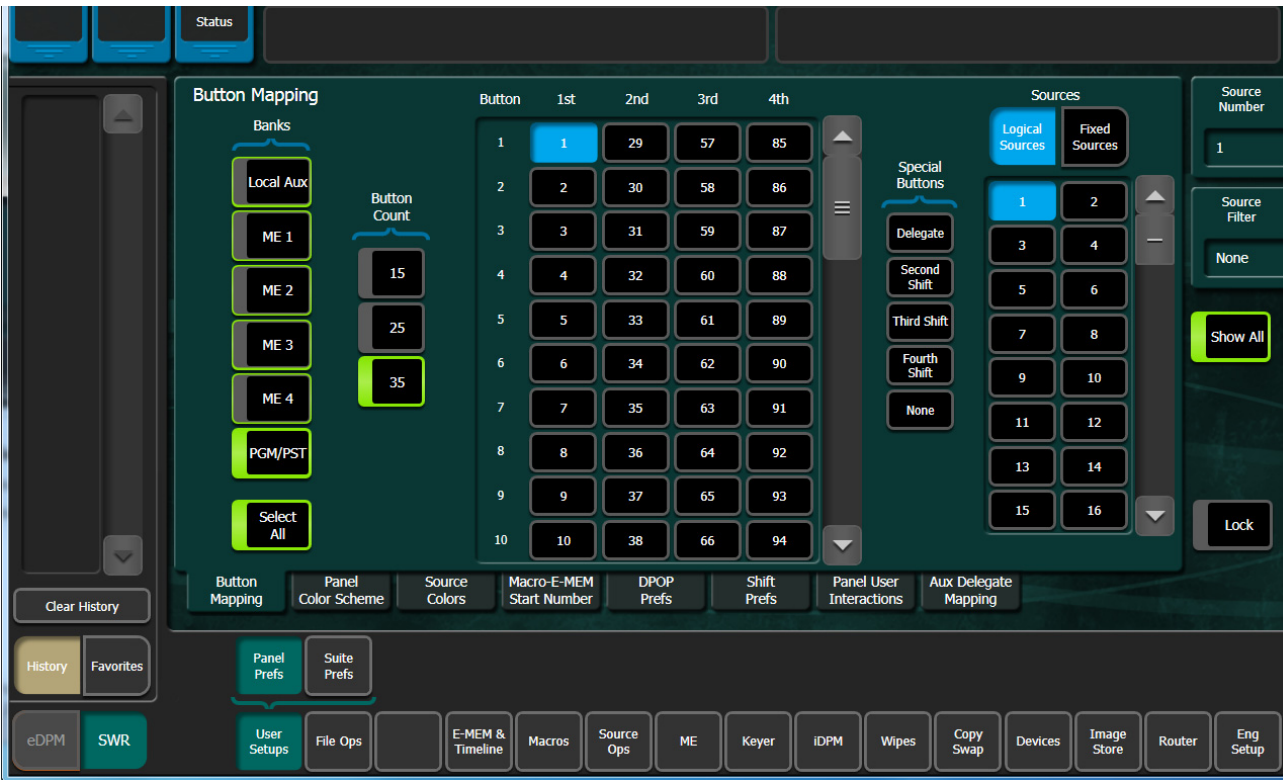
Panel Button (25)	4th
Button 1,2	Source 55,56
Buttons 3-8	IS 1A - IS 6A
Buttons 9,10	eDA, eDC
Buttons 11-14	Pg A - Pg D
Button 15	Blk
Button 16	Test
Buttons 17,18	Bg 1,Bg 2
Buttons 19-22	M1 D - M4 D
Button 23, 24	Shift, Shift
Button 25	Delegate

## Setting Control Panel Source Select Button Mapping Preferences

Before setting Control Panel source select button mapping preferences, Source Names have been defined in the Eng Setup, Source Definition menu and Image Store channels are assigned to Aux Busses.

1. Select **User Setups, Panel Prefs, Button Mapping**.

Figure 18. Button Mapping Menu



2. Select the **PGM/PST** Button Mapping Bank button. (Notice that a **Select All** button is available below the list of bank buttons.)
3. select the bank source button to be mapped in the center pane.
4. Select the desired source in the right pane on the right. Select from Logical or Fixed sources.

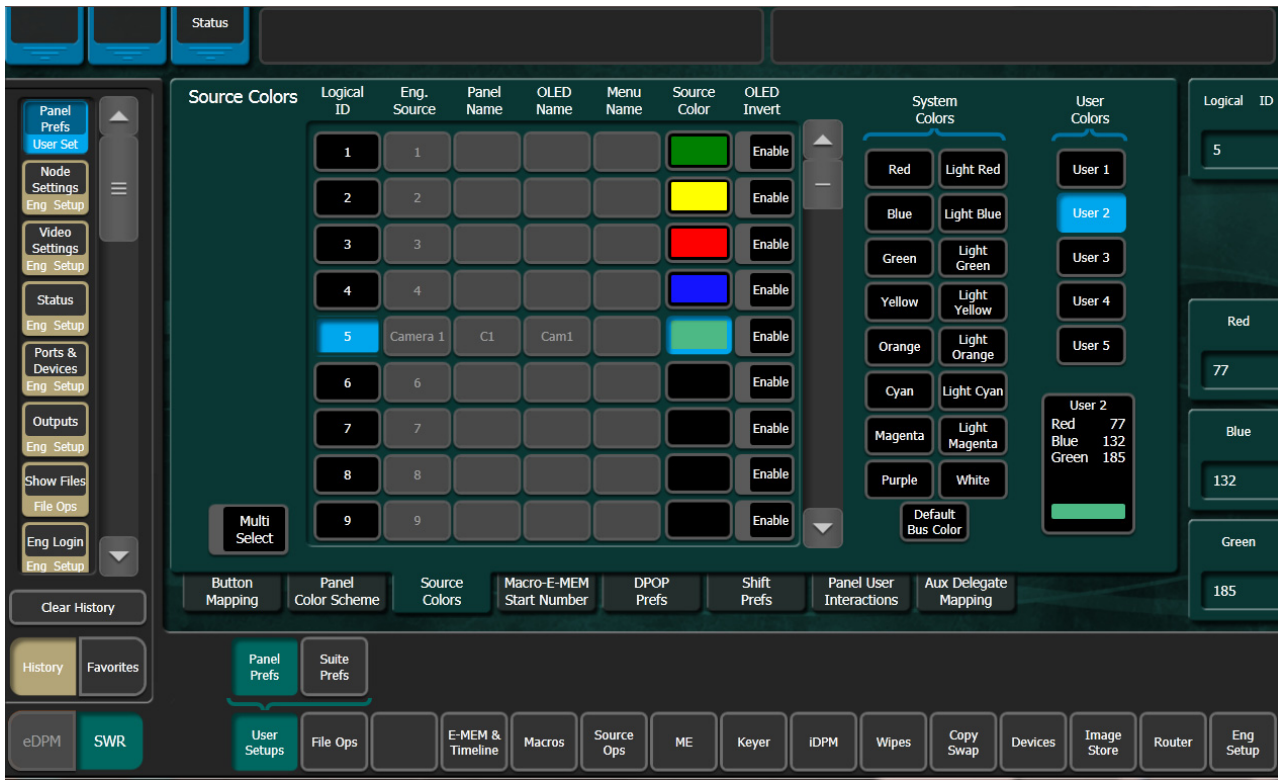
Result: As the button mappings change, the new source names will appear on the source name displays of the source selection buttons on the Control Panel and/or Local Aux.

## Assigning Colors to Control Panel Source Select Buttons

The Control Panel Source Select buttons, including Delegate and Shift buttons, can be changed from the Control Panel color scheme to display user-defined colors (red, green, blue, light red, light green, cyan, magenta, etc.).

1. Select **User Setups, Panel Prefs, Source Colors**.

Figure 19. Source Colors Menu



2. Select the Logical ID of the desired source (use **Multi-Select** button for multiple selections).
3. Select the desired color in the System Colors pane.
4. Selecting the **Invert** button displays dark text over a colored background in the Source Select Area display OLEDs (default is colored text over dark background).

## Assigning User-defined Colors

The User Color buttons allow you to create custom colors for Source Select, Delegate, and Shift buttons.

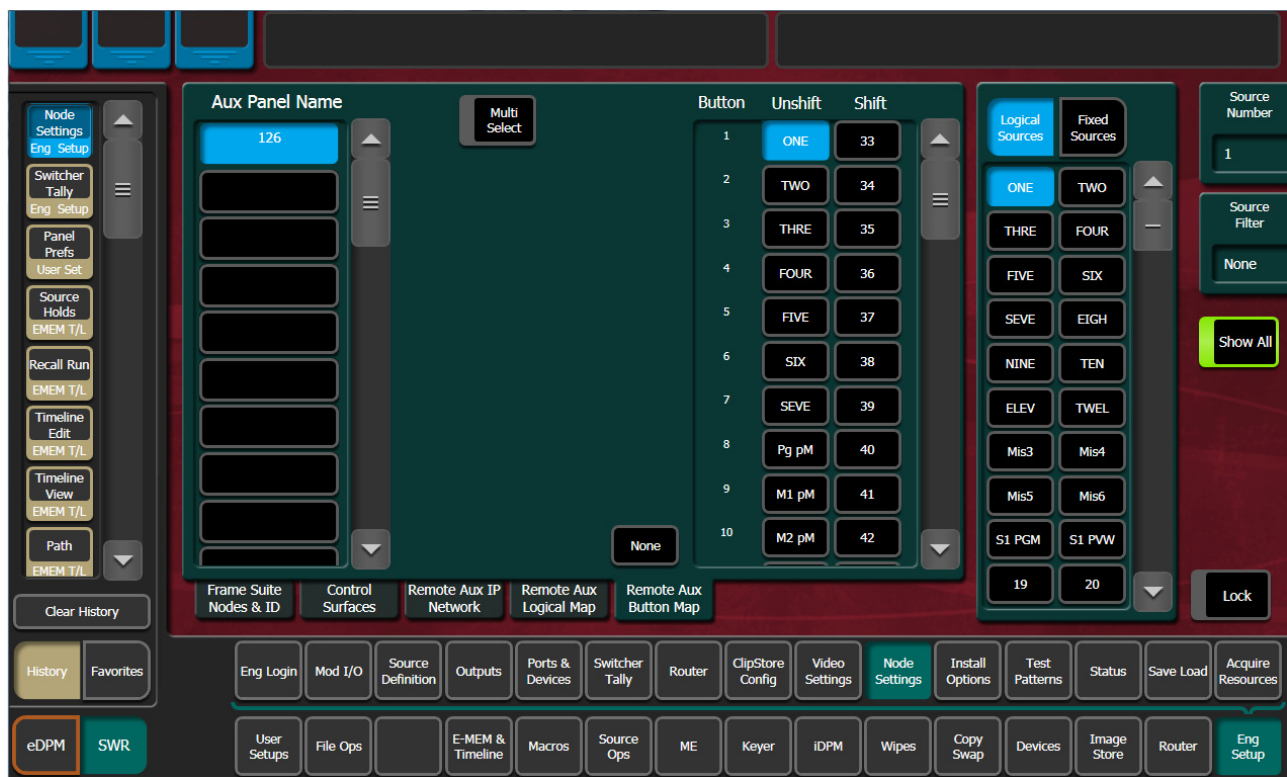
1. Select **User Setups, Panel Pref.**
2. Select the number of the Logical ID in the scrolling list or enter the number in the Logical ID pop-up keypad by selecting the Logical ID data pad (use **Multi-Select** button for multiple selections).
3. Select a User Colors button **User 1-User 5**.
4. Adjust the User Color by turning the Red, Blue, and Green Menu Panel soft knobs or by selecting their data pads and entering a value in the pop-up keypad (right side of menu).

# Mapping Remote Aux Panel Source Select Buttons on the Control Panel

The Remote Aux Panel Server Ethernet IP is set to the Video Processor Frame of the GV Switcher system, in the Panel Network Configuration web page and the Remote Aux appears in the Aux Panel Name column in the Eng Setup, Node Settings, Remote Aux IP Network menu. Refer to the Remote Aux Panel topics in the *Installation & Service Manual* for your switcher model for more information.

1. Select **Eng Setup, Node Settings, Remote Aux Button Map**.

Figure 20. Remote Aux Button Map Menu



2. Select an individual Remote Aux Panel by selecting its button in the left pane or select the **Multi Select** button for group selection of the Node Settings menu.
3. Map the source buttons for the selected Aux panel(s) by selecting the Aux source button in the central pane, then selecting the source in the right pane.

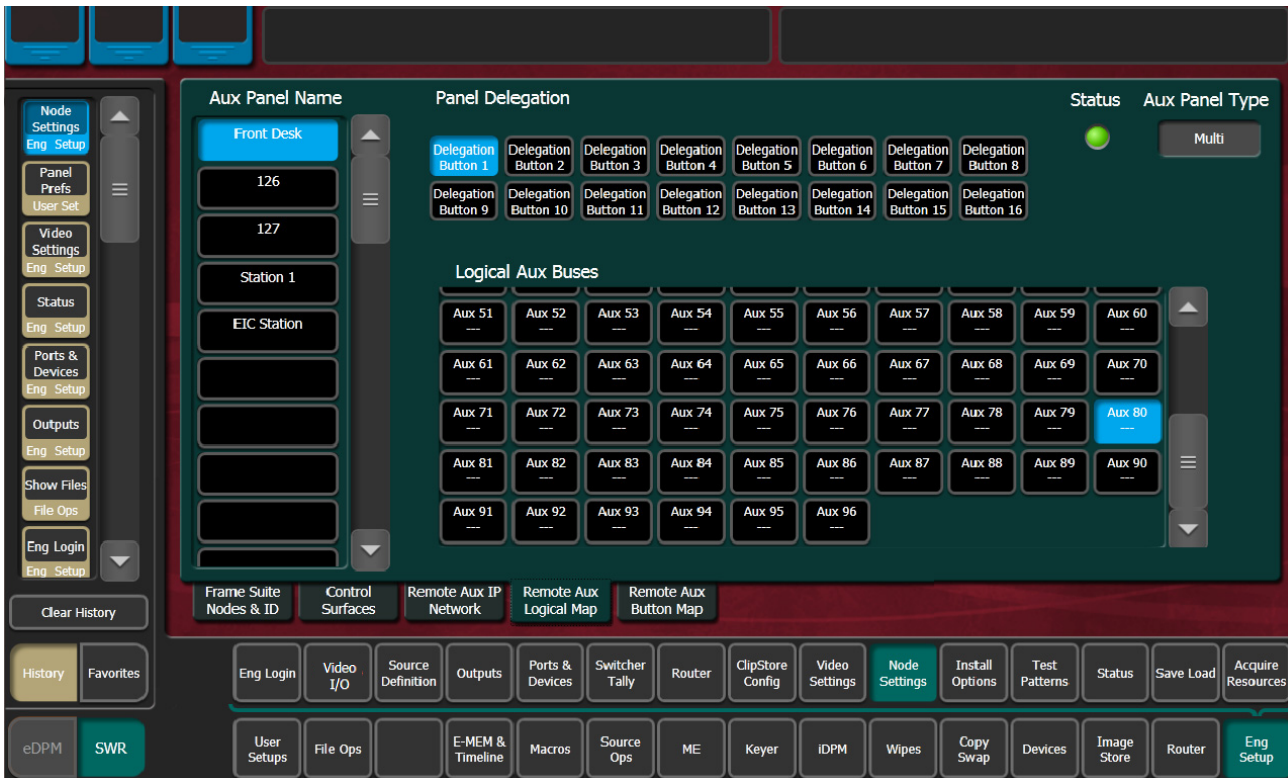
# Mapping Remote Aux Panel Delegation Buttons

You can map Remote Aux buses to Panel Delegation buttons to make them available as sources to the GV Switcher Control Panel.

Aux Delegate button mapping is performed in the Eng Setup, Node Settings, Remote Aux Bus Button Map menu. When multiple Remote Aux Panels are selected, changing one button’s mapping changes the button mapping for all the selected Remote Aux Panels.

1. Select **Eng Setup, Node Settings, Remote Aux Logical Map**.

Figure 21. Remote Aux Bus Delegation Button Mapping Menu



2. In the Panel Delegation area, select a Remote Aux Panel button.
3. In the Logical Aux Buses area, select an Aux Bus delegation button.

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



# Setting Suite Preferences

## Source Patching

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

By default engineering source IDs are mapped one-to-one with logical IDs but Source Patching can be used to quickly set up production elements for use in a different facility. For example, a show's effects, DDR clips, and taped material may have been built in one production truck with one set of devices, but the next show is scheduled for a different truck. Previously, to use effects in the other truck the Technical Director (TD) would need to edit the engineering source definitions in the new truck so they exactly matched the old truck. By remapping the engineering sources of the devices in the new truck to the logical sources used to build the effects, all the effects can be used without having to edit them. Source Patching can also be used to quickly swap out a defective device during a show without having to reconfigure the engineering sources. In this case logical names seen by the production personnel would be identical for that content, even though the actual device playing the material changed.

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

The Source Patch menu scrolling list has more Logical IDs than physical inputs. These can be used to permit alternative processing of the same incoming signal. For example, the same camera input can be assigned to

two Logical IDs, and one of these Logical sources can be given a Source Rule that can be cut on Key 5, and the other be given a Source Rule that cuts on Key 6. Selecting these different versions of that same source would automatically apply or clear the keys, as needed.

Figure 22. Source Patch Menu



## Engineering Names, Eng IDs, and Logical IDs

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

## Alternative Source Names

Alternative names can be assigned to sources for the convenience of production personnel. For example, you may give the cameras menu names

that include the operator (C1 Bob, C2 Phil, and C3 Bill), but remove the operator names from the OLED names to show C1, C2, and C3 in larger characters. These alternative names are entered in the Source Patch menu.

The Source Patch menu has three editable columns for defining up to three alternative names:

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

An **OLED Name** appears only on the Source Name Displays on the Control Panel. Characters are limited by capitalization and type (alphanumeric).

A **Menu Name** appears on all the GV Switcher menu application screens except Engineering Setup menus, which always display engineering IDs or names. Characters are limited by capitalization and type (alphanumeric).

## Multiple Suites and Source Names

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

## Source Name Display Hierarchy

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

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

For alternative names entered in the User Setups, Suite Prefs, Source Patch menu ([Figure 23](#)), the following rules apply:

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

Figure 23. Source Patch Alternative Source Names

Logical ID	Eng Sources	Patch Key	Panel Name	OLED Name	Menu Name	Source Correction
1	1	1	ONE			Enable
2	2	2	TWO			Enable
3	3	3	THRE			Enable
4	4	4	FOUR			Enable
5	Camera 1	---	C1	Cam1		Enable
6	CS-1	---	[CS1	[CS1		Enable
7	CS-2	---				Enable
8	CS-3	---				Enable
9	CS-4	---				Enable

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

## Source Patching and Effects Portability

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

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

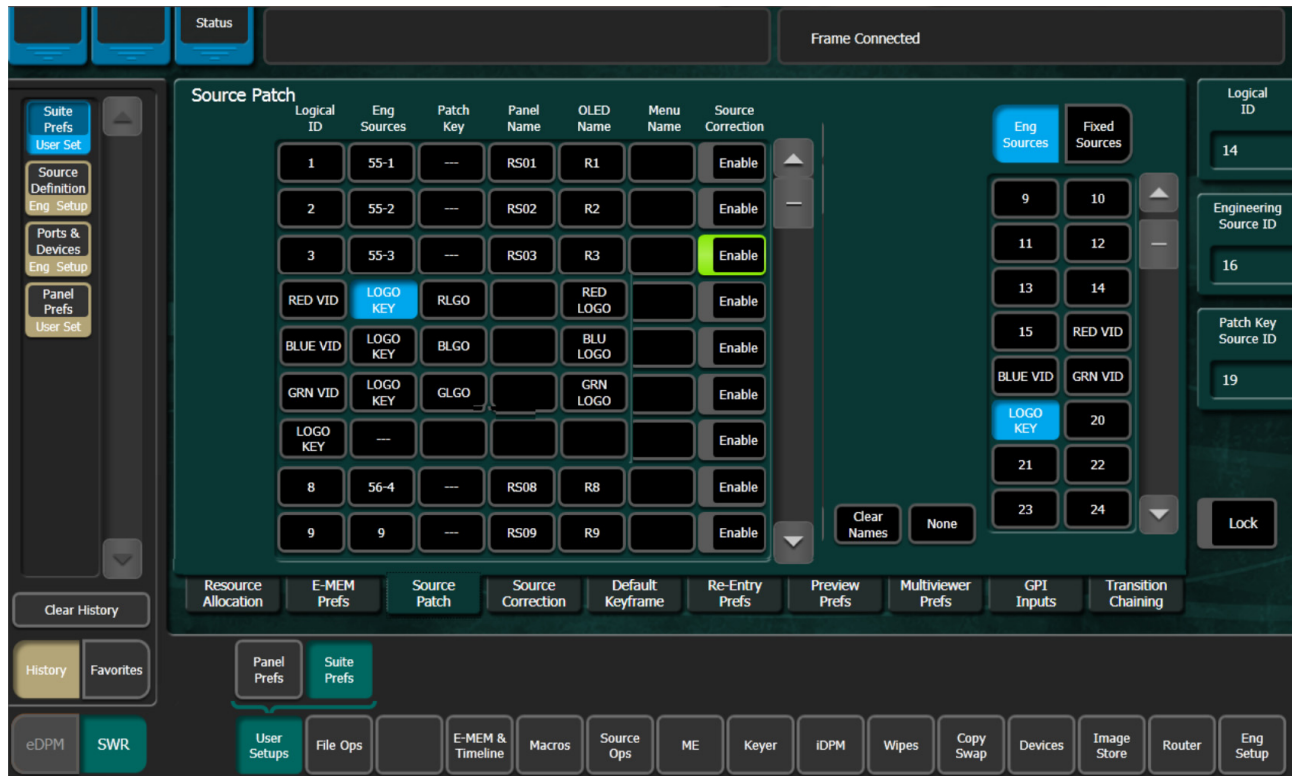
files into that GV Switcher system. Do not load the Eng Setups of one facility into the other, as this will overwrite that facility's existing Engineering configuration.

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

## Patching Engineering and Fixed Sources to Logical IDs

1. Select **User Setup, Suite Prefs, Source Patch**.

Figure 24. Source Patch Menu



2. Select the **Eng Sources/Fixed Sources** button to select a source type.

3. Select the Logical ID of the source you wish to change by either:
  - Selecting the Logical ID data pad and entering the Logical ID number, or
  - Scrolling through the Source Names list with the scroll bar. This scrolls the list without changing the current selection. When the desired source appears on the menu, select its Logical ID button to select it. Use the **Lock** button to lock the scroll bar.
4. Give sources alternative names in the Source Patch menu in the following ways:
  - Panel Name —Source will appear in the Transition and Multi-Function displays with this name,
  - OLED Name (SND Name column)—Source Name Display will appear in mapped ME/PGM PST Source Select and the Multi-Function displays with this name,
  - Menu Name (Menu Name column)—Source will appear with this name in the menus only.

To change the source patching, select an Engineering/Fixed source to be associated with the currently selected Logical source with the Engineering Source data pad or by scrolling the Engineering Source IDs Button pane.

## Enable Source Correction on any Source (Globally)

Using Source Corrections, in the User Setups, Source Patch menu (or the Source Corrections menu), you can enable source correction for a patched Engineering to Logical source. The source correction is global; anywhere the patched source is mapped on the switcher. Source Correction is saved as part of File Ops, User Setups, Suite Prefs and can be included/excluded.

**Note** Enabled Source Correction on a source is not E-MEMable, however patching a source on an ME, from the Source Corrections menu, is E-MEMable.

1. Choose the source and enable Source Correction:
  - a. In the User Setups, Suite Prefs, Source Patch menu, select the **Enable** button to the right of the desired Source Patch row, or
  - b. In the Source Correction menu, select the **Logical Name** data pad and enter the Logical ID in the pop-up keypad then turn on the Source Correction **Enable** button.
2. Adjust the parameters for Video Processing and RGB Color Correction in the Source Correction menu.

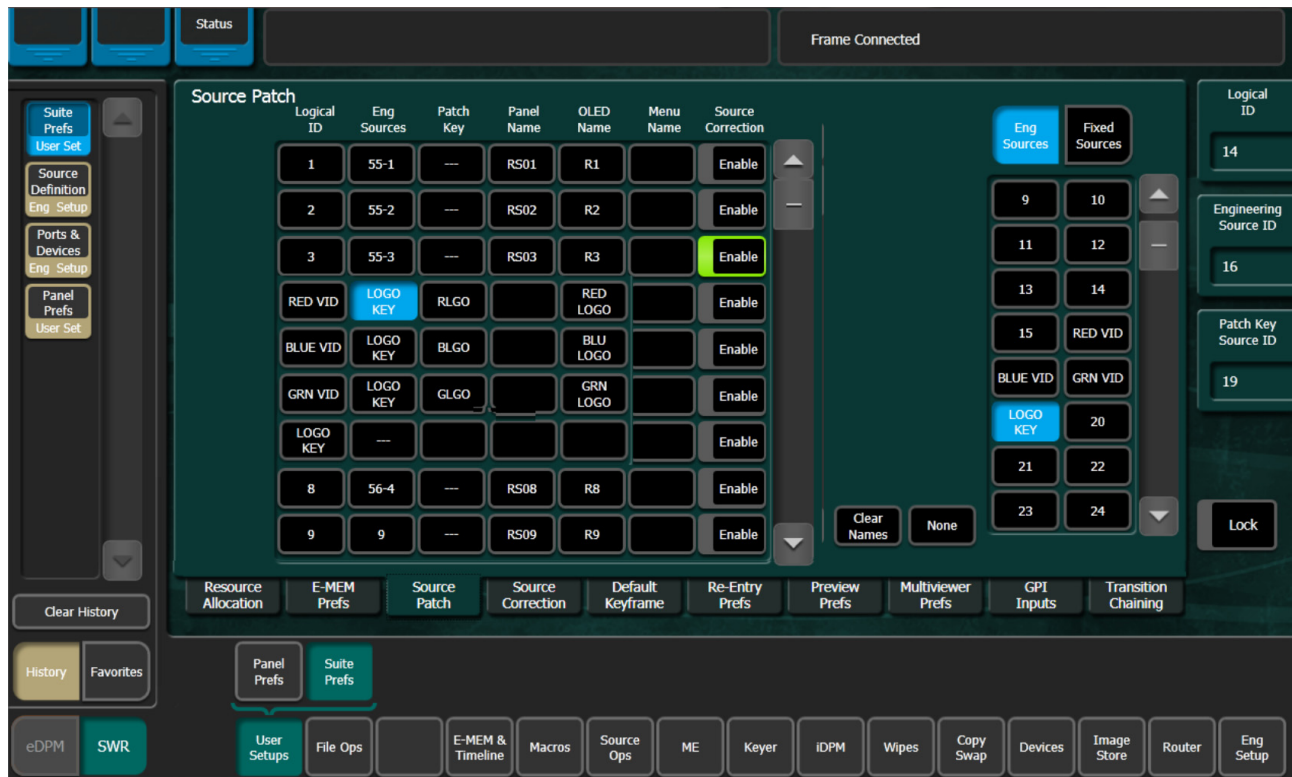
**Note** The same Engineering source can have Source Correction enabled or disabled by patching the source to a different logical ID.

# Patch a Key Input from One Source to a Different Source Using Patch Key

You can patch a key from a different source using Patch Key.

1. Select **User Setup, Suite Prefs, Source Patch**.

Figure 25. Source Patch Menu



2. Select the data entry pad in the Patch Key column for the Logical ID you wish to patch a key from a different source.
3. Select the Eng or Fixed source in the Sources scrolling list containing the key you wish to patch (LOGO KEY in the example in or press the **Patch Key Source ID** data pad and enter the Source ID number for the key you wish to patch, and press **Enter**.

Result: The key signal for Logical ID 19 (LOGO KEY) is now paired with the Logical ID 16 (RED VID) video signal.

Example: There are three shows with three different video sources over the same key signal, in this case the station logo. The three logos are defined as RED LOGO, BLU LOGO, and GRN LOGO in the menus and as RLGO, BLGO, and GLGO in the Panel Name which will be displayed on the OLEDs of the keyer source select buttons when assigned to the Control Panel.



## Default Keyframe

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

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

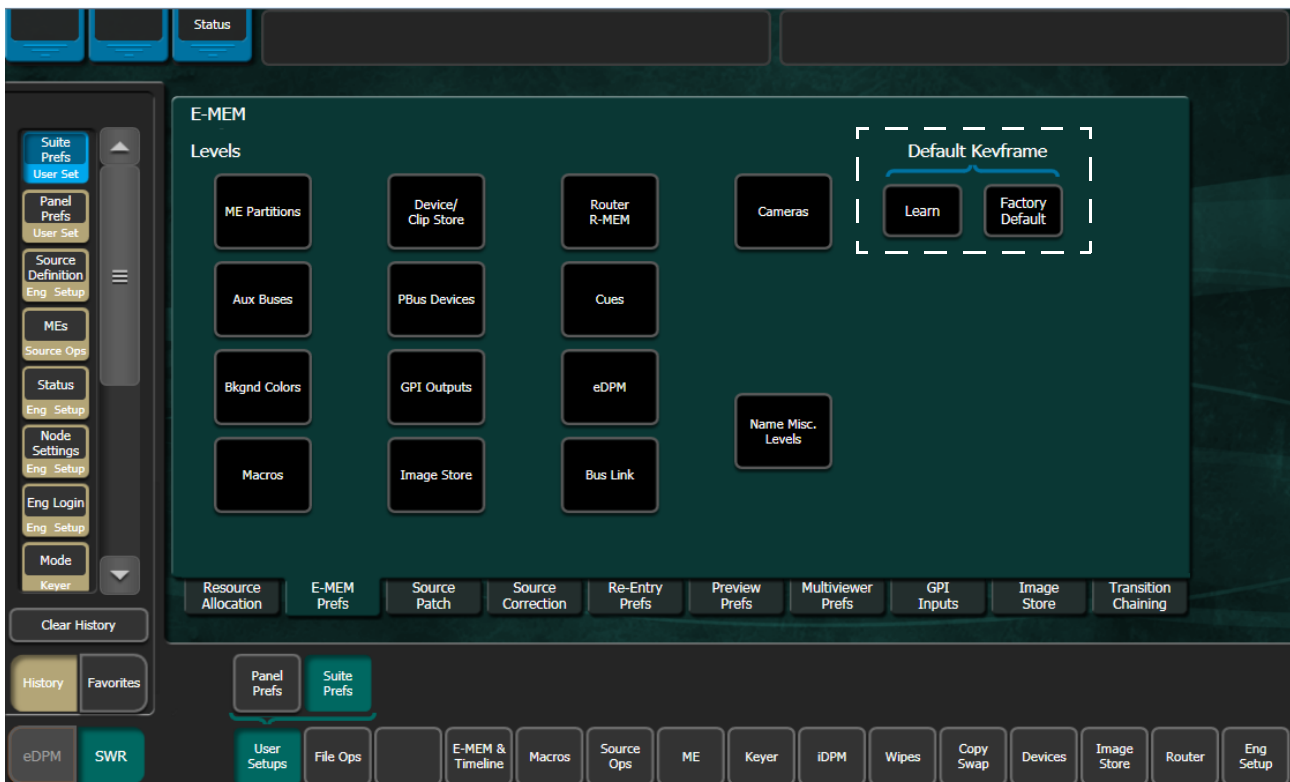
The Default Keyframe menu is used to learn the current Control Panel state to the system’s Default Keyframe (and to set the Default Keyframe back to factory settings). Individual settings for each ME are stored in the Default Keyframe, so different states can be saved for different MEs, if desired.

**Note** Individual Default Keyframe settings are saved for each GV Switcher ME.

## Learning a Default Keyframe

1. Select **User Setups**, **Suite Prefs**, **E-MEM Prefs**.

Figure 26. Default Keyframe Menu





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

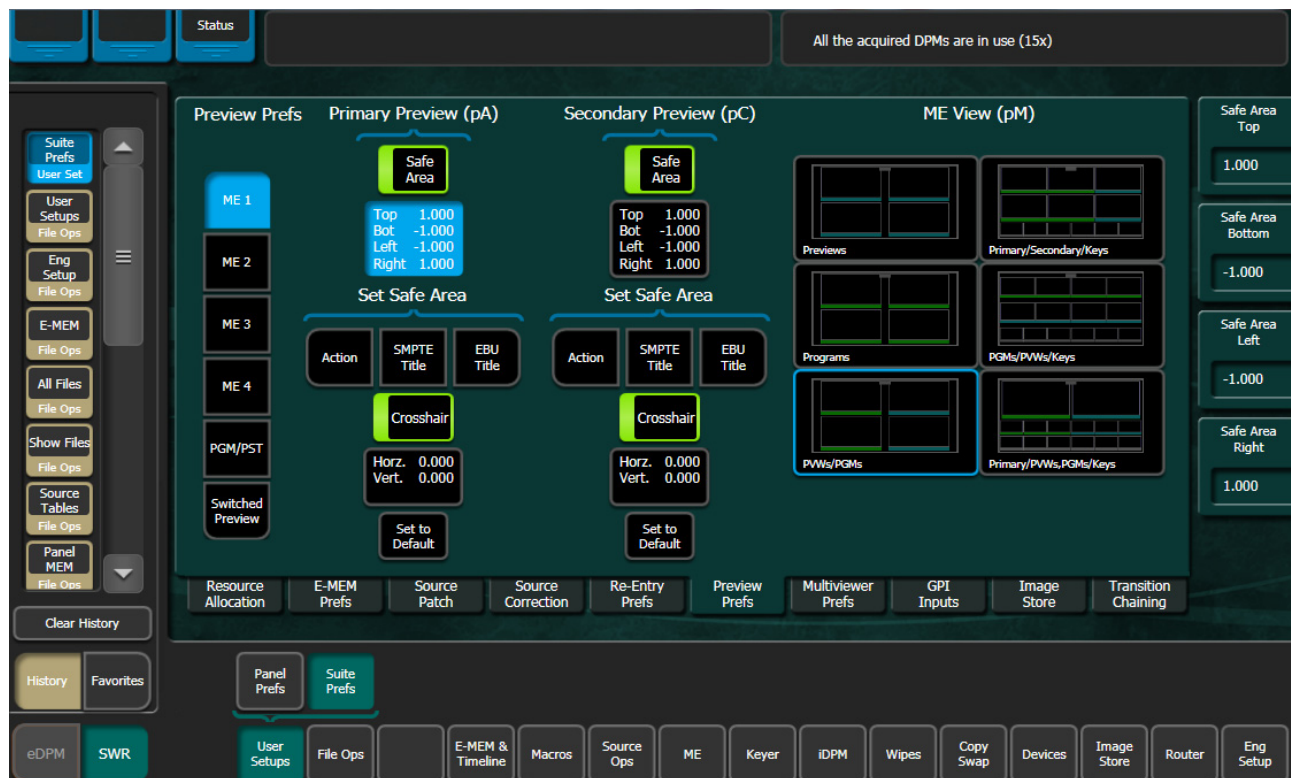
Pressing the **Factory Default** button overwrites the Default Keyframe with factory defaults.

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

## Preview Prefs

Preview displays can be adjusted by the user, including Safe Area borders, Crosshairs, and the selection of optional multi-image ME Viewer layouts.

Figure 27. Preview Prefs Menu



- **Preview Prefs** buttons on the left select the ME or Switched Preview that will be affected by the settings on the right. Each ME has Primary and Secondary Preview parameters for Safe Area and Crosshairs, and an ME Viewer layout. Switched Preview has a single set of parameters for Safe Area and Crosshairs.

## Safe Area

- **Safe Area** button, when illuminated, activates the Safe Area border display for the selected preview.
- **Set Safe Area** data pad displays knob controls on the right used to move the Safe Area borders.
- **Action, SMPTE Title, EBU Title** buttons sets the safe area borders to those standards.

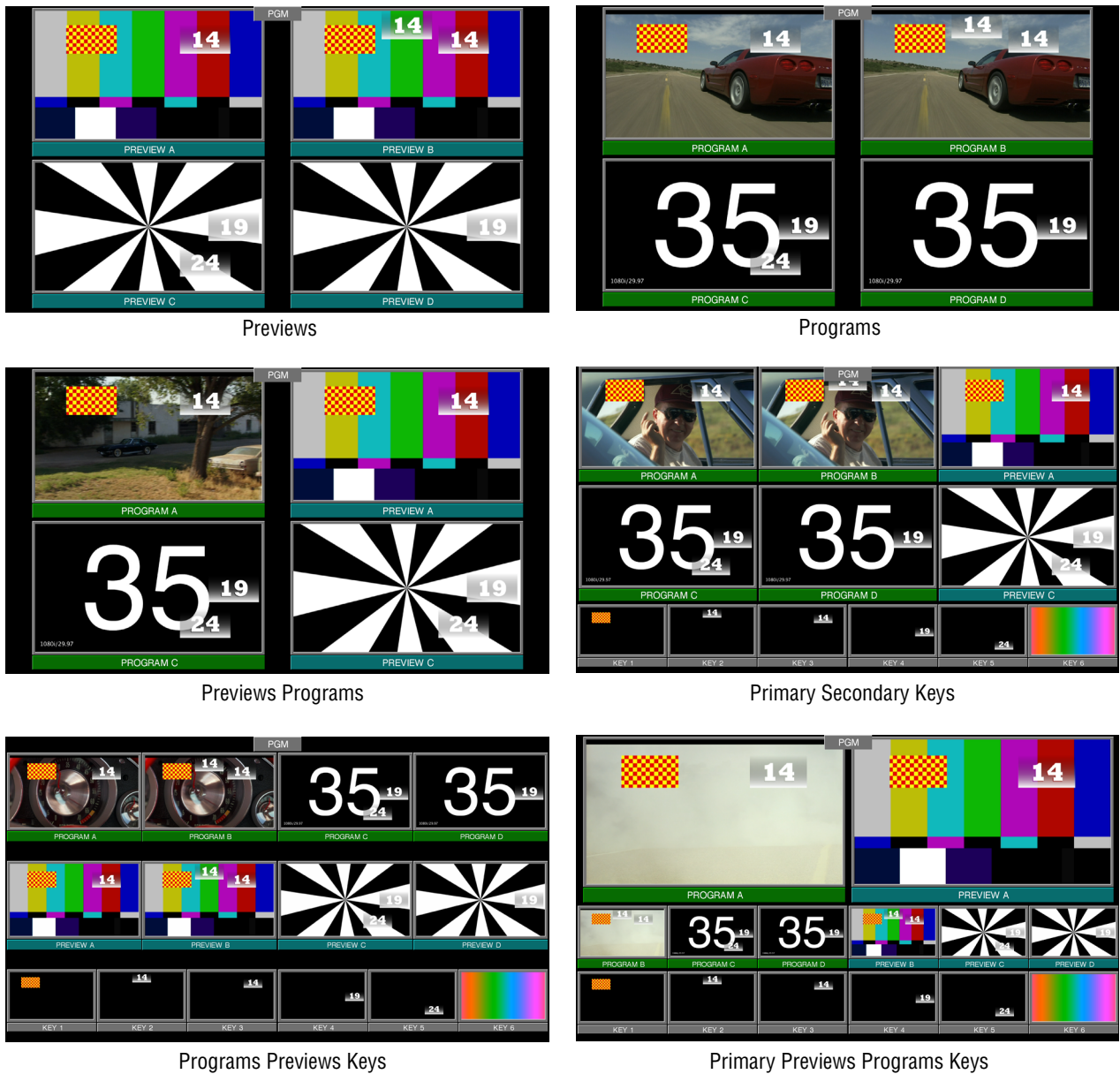
## Crosshair

- **Crosshair** button, when illuminated, displays a Crosshair for the selected preview.
- **Crosshair** data pad displays knob controls on the right used to adjust the position of the Crosshair.
- **Set to Default** restores the default center position for the Crosshair.

## ME Viewer

The K-Frame ME Viewer optional feature provides a special source from each ME that can be used to display multiple ME signals on a single monitor. Each ME has a fixed source named **(ME) pM** (ME = 1-4 or Pg). This source can be assigned one of six multiple signal arrangements, in User Setups/Suite Prefs. Assigning this source to a physical output connector permits viewing that arrangement of signals on a monitor.

Figure 28. Examples of ME Viewer Displays



## Multiviewer Preferences

The K-Frame Multiviewer provides five layout configurations, tally preference settings, assignable Fixed and Logical inputs, Switched Preview, or Aux Buses to each video window. Multiviewer menu preferences are saved as part of Suite Prefs and can be loaded or excluded as part of the Load Granularity in the File Ops, Eng Setup menu.

Prerequisite: Multiviewer resources have been allocated and configured, see the Installation & Service Manual for your switcher model.

## Set Multiviewer Layout Preferences

Choose from one of five Multiviewer layouts.

1. Select the **User Setups, Suite Prefs, Multiviewer Prefs** menu buttons.
2. If there is more than one Multiviewer acquired, press the **Identify** button to display the available Multiviewers in the top, middle of the monitor so the correct Multiviewer will be selected for adjustment.
3. Select a Multiviewer to apply the preferences; buttons **MV1-MV4** below the layout configuration pane.

Figure 29. Eng Setup, Acquire Multiviewer—Standard Frame



4. Select a layout from the Layout list on the left side of the menu.
5. Select a window in the Multiviewer layout.
6. Select **Logical** or **Fixed** above the scrolling list on the right of the menu.
7. Scroll or filter to an input and select that input to assign it to the selected window.

The window name is taken by default from the Eng Sources name but will take the Menu name if entered in the User Setups, Suite Prefs, Source Patch menu for the selected source.

8. To enter a name in the Menu column of the Source Patch menu to change the window name:
  - a. With the source assigned and the window selected in the Multiviewer Prefs menu, note the Source Number in the upper right data pad.
  - b. Select the **Source Patch** menu tab.
  - c. Locate the noted source by either scrolling through the Source list (Logical ID column) or clicking on the Engineering Source ID data pad and entering the Source Number noted from the Multiviewer Prefs menu.
  - d. Select the Menu column data pad for the source and enter the new name in the pop-up keyboard.
  - e. Select **Enter**.
9. Repeat selecting windows then input sources for additional assignments.
10. Turn off the Identify feature if on as it can obstruct some of the views.

**Note** It is not recommended to have the Identify feature on during normal operations. The default is off and it is not saved as part of the suite preferences.

## File Operations

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

## Features

The GV Switcher file browser supports the following features:

- Navigate through the Frame User Directory on the Video Processor (System Storage menus) and access the Menu Panel and all mapped network drives including USB Memory Sticks (Remote Storage menus),
- Save and Load Show, User Setup, Panel Memory, E-MEM, Macro, Source Rules, Cues, e-DPM, R-MEM, and Eng Setup files,
- Organize collections of files as Shows,
- Sort files by name and type, and in reverse alphabetical order,
- Create new folders,
- Copy/Paste, and Delete files,
- Rename files and folders, and
- Select multiple files.

## Introduction

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

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

### GV Switcher Drive Access

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

### File Storage Organization

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

manner. To prevent accidentally saving and loading incorrect files, your facility should establish file storage and naming conventions and follow them consistently.

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

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

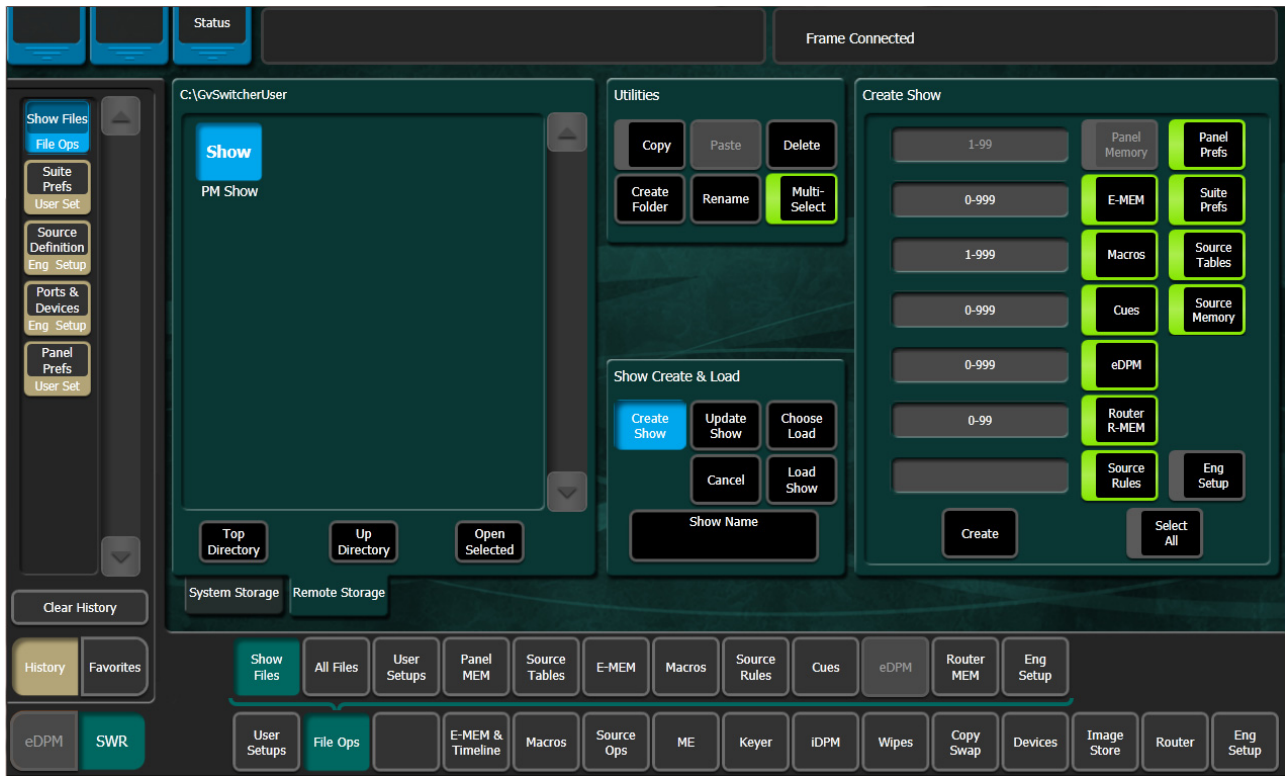
Use the Show feature to manage groups of files routinely used together for a particular production.

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

## **Managing Files Using the Utilities Pane Buttons in the File Ops Menus**

Each File Ops menu category (Show Files, All Files, User Setups, etc.) has a Utilities Pane, with buttons to perform Copy, Paste, Delete and Create Folder operations and a **Multi-Select** toggle button.

Figure 30. File Operations Utilities Pane



## Copy/Pasting Files

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

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



## **Deleting Files**

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

## **Creating a Folder**

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


## **Renaming Files**

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

## GV Switcher File Type Extensions

GV Switcher files are named by the user when saved, and this name appears below the icon.

Table 7. GV Switcher System File Extensions

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

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

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

## Show Files

A Show is a special collection of GV Switcher files that can be managed as a group. You can create and load a show file that contains all of your switcher settings or you may want to customize your show by loading some file types and not others. Both can be accomplished from the Show Files menu.

### Show File Buttons

**Create Show:** opens a create show pane. In this pane you enter the name of the Show (select the **Show Name** data pad), and if you choose, select which

file types and choose a range of registers that will be included in the Show file.

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

**CAUTION** Verify that the Show contains the desired files before loading, especially if the system is currently on-air.

**Choose Load:** brings up a pane that allows you to see what files are contained in the Show, and select which files to load. Buttons for files not present are grayed out. By default all the files in the Show are selected for load.

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

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

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

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

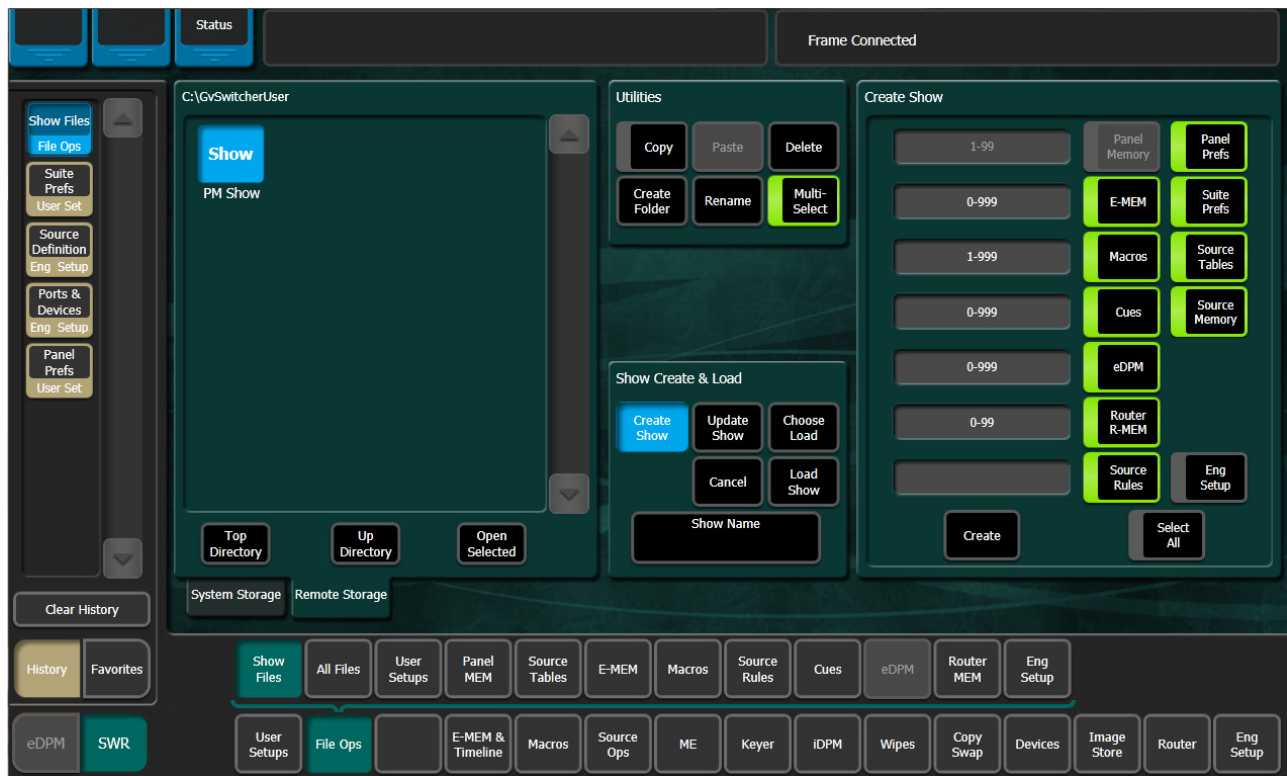
**Update Show:** brings up a pane that allows you to select specific files within a show to update. Specify the file types and ranges of files you wish to update, then select the **Update** button. The selected files in the show will be overwritten with the current GV Switcher settings for those items.

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

## Create a Show File

1. Select **File Ops, Show Files**.

Figure 31. Create Show File Operations



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

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

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

6. Select the **Create** button in the Create Show pane.

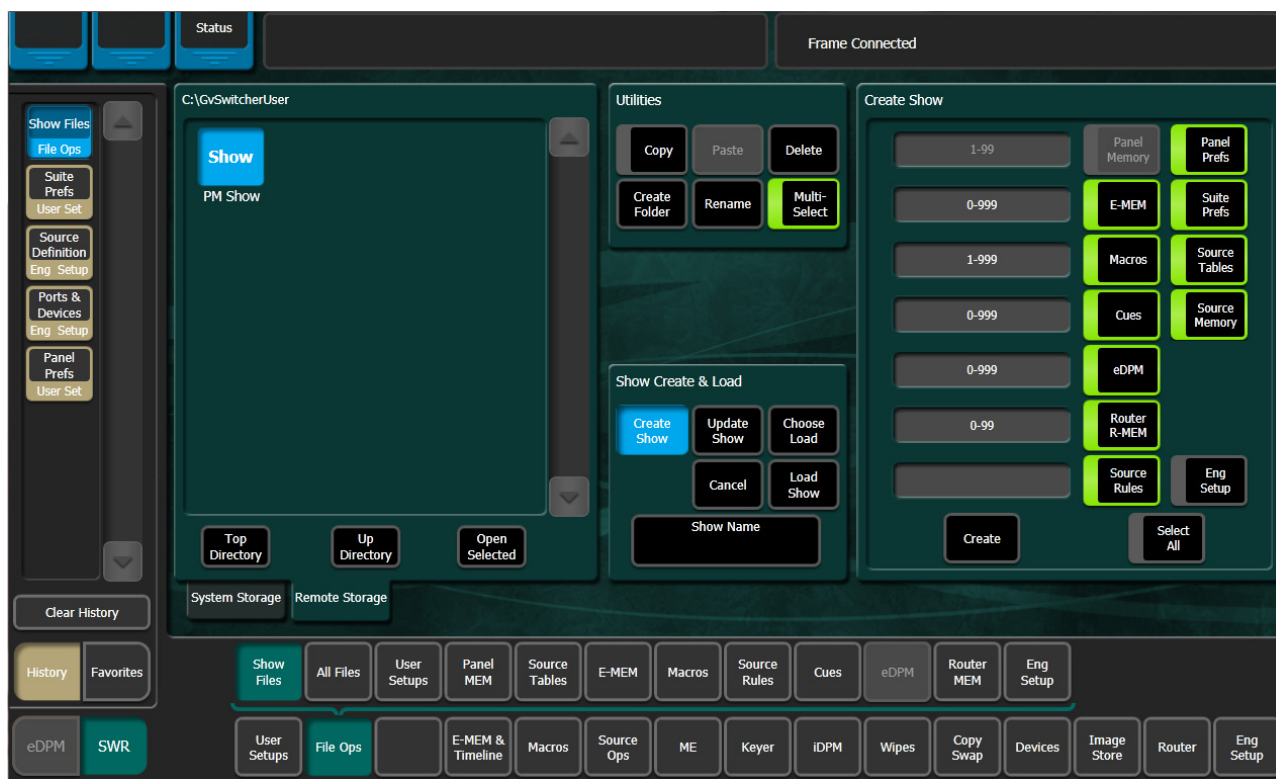
Result: The Show file is created with the selected file types and appears in the directory.

## Load a Show File

All Show files can be loaded or selected Show files using the Show Create & Load menu pane.

1. Select **File Ops, Show Files**.

Figure 32. Load Show File Operations



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

2. Navigate to and select the Show file you wish to load in the Directory pane (left side of menu).
3. To load all files saved in a Show file, select the **Load Show** button in the Show Create & Load pane.

4. To only load selected files in a show, select the **Choose Load** button to bring up the Crate Show pane that allows you to see what files are contained in the Show, and choose which files to load by selecting the File Type buttons.
5. In the Create Show pane, select to select/deselect file types, or select the **Select All** button (e-DPM is an option, if not installed the button will be inactive).
6. Select the register data pad (left of each button) and enter a series or range of registers to be included in the Show file (the default is all).

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

7. Select the **Load** button in the Create Show pane to load the Show file (not the **Load Show** button as this will load the entire Show file without your File Type selections).

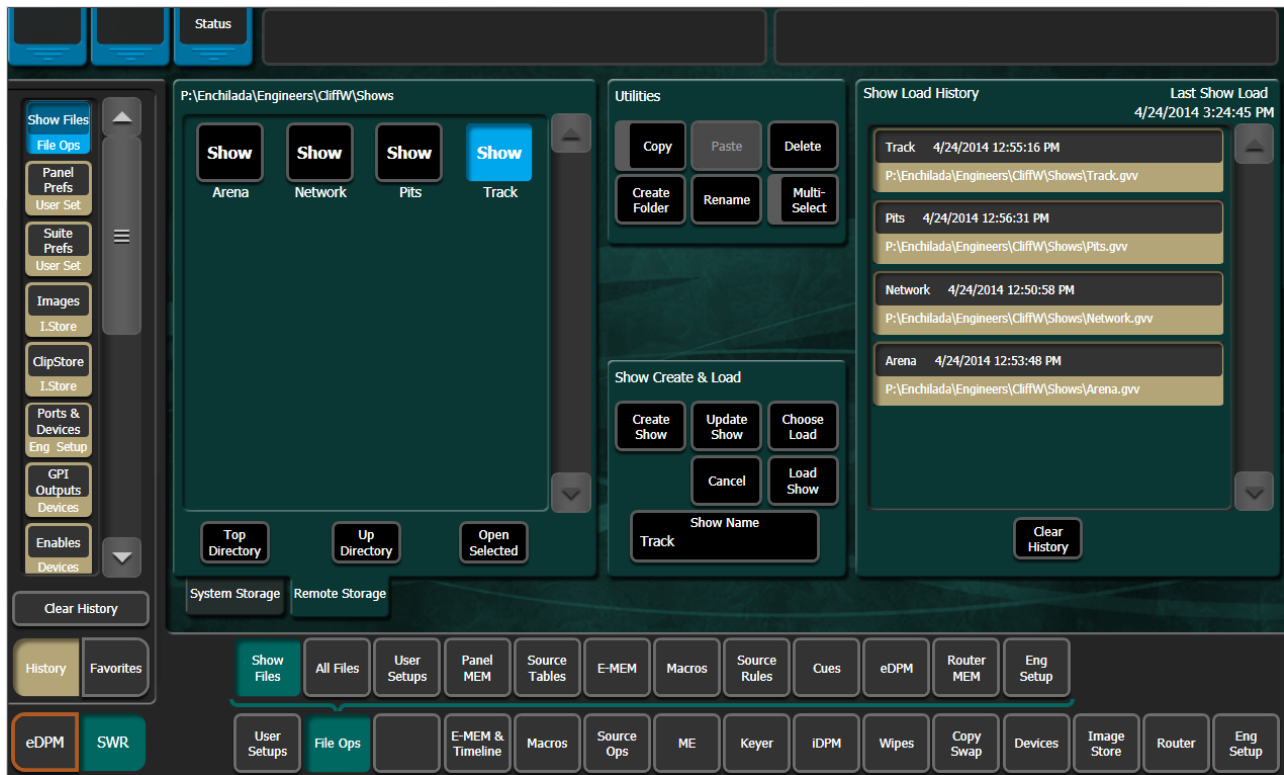
## Load a Show from the Show Load History

Shows that have been loaded, are displayed in the Show Load History pane on the right side of the Show Files menu. The list of previously loaded shows are displayed until the **Clear History** button is selected. The “Last Show Load” reflects the date and time that the top item in history, was loaded—in the current menu.

1. Select **File Ops, Show Files**.
2. Select a previously loaded show from the Show Load History scrolling list on the right.
3. The selected show file is automatically displayed in the left-hand directory pane.
4. Select the **Load Show** button.

**Note** A pink highlighted load list item means a full show, otherwise it is a partial show.

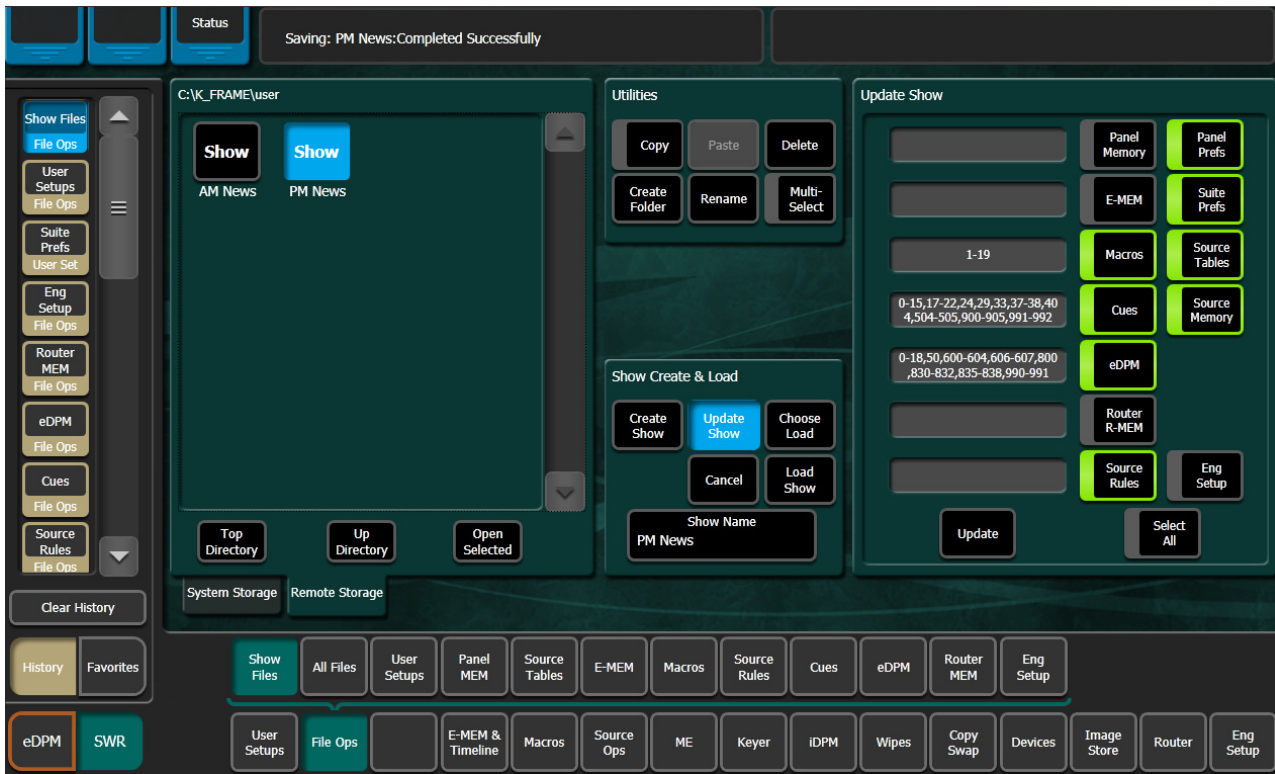
Figure 33. Show Files—Show Load History



## Updating a Show File

1. Select File Ops, Show Files.

Figure 34. Update Show File Operations



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

2. Navigate to and select the Show file you wish to update in the Directory pane (left side of menu).
3. Select the **Update Show** button in the Show Create & Load pane to bring up the Create Show pane that allows you to see what files are contained in the Show, and choose which files to load by selecting the File Type buttons.
4. In the Create Show pane, select to select/deselect file types, or select the **Select All** button (e-DPM is an option, if not installed the button will be inactive).
5. Select the register data pad (left of each button) and enter a series or range of registers to be included in the Show file (the default is all).

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

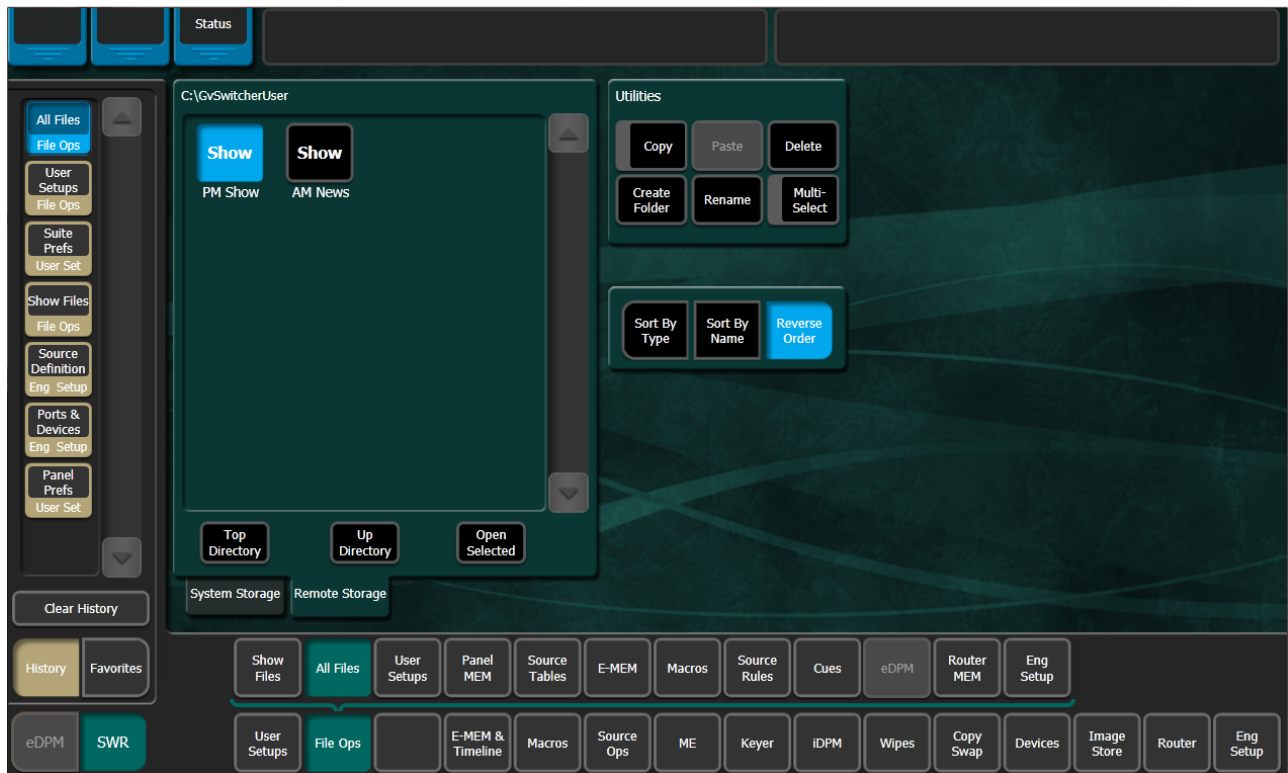
6. Select the **Update** button in the Create Show pane to update the Show file.



## All File Type and Directory Management

The File Ops, All Files menu is used to quickly sort by using the **Sort By Type**, **Sort By Name**, and **Reverse Order** (reorders the current sort to ascending or descending) buttons and manage all files types in the System Storage and Remote Storage directories. Use the Utilities pane buttons to perform file operations. The menu is accessed from **File Ops, All Files**.

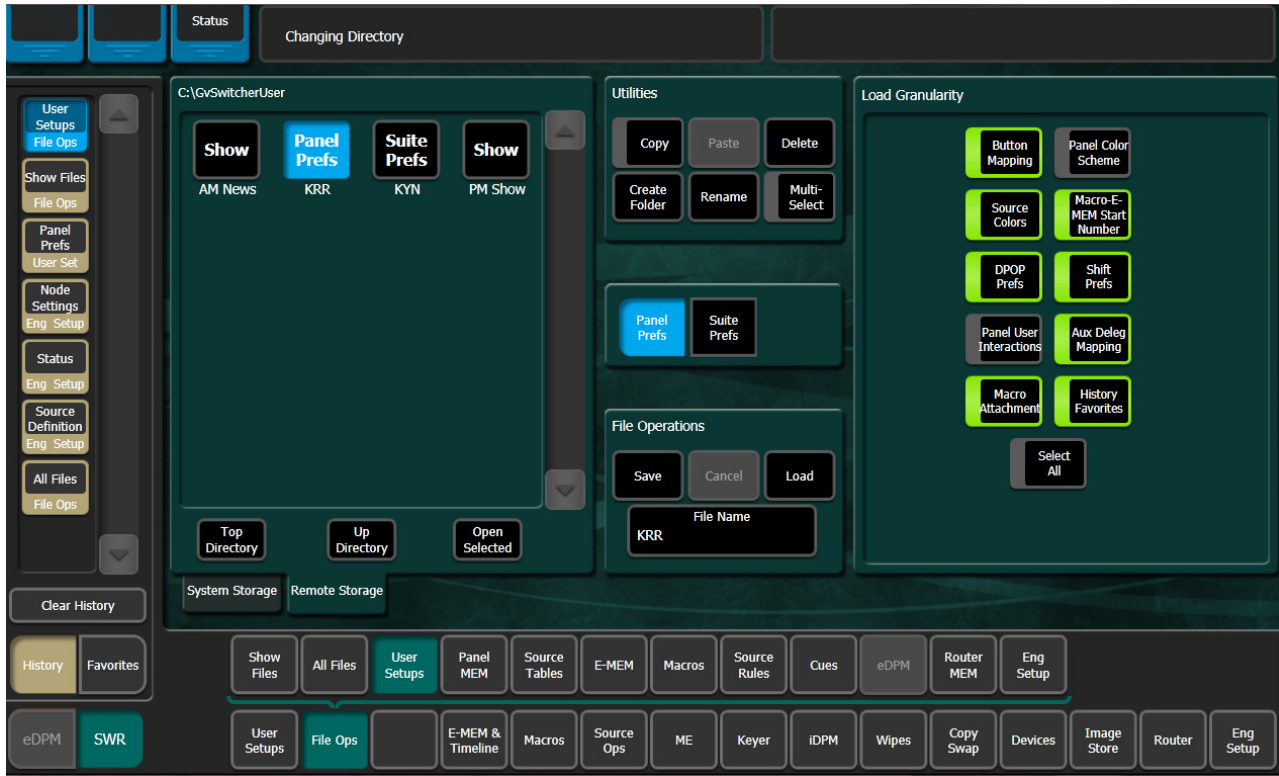
Figure 35. All Files Menu



## Saving Panel Prefs and Suite Prefs Files

1. Access the User Setups menu by selecting, **File Ops, User Setups**.

Figure 36. User Setups Menu

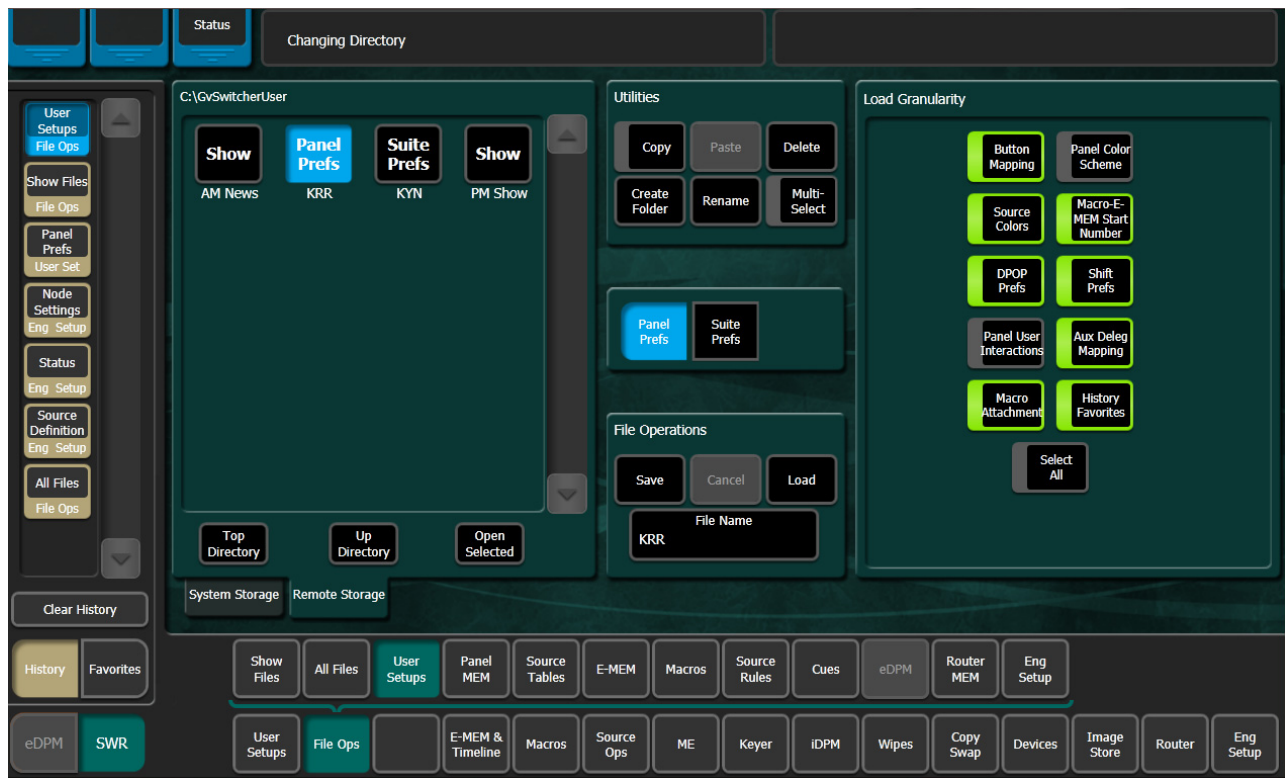


2. Select the **Panel Prefs** or **Suite Prefs** button.
3. Navigate to and select the Show file you wish to update in the Directory pane (left side of menu) and:
  - a. Select a file to select it, or
  - b. Create a new file by selecting the File Name button, typing a name, and selecting **Enter**.
4. In the Load Granularity pane, select to select/deselect file types, or select the **Select All** button.
5. Select the **Save** button in the File Operations pane.

## Loading Panel Prefs and Suite Prefs Files

1. Access the User Setups menu by selecting, **File Ops, User Setups**.

Figure 37. User Setups Menu



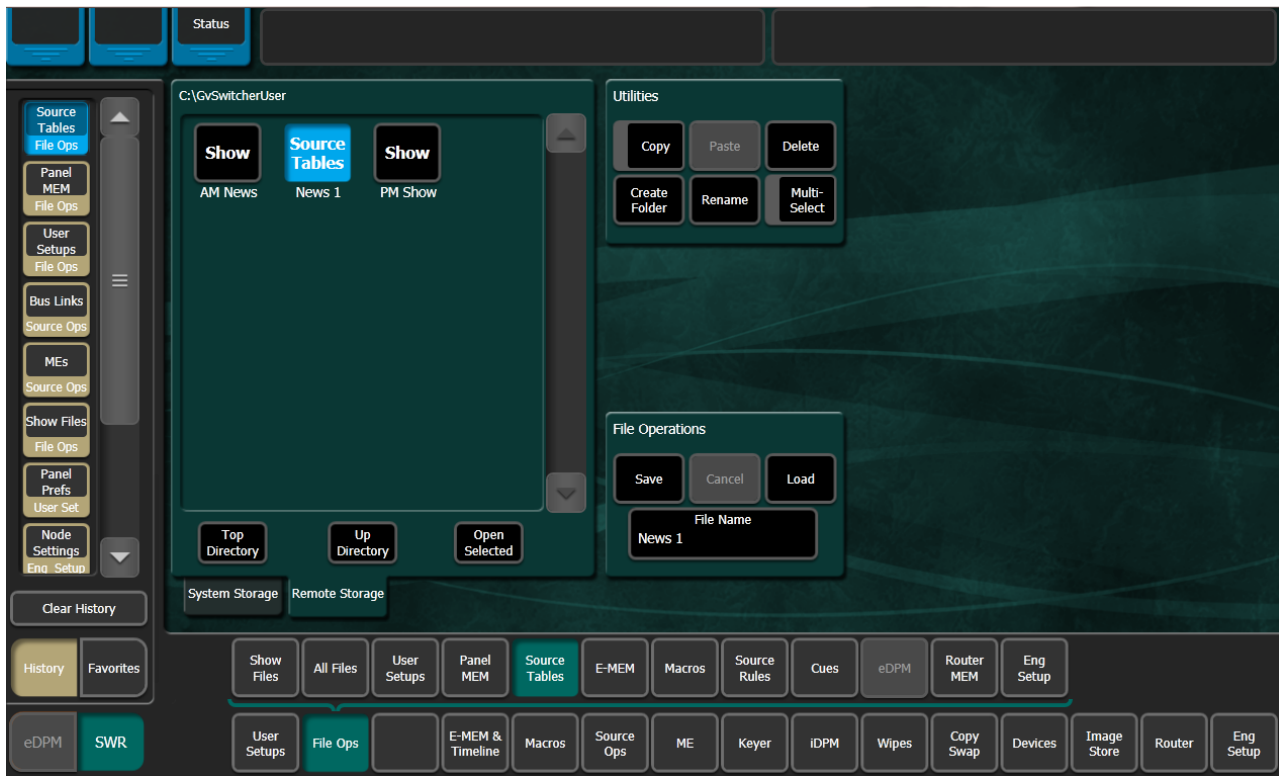
2. Navigate to and select the Show file you wish to update in the Directory pane (left side of menu) and:
  - a. Select a file to select it, or
  - b. Create a new file by selecting the File Name button, typing a name, and selecting **Enter**.
3. In the Load Granularity pane, select to select/deselect file types, or select the **Select All** button.
4. Select the **Load** button.

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

## Saving Source Tables

1. Access the Source Rules menu by selecting, **File Ops, Source Tables**.

Figure 38. Source Tables Menu

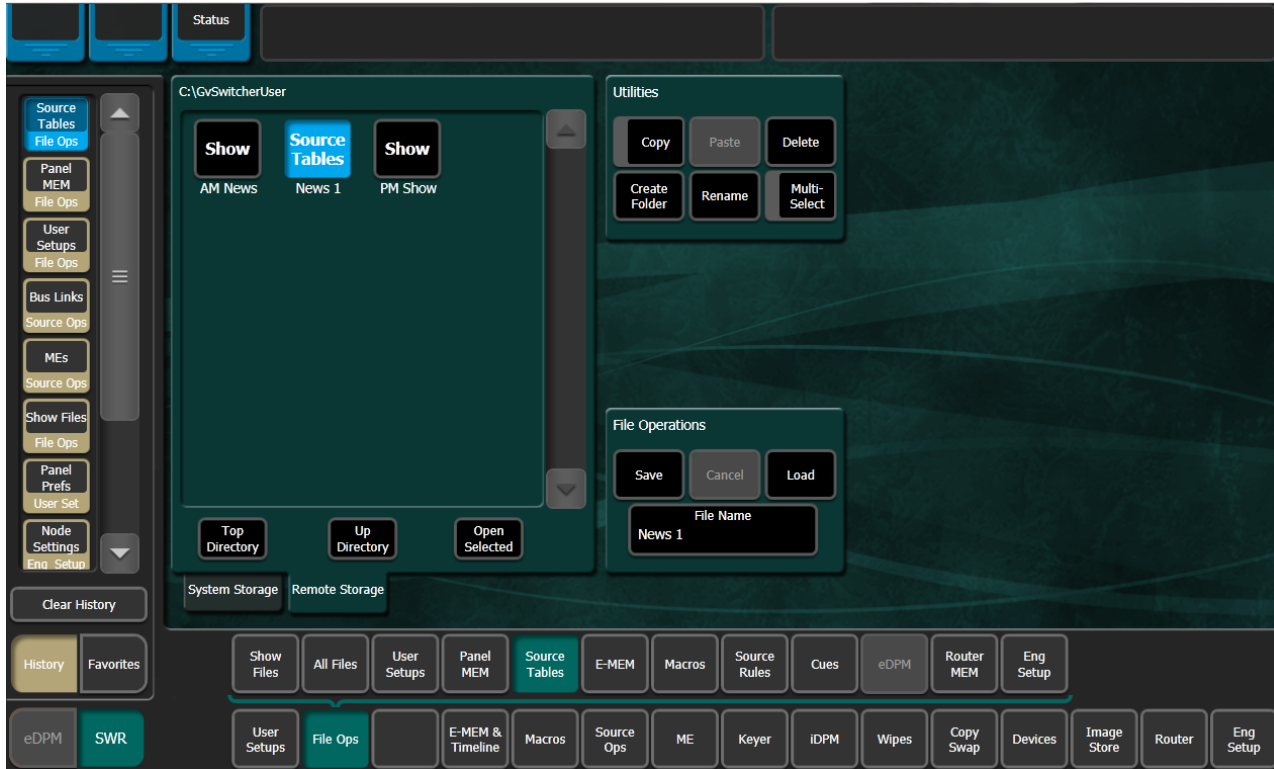


2. Select a file by:
  - a. Navigating to the desired destination directory and selecting a file to select it, or
  - b. Creating a new file by selecting the **File Name** button, typing a name, and selecting **Enter**.
3. Select **Save**.

# Loading Source Tables

1. Access the Source Rules menu by selecting, **File Ops, Source Tables**.

Figure 39. Source Tables Menu



2. Select a file by:
  - a. Navigating to the desired destination directory and selecting a file to select it, or
  - b. Creating a new file by selecting the **File Name** button, typing a name, and selecting **Enter**.
3. Select **Load**.

## Register Files

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

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

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

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

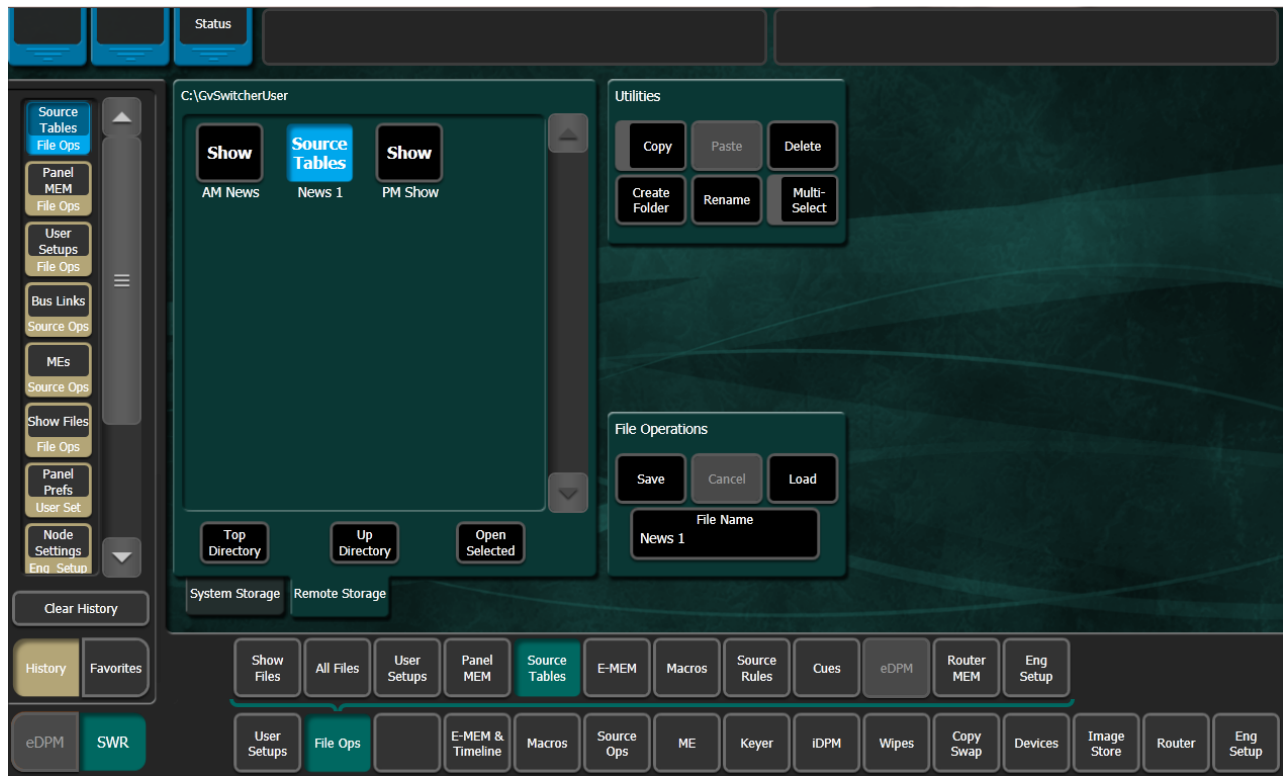
Each menu provides the Utilities pane (Copy, Paste, etc.) and the ability to select all, individual, or a range of register files to be saved or loaded. In addition, in the File Operations pane, you can enter a starting register which allows you to save/load a register or range of registers to a different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

## Saving Register Files

The File Ops Memory menus provide controls for saving and loading register files for each area of the switcher.

1. Access the Panel MEM, E-MEM, Macros, Cues, e-DPM, or Router MEM menu by selecting, **File Ops**, and then selecting a MEM category.

Figure 40. Source Tables Example Menu



2. Select a file by:
  - a. Navigating to the desired destination directory and selecting a file to select it, or
  - b. Creating a new file by selecting the **File Name** button, typing a name, and selecting **Enter**.
3. Select one of the three Save/Load Register mode buttons (center) and
  - a. Select the **All** button to select all register files, or
  - b. Select the **Enter Reg(s)** button then enter a register or range of registers in the **Register** data pad (right), for example 1-5,10,12, or
  - c. Select the **Select Reg(s)** button then select register files in the file display panel (select **Multi-Select** button for multiple selections).
4. Select **Save**.

Result: The register or range of registers is saved to the target directory.

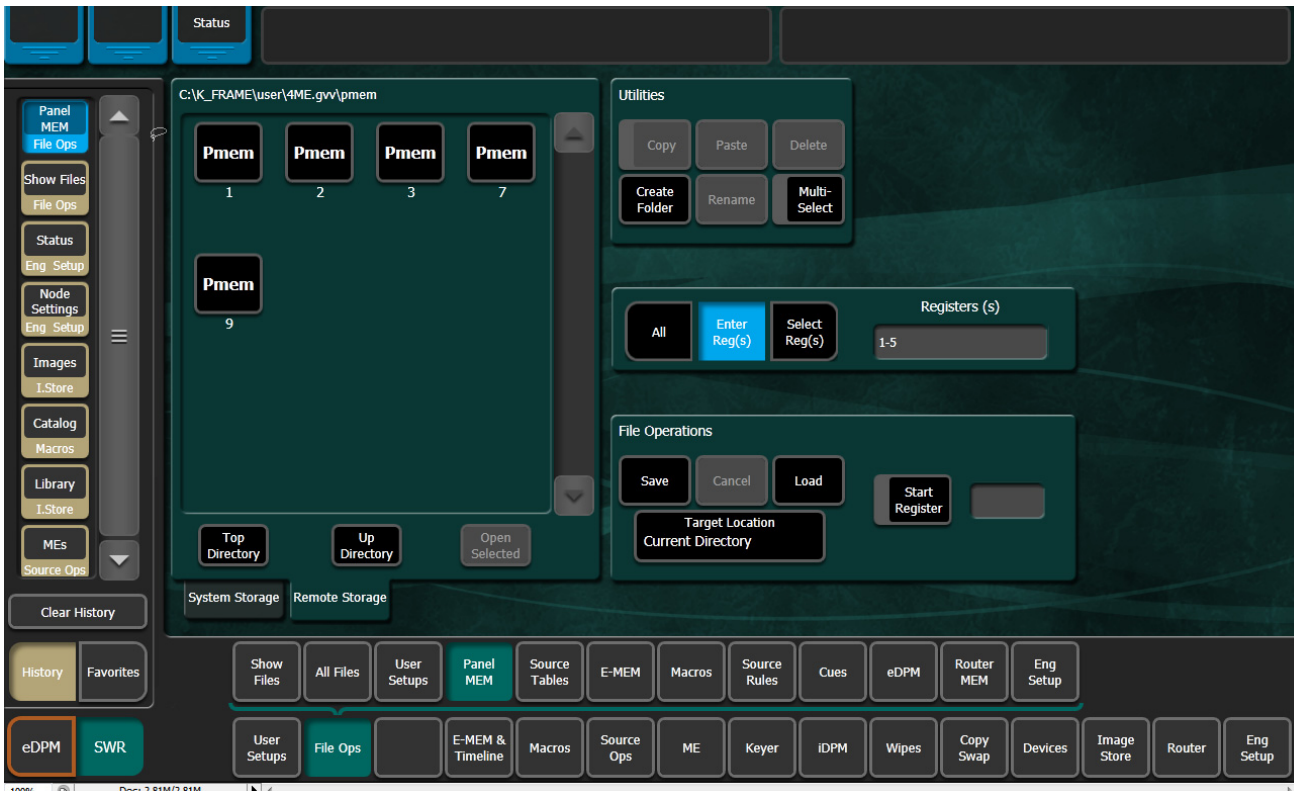


## Loading Register Files

The File Ops Memory menus provide controls for saving and loading register files for each area of the switcher.

1. Access the Panel MEM, Source Tables, E-MEM, Macros, Cues, e-DPM, or Router MEM menu by selecting, **File Ops**, and then selecting a MEM category.

Figure 41. Panel MEM Menu—Load Registers



2. Select a file by:
  - a. Navigating to the desired destination directory and selecting a file to select it, or
  - b. Creating a new file by selecting the **File Name** button, typing a name, and selecting **Enter**.
3. Select one of the three Save/Load Register mode buttons (center) and
  - a. Select the **All** button to select all register files, or
  - b. Select the **Enter Reg(s)** button then enter a register or range of registers in the **Register** data pad (right), for example 1-5,10,12, or
  - c. Select the **Select Reg(s)** button then select register files in the file display panel (select **Multi-Select** button for multiple selections).



4. Select **Load**.

Result: The register or range of registers are loaded into the GV Switcher.

## Loading to a Different Set of Registers

Registers can be loaded with an offset.

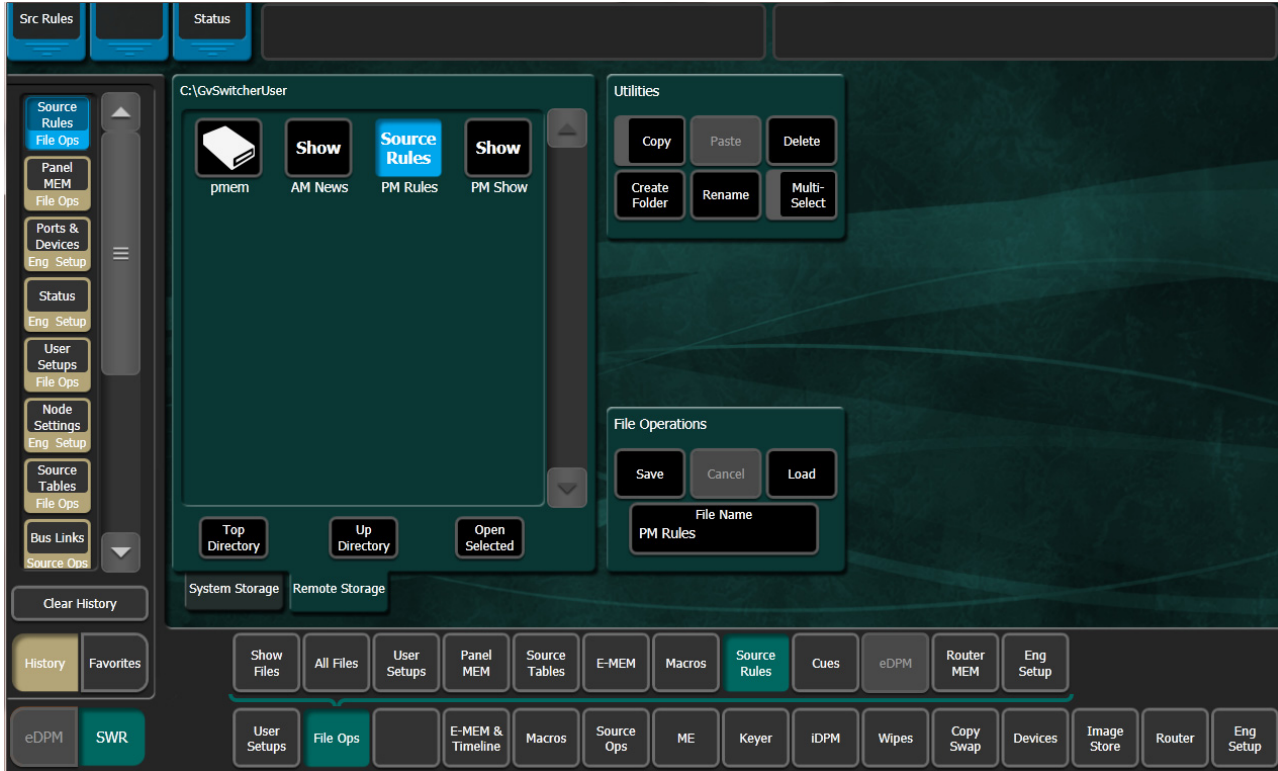
1. Navigate to the desired destination directory and/or create a new folder for the file using the buttons in the File Operations pane.
2. Select the **Enter Reg(s)** button then enter a register or range of registers in the **Register** data pad (right).
3. Select the **Start Register** (highlights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

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

## Saving Source Rules Files

1. Access the Source Rules menu by selecting, **File Ops, Source Rules**.

Figure 42. Source Rules Menu

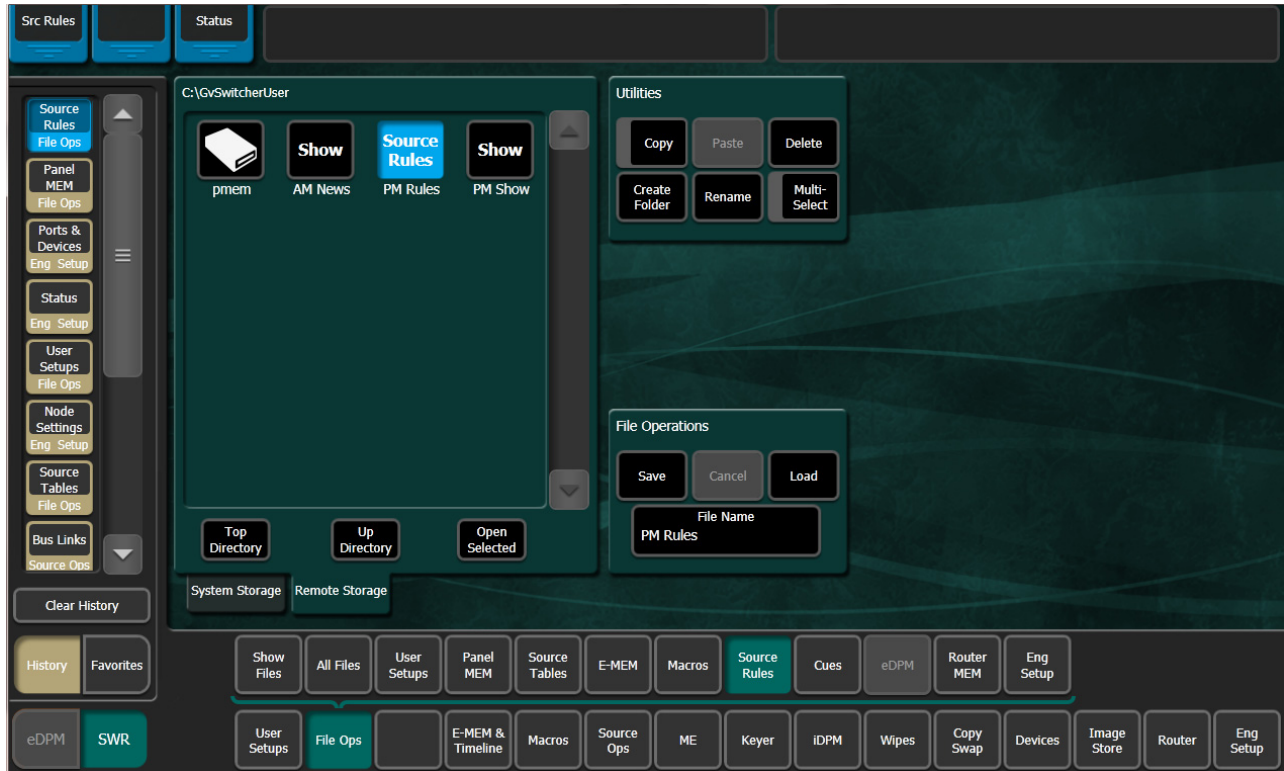


2. Select a file by:
  - a. Navigating to the desired destination directory and selecting a file to select it, or
  - b. Creating a new file by selecting the **File Name** button, typing a name, and selecting **Enter**.
3. Select **Save**.

# Loading Source Rules Files

1. Access the Source Rules menu by selecting, **File Ops**, **Source Rules**.

Figure 43. Source Rules Menu



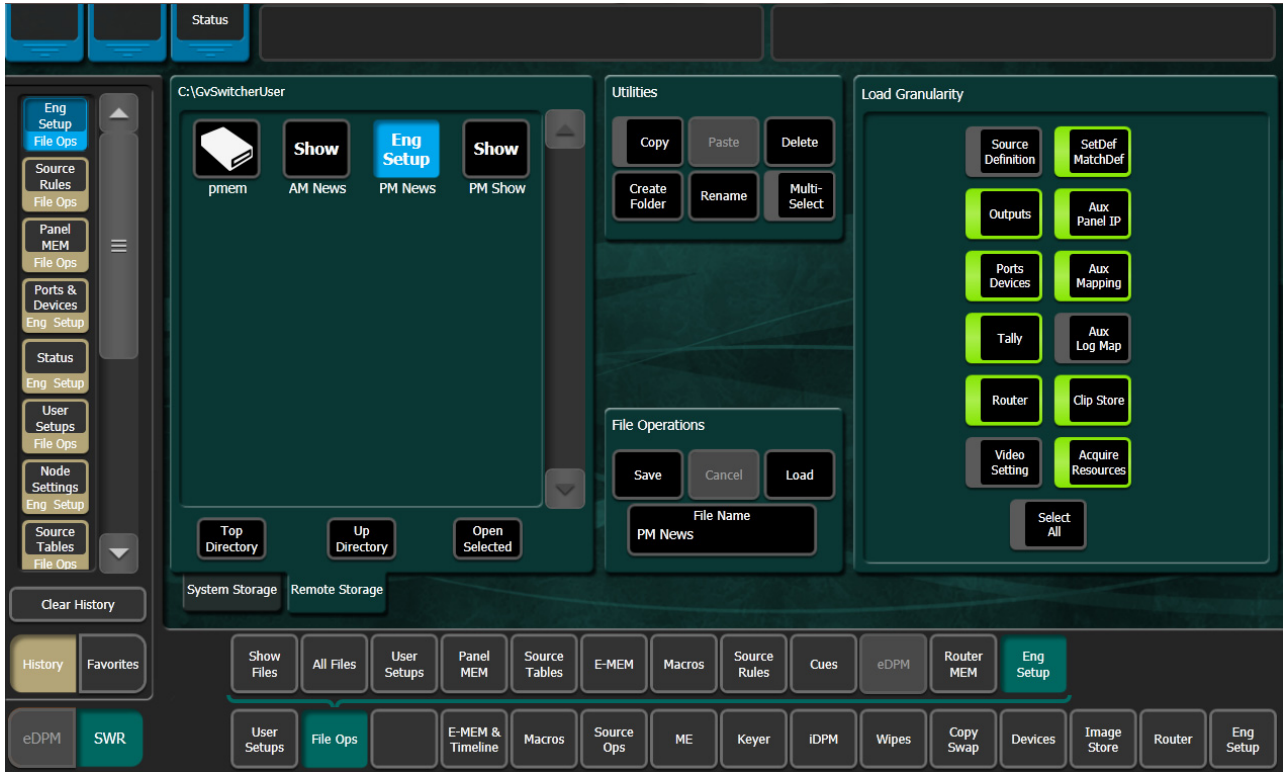
2. Select a file by:
  - a. Navigating to the desired destination directory and selecting a file to select it, or
  - b. Creating a new file by selecting the **File Name** button, typing a name, and selecting **Enter**.
3. Select **Load**.

## Saving Eng Setup Files

The File Ops, Eng Setup menu is used to save and load engineering setups information. Only this file format is supported in this menu.

1. The menu is accessed by selecting **File Ops, Eng Setups**.

Figure 44. Eng Setup Save-Load Menu



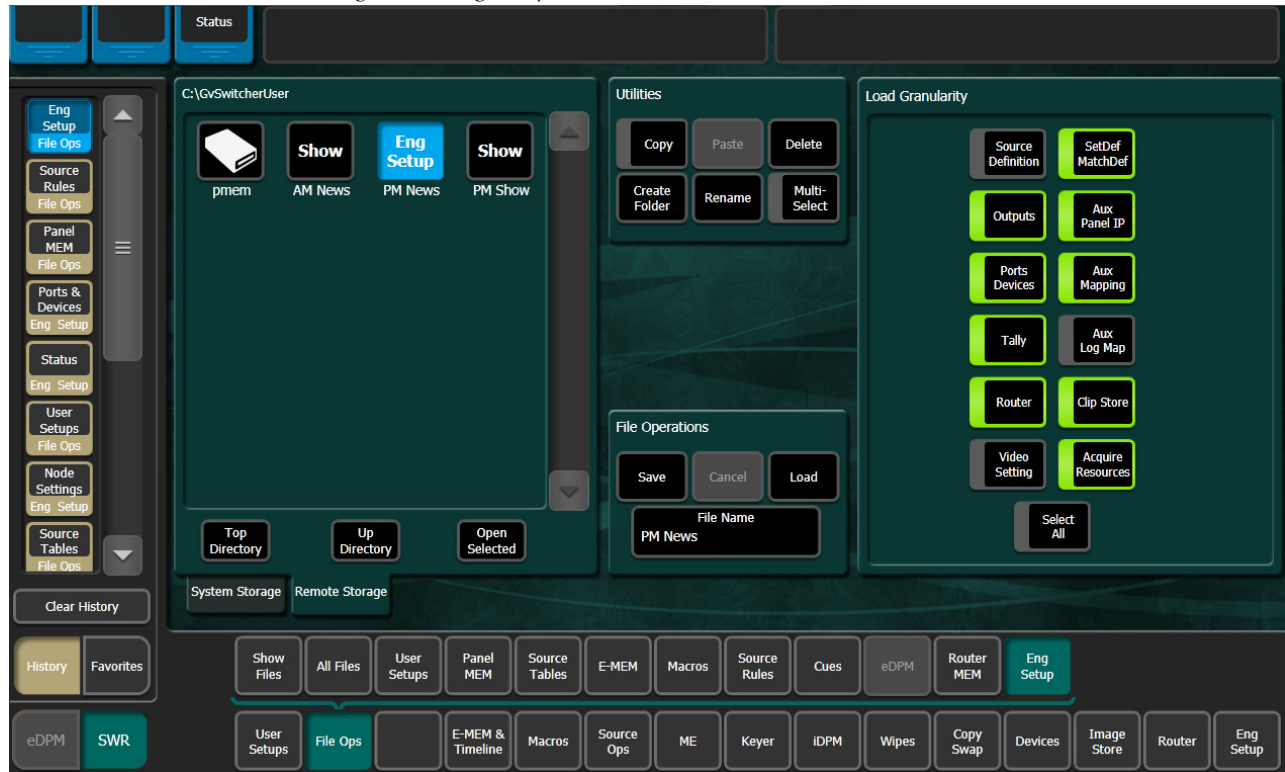
2. Navigate to the desired destination directory and:
  - a. Select a file to select it, or
  - b. Create a new file by selecting the File Name button, typing a name, and selecting **Enter**.
3. In the Load Granularity pane, select to select/deselect file types, or select the **Select All** button.
4. Select the **Save** button.

# Loading Eng Setup Files

The File Ops, Eng Setup menu is used to save and load engineering setups information. Only this file format is supported in this menu.

1. The menu is accessed by selecting **File Ops, Eng Setups**.

Figure 45. Eng Setup Save-Load Menu



2. Navigate to the desired destination directory and:
  - a. Select a file to select it, or
  - b. Create a new file by selecting the File Name button, typing a name, and selecting **Enter**.
3. In the Load Granularity pane, select to select/deselect file types, or select the **Select All** button.

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

4. Select the **Load** button.

# File Translation K-Frame Classic

## K-Frame Show Files

When loading a show created on an earlier Kayenne/Karrera (non-K-Frame) system into a K-Frame system, all the files transfer and the configuration files will set up the K-Frame switcher for most functionality. However, because the K-Frame hardware is different from the Kayenne/Karrera frame, some settings will need to be changed. These adjustments affect Eng Setups, Panel Prefs, and Suite Prefs. In addition, while Macros and EMEMs from a Kayenne/Karrera system will run, if they include fixed sources they will not produce the correct effect. Source Patching is one way to quickly resolve that issue.

## Loading an Earlier Kayenne/Karrera Show into a K-Frame

### Eng Setup Adjustments

- The Acquired Resources will not load from Kayenne/Karrera. You should update them first, including Acquisition of GPIs if you use them.
- The Frame Operating Mode will need to be set in the Video Settings menu.
- Fixed Outputs connector settings will need to be updated in the Outputs menu.
- ClipStore configuration settings will need to be re-entered. in the ClipStore Config menu.
- Modular I/O settings may need adjustment in the SetDef MatchDef menu.

**Note** K-Frame 6.0 and newer supports 24 PBus devices. The eight Kayenne/Karrera PBus devices will map to the first eight K-Frame devices.

### Panel Prefs Adjustments

- Image Store and eDPM delegations can now be assigned separate colors in the Panel Color Scheme menu.
- Source Colors for preview sources will need to be selected again in the Panel Color Scheme menu.
- All Kayenne/Karrera Background U1 & U2 functions are translated to the C and D backgrounds in K-Frame. If you setup U1 and U2 for DPOP in Kayenne/Karrera, they will transfer to C and D. The U1 and U2 buses are not used for this in K-Frame.
- Aux Delegate Mapping for the two Image Store and six eDPM inputs are adjusted in the Aux Delegate Mapping menu.

### Suite Prefs Adjustments

- K-Frame has more Image Store channels than Kayenne/Karrera. The E-MEM Prefs for Image Store are adjusted in the Suite Prefs/EMEM Prefs/Image Store menu. They will need to be set to the ME levels they are used on.

### E-MEMs and Macros – Source Patching

K-Frame fixed sources are different from Kayenne/Karrera, so any E-MEMs and Macros using them will not run properly on K-Frame.

One of the quickest ways to adjust for E-MEM and Macro functions is to Source Patch the K-Frame fixed sources to the source IDs they had on Kayenne/Karrera. [Table 8 on page 86](#) shows this source patching. For example, source patch Logical Source 201 to Eng Source M1 A to make that K-Frame fixed source match that of Kayenne or Karrera's. This allows sources that were selected using E-MEMs and Macros on the Kayenne/Karrera frame systems to be selected using K-Frame E-MEMs and Macros.

Table 8. K-Frame Source Mapping for Kayenne/Karrera Fixed Sources

Logical ID	Eng Source	Logical ID	Eng Source
<b>ME 1</b>		<b>Pgm Pst</b>	
201	M1 A	225	Pg A
202	M1 B	226	Pg B
203	M1 C	227	Pg C
204	M1 D	228	Pg D
205	M1 pA	229	Pg pA
206	M1 pC	230	Pg pC
<b>ME 2</b>		<b>eDPM</b>	
207	M2 A	231	eDA
208	M2 B	232	eDAk
209	M2 C	235	eDC
210	M2 D	236	eDCk
211	M2 pA	<b>Generated Sources</b>	
212	M2 pC	240	Blk
<b>ME 3</b>		241	Wht
213	M3 A	244	Blk Key
214	M3 B	239	Test1
215	M3 C	241	Bg 1
216	M3 D	242	Bg 2
217	M3 pA	<b>Image Store</b>	
218	M3 pC	245	IS 1A
<b>ME 4</b>		246	IS 2A
219	M4 A	247	IS 3A
220	M4 B	248	IS 4A
221	M4 C	249	IS 5A
222	M4 D	250	IS 6A
223	M4 pA		
224	M4 pC		

### E-MEM – Enable Definable Levels

Definable levels will need to be re-enabled in some effects. If you are using definable levels then check to see that the levels are enabled and re-enable them in effects that use them. The timeline of the definable level will be OK. Only the enable will need to be modified.

### Two Outputs on K-Frame eDPM

The K-Frame eDPM has two outputs. Each K-Frame suite can have an eDPM if the K-Frame system is licensed for two.



## Importing Kalypso Image Store File Types into K-Frame

**CAUTION** When importing files into Image Store cache, existing files with the same ID will be overwritten so check if the ID already exists in the cache.

- The still files must be named using the default Kalypso numbering format (I000000.gvi/.gva, but not greater than I008999.gvi/.gva). If a Kalypso still has been renamed, change it back to this naming format using the Kalypso system, or by renaming both the .gva and .gvi files to matching file names directly in the computer directory.
- Both of the Kalypso still .gvi and .gva file components must be present for each image.
- Thumbnail .bmp images are not supported (the K-Frame system generates its own thumbnails). Kalypso image .bmp files can be ignored, and can safely be deleted from the directory to keep them from appearing on the Image Store Library menu screen.
- Kalypso clip conversion is not supported.

**Note** Kalypso NTSC Still Store images contain 486 lines, while the K-Frame Image Store supports 487 lines. A K-Frame system will display one black line at the bottom of the image raster of converted Kalypso NTSC stills.



# *Video Mix/Effects*

## **MEs and Keyers**

An ME is a subsystem of a video production switcher that can create a composite of two or more pictures. An ME includes multiple source selection buses and provides transition (mix and wipe) and keying capabilities on the selected signals.

Keyers are used to insert part of one picture into another to create a composite picture. Keying involves three signals:

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

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

The GV Switcher system supports the following types of keys:

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

The GV Switcher system also supports self keys and split keys.

## **Chroma Key**

The GV Switcher system features the chroma keyers option with powerful controls. These controls offer subtle adjustments to allow successful keying of difficult subject matter (fine hair, smoke, translucent objects, etc.), and to overcome some problems resulting from imperfect chroma key set coloring

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

The following information provides more detailed instructions on how to set up a chroma key using the Auto Setup feature and use the manual controls in the Keyer menu.

## Chroma Key Auto Setup

The first step of setting up most chroma keys is to use Auto Setup. Auto Setup automates the first steps to achieving a chroma key. Auto Setup performs the following:

- Calculates primary suppression Hue and Luminance.
- Sets primary suppression Selectivity and Chroma to defaults.
- Calculates Clip Low, and sets Clip Hi to default.
- Sets all the secondary suppression values to duplicate the primary suppression values, but turns secondary suppression off.
- Changes Opacity temporarily to 100% to permit an accurate backing color sample, and then returns it to its original setting.
- Sets Key Position and Size values to default (0).

Two different Auto Setup algorithms are available, one for well designed and lighted sets (**Reshape** off), and the other for more challenging sets (**Reshape** on). Depending on individual circumstances, additional manual adjustments may be required after you use Auto Setup.

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

## Manual Chroma Key Adjustments

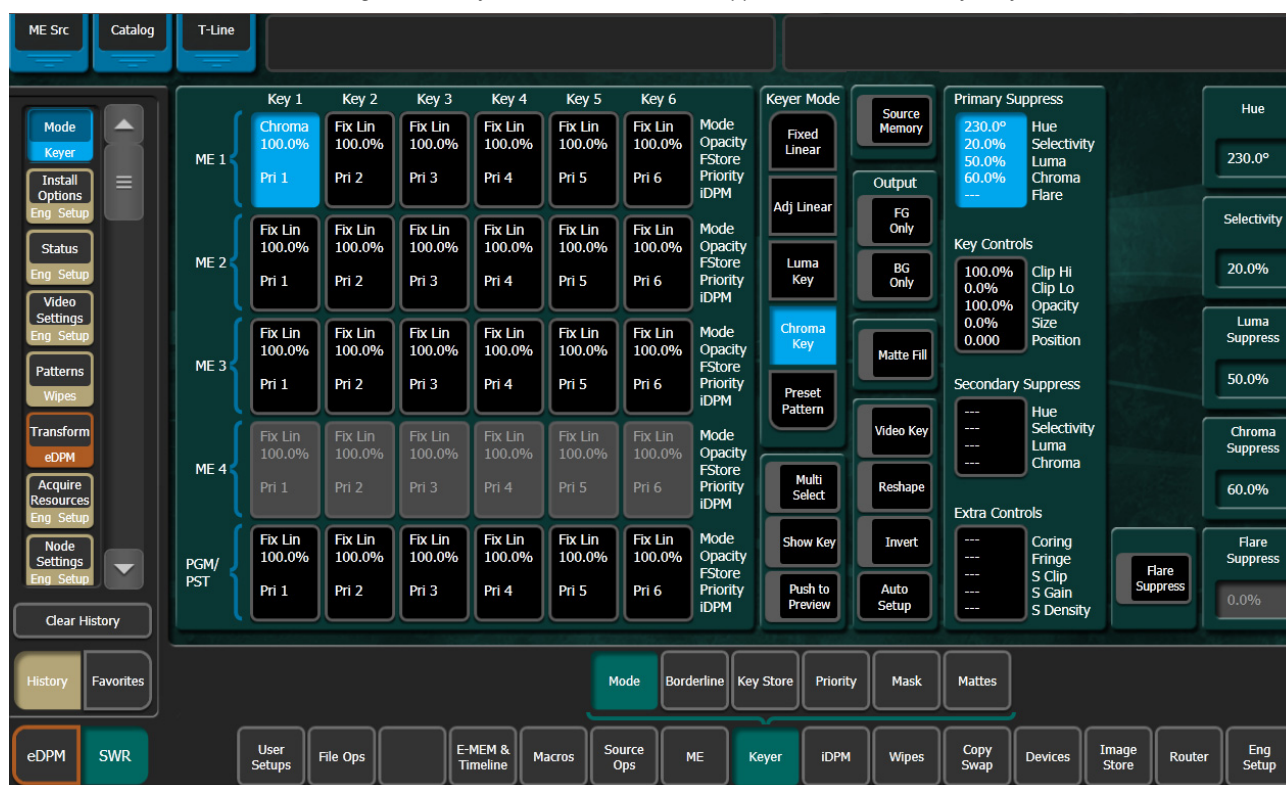
If the Auto Setup of the hue fails to provide a suitable chroma key, additional controls are available in the Keyer menu for fine tuning the key. Chroma key manual set up consists of choosing the best set of compromises to provide adequate detail and color fidelity to meet your needs. While using this menu you need to view the chroma key scene on a monitor. A vectorscope and waveform monitor can also be very useful when setting up a chroma key. During set up you need to focus your attention on particular areas of the foreground, background, and/or composite. The areas you look at will change depending on the individual controls being used. The **FG Only** and **BG Only** menu buttons can be used to remove extraneous picture information, allowing you to view only those areas of the composite.

Chroma key set up procedures follow a recommended order, as indicated by the numbered steps displayed on the menu. However, requirements can vary depending on each individual scene. You may need to go back to earlier steps and readjust previous settings to optimize the key. Understanding what the chroma key controls do will help you decide what adjustments are required for your individual situation.

## Access Keyer Menu and Delegate Keyer

On the Menu Panel, select **Keyer, Mode**. Delegate the keyer you wish to set up on the left side of the screen, then select the **Chroma Key Mode** button.

Figure 46. Keyer Chroma Menu, Pri Suppress Control—Six Keyer Systems



## Primary Suppression

Primary suppression is the most critical chroma key parameter, and the easiest to set. Auto Setup should take care of this, but manual adjustments can be made if desired. If primary suppression is set wrong, however, it will be impossible to achieve a good chroma key with the other controls.

Primary Suppression should be set while looking at the foreground. Ideally the backing color will appear as a small dot on the vector scope and a perfectly flat line on the waveform display, but this never occurs due to set

lighting variations, shadows, etc. This means you will need to pick the best suppression for the overall look of the key.

You can select the stage 1 **Pri Suppress** data pad, if necessary, to activate these controls and adjust Hue, Selectivity, Chroma, and Luma primary suppression to eliminate the backing color.

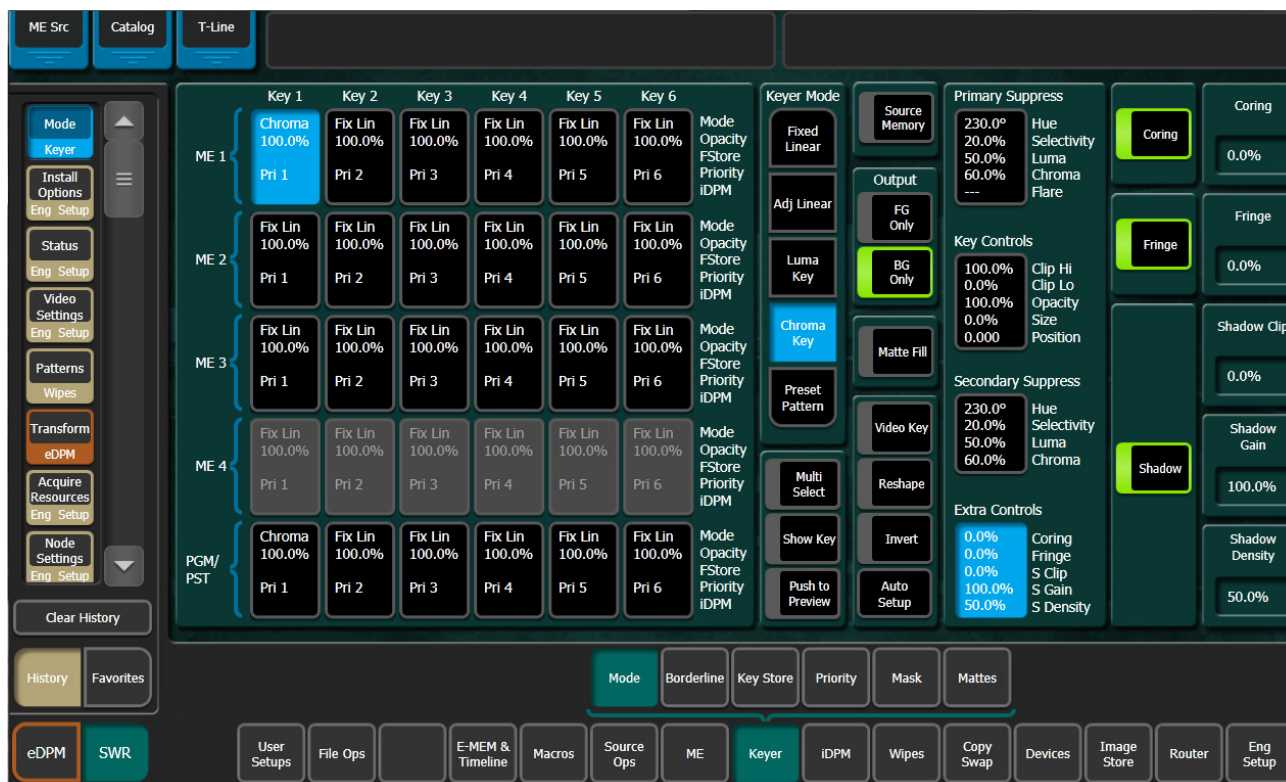
- **Hue** can be set accurately with Auto Setup. **Hue** should center on the primary color of the backing area of the foreground scene. Depending on where **Luma** and **Chroma** primary suppression are set, adjusting **Hue** may not make any noticeable change on the scene. **Chroma** suppression should be preset to 100% and **Luma** set to 0%. Hue can then be tuned to remove the backing color.
- **Selectivity** may need to be increased if there are colors in the foreground image that are being suppressed. **Selectivity** should be set as low as possible without including colors that should not be suppressed. For example, when keying on green, a greenish yellow shirt might be affected by the suppression. If so, adjust the selectivity high enough to reject that color. Too high a selectivity is one of the classic causes of a noisy key. If the foreground subject is stationary, consider using a force mask instead of increasing selectivity.
- **Chroma** suppression can be set accurately with Auto Setup. To adjust, increase **Chroma** suppression and observe the backing color dot on the vector scope move toward the center. You want to center it exactly, so no chroma exists in the backing area. 100% chroma suppression is the correct setting for all chroma keys. At this point, you will probably see a line through the center of the vector scope. With increased selectivity, this line will become an arc.
- **Luma** suppression adjustments may be necessary if shading is visible in the backing area with **FG Only** selected, or if the shading adversely affects the background image. Primary Luma suppression is hardly ever desired when Reshape is on. To adjust, increase **Luma** suppression and observe the backing color move toward black. You want to make the backing color just black. Increasing this control too much will make the chroma key hard and noisy. When not enough, highlights will be added to the background. Note that incomplete luminance suppression is not necessarily bad. The highlights added to the background will match the shading on the backing wall, adding natural shadows and perhaps eliminating the need to add artificial shadows.
- All the above adjustments may need to be revisited later.

Another potential artifact of chroma keying is a tinting of the overall foreground subject due to lighting splash from the backing color or lens flare. **Flare Suppression** adds a small amount of color to the entire foreground image to cancel the splash or flare. Typically less than 2% of the backing color is needed to neutralize the flare.

## Extra Chroma Key Controls

Additional chroma key controls are available by selecting the stage 4 **Extra Controls** data pad. Coring, fringe, and shadow controls can be individually activated by selecting the labeled buttons.

Figure 47. Extra Control—Six Keyer Systems



**Coring** replaces any pixels in the luminance signal after primary suppression that are below the adjustable threshold with black. This eliminates noise resulting from incomplete suppression. While coring can improve some keys, it can easily be over done. Coring thresholds much above black will affect dark grays that are actually part of the foreground subject, making the chroma key composite look unnatural.

**Fringe** is used to restore color to the gray portions of the foreground color resulting from secondary suppression adjustments. This control is only active when secondary suppression is on.

**Shdw** provides controls of shadows that fall on the backing. **Shadow Clip** and **Shadow Gain** allow selecting the range of the luminance portion of the foreground that produces a shadow. **Shadow Density** is an opacity control for the shadow and adjusts how much shadow is added to the background.

# Setting Up a Chroma Key

## Using Auto Setup

1. Press one of the keyer transition buttons on the Control Panel (for example **Key 1**) on an ME to delegate the keyer you wish to use.
2. Choose the selected keyer's key bus that has the chroma key source and the chroma key backing color.
3. Select the CHR as the key type in the Multi-Function Module (source memory may automatically select this key type).
4. Choose the source on the A bus that will be used to replace the backing color of the chroma key source.
5. Go to the Keyer menu either by double pressing a keyer transition button on the Control Panel (for example **Key 1**) or selecting **Keyer, Mode** on the menu and make sure **Reshape** is off for the keyer you are using.

Figure 48. Keyer Menu, Chroma Key Reshape Off



6. Press the **Auto Setup** button on the Control Panel or select it in the menu. Preview for that ME will now display the chroma key source with a superimposed cursor. The cursor actually represents a box of 16 x 16 pixels.
7. Use the joystick to position the cursor on the backing color. Select a darker area, if one exists, to optimize the backing color suppression.



8. Press the button on top of the joystick. The chroma key will be set up automatically using the average of the colors selected by the cursor box. Because **Reshape** was off, fine edges of the key will be preserved.
9. If this chroma key is acceptable, you are done. If set, lighting, or other conditions prevent the result from being acceptable, you need to decide whether to adjust the chroma key manually or use Auto Setup with Reshape.
  - Manual adjustment permits retention of fine edge detail (see the *Switcher Concepts Manual* for more information). In particular, if there are problems with translucent areas (hair, smoke) secondary suppression controls can be useful.
  - Auto Setup with Reshape produces a chroma key with harder edges, but accommodates wider set variations (see below).

## Reshaping a Chroma Key Using Auto Setup

If the set is lit unevenly or has other problems, Reshape is available to help solve the problem. A better alternative, if time permits, is to adjust the lighting on the set to even out the backing color. This may improve the key so that Reshape is not needed.

1. If you decide you must use Reshape, follow the Auto Setup procedure in *Using Auto Setup* but select **Reshape** in the Keyer menu to turn it on (its green indicator will illuminate). After selecting the backing color area and selecting the top button on the joystick, the chroma key will be set up with coarser values better able to handle set variations.
2. If this chroma key is acceptable, you are done. If you are still not satisfied, you can fine tune the chroma key using manual adjustments.

## Adjusting Chroma Key Controls

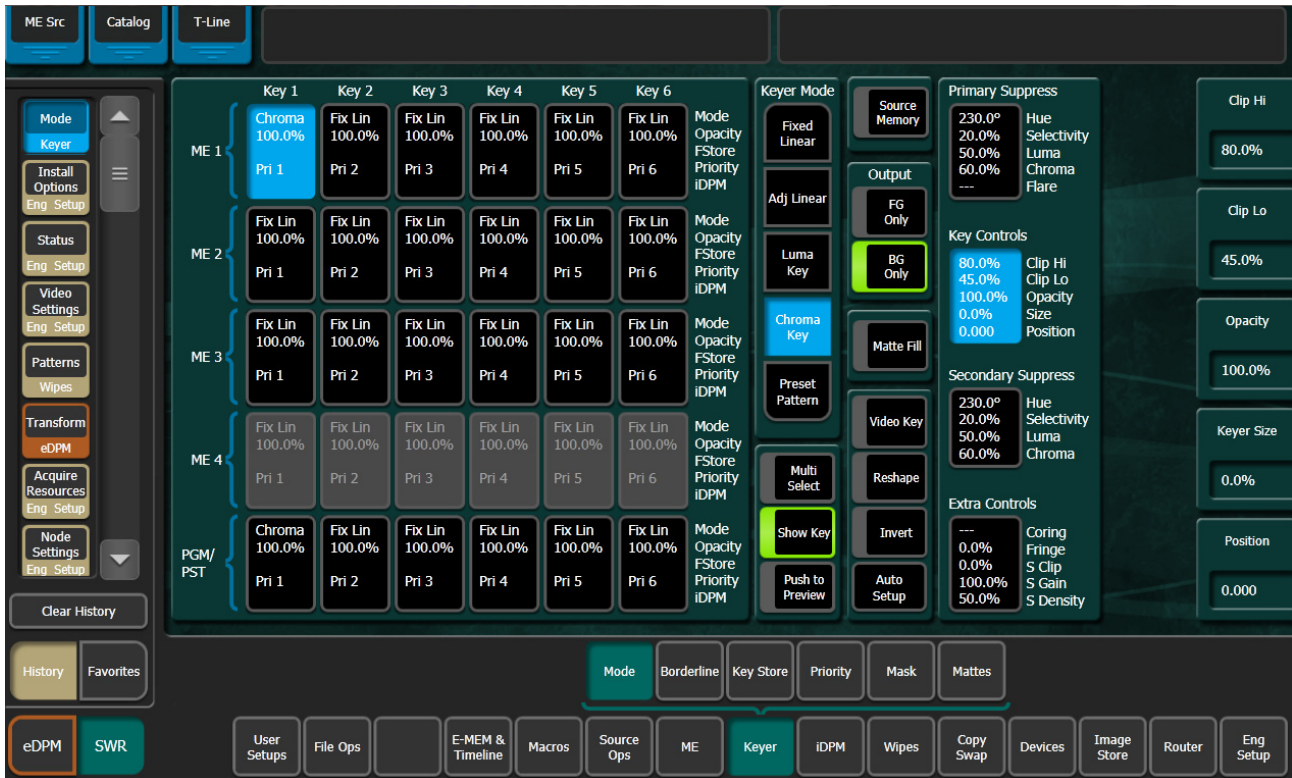
The purpose in adjusting **Clip Hi** and **Clip Low** is to cause the proper hole to be cut in the background. All areas of the backing color should be full background while all areas of the foreground should make the background completely invisible. The easiest way to do this is to observe the key signal while making your adjustments.

The smaller the difference between **Clip Hi** and **Clip Lo**, the higher the keyer gain. High gain amplifies noise present in the transition between transparent and opaque. The correct setting is with **Clip Hi** and **Clip Lo** set to just barely achieve opacity and transparency, respectively.

1. Select the stage 2 **Key Controls** data pad to activate these controls. You can now manually adjust keyer clipping controls.

2. Select **Show Key** in the Keyer menu and look at the ME preview output on a picture and waveform monitor.

Figure 49. Key Controls—Six Keyer System—Six Keyer System



3. Adjust **Clip Hi** so that all areas of the foreground objects are white. If **Clip Hi** is set too low (too far clockwise), much of the translucent areas will be forced to be fully opaque, hardening the key and darkening the transition area between background and foreground.
4. **Clip Low** can be set accurately with Auto Setup. Adjust **Clip Low** so that all areas of the backing color are black. If **Clip Lo** is set too high (too far counter-clockwise), translucent areas will be forced fully translucent, hardening the key.

**Note** When adjusting clip levels, remember that areas on the edge of the foreground subject should show as shades of gray. Gray indicates areas of translucency, which is desirable in chroma keying.

5. Check the final results with **Show Key** off and the chroma keyer in normal mode (**FG Only** turned off). Note that incorrect adjustments can create a hard, noisy key.
6. If the chroma key now looks good, you are done. If dark edges are present, there may be too much primary **Luma** suppression or **Clip Hi** or **Clip Low** may be set improperly. If adjusting these parameters fails to solve the problem, you should consider activating the Reshape feature.

## Reshaping Chroma Key

Reshape is useful when shading variations exist in the backing color. A better alternative, if time permits, is to adjust the lighting on the set to even out the backing color. This may improve the key so that Reshape is not needed. Reshape helps with backing color suppression at the expense of a harder looking key with more noticeable edge artifacts. A drawback of Reshape is loss of detail in the keyed edge. For example, smoke and hair in the foreground will probably be lost.

1. Select the **Reshape** button to activate this feature.
2. Set primary **Luma** suppression to 0.
3. You can now readjust the **Clip Hi** and **Clip Low** controls if necessary to fine tune the key as described above.
4. When **Reshape** is on, key resizing and positioning also become available to clean up the key edges.
  - **Size** narrows the key signal and can remove much of the blue or green edge on the foreground subject.
  - **Position** moves the key signal left and right, and can be used to reduce a color edge along only one side of the foreground.

## Applying Chroma Key Secondary Color Suppression

Secondary color suppression is intended to improve the color of translucent areas (e.g., glass or smoke) or fine detail near the edge of a foreground subject (e.g., hair). These areas can take on some of the backing color. Much less secondary suppression will be needed than is used for primary suppression, because the foreground color is only partially corrupted by the backing color. Because there is a mixture of backing color and foreground color, the secondary suppression Hue and the direction (Angle) will be different from primary suppression. Primary suppression removes the backing color, while secondary suppression corrects the color in translucent areas.

**Note** If Reshape has been applied, it is unlikely enough edge detail will remain to use secondary color suppression.

1. Select the stage 3 **Sec Suppress** data pad and then select the **Secondary Suppress** button to activate this feature.

Figure 50. Sec Suppress Controls—Six Keyer System



2. Adjust secondary suppression **Hue** and **Selectivity** so that the translucent area is affected, but opaque areas of the foreground are not. The final hue will lie somewhere between the backing color (primary suppression hue) and the uncorrupted foreground color.
  - When making this adjustment, it is helpful to turn the secondary **Chroma Suppression** to maximum, and the secondary **Suppression Angle** to produce an unnatural color in the affected area. This makes the changes to secondary suppression more obvious.
  - Selectivity should be kept as wide as possible. You should only narrow selectivity (increase its value) if you cannot avoid changing opaque areas of the foreground.
3. Adjust the secondary **Angle** so that changing secondary **Chroma** suppression moves the color in the desired direction. You are trying to match the color of the translucent areas to an opaque (uncorrupted) area of the foreground subject.
4. Decrease secondary **Chroma** suppression for the best match between corrupted (translucent) and uncorrupted (opaque) areas. Interaction between secondary suppression Angle and Chroma suppression may require repeating these adjustments.
5. Increase secondary **Luma** suppression to balance lightness of the translucent and opaque areas.

- Repeat secondary suppression Angle, Chroma suppression and Luma suppression for best results.

## Generating Background Mattes

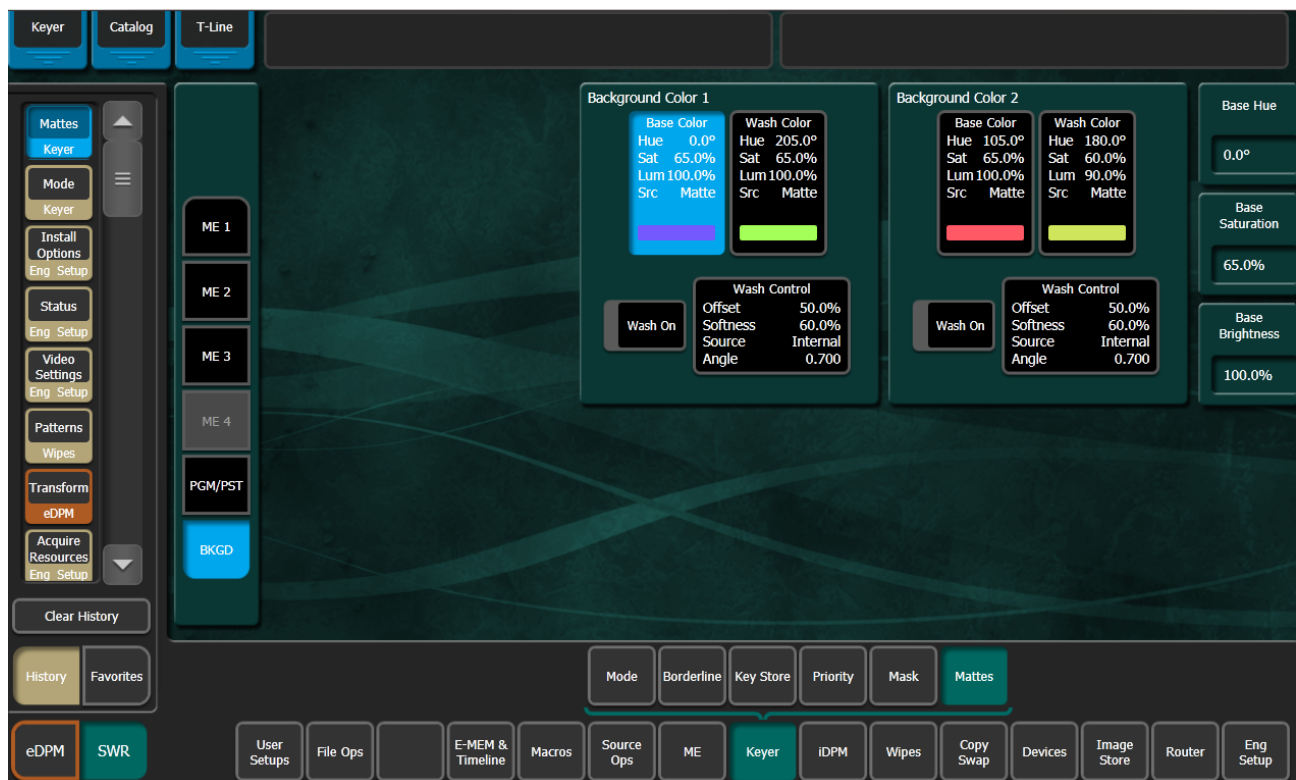
Background matte generators create colors and washes. These can be used, for example, as the backgrounds for keys.

Background mattes cannot use the wipe pattern generators available to keyer and wipe mattes, and cannot use Utility video as a wipe source. Instead background mattes employ a simple dedicated wipe generator that creates a single, straight line.

Background matte control is available from the Control Panel (Modifier area, **Matt** button in the Home menu) and from the Keyer, Matte menu, which provides additional background parameter controls.

- Go to the Mattes menu by pressing **Keyer, Mattes**.
- Select the **BKGD** button.
- If not already selected, select the **Base Color** data pad of the desired Background (1 or 2). Use the top three soft knobs to adjust **Base Hue**, **Base Saturation**, and **Base Brightness** of the base fill color.

Figure 51. Matte Menu, Base Color Selected



4. Select the **Wash On** button at the bottom so its indicator illuminates to create a wash matte.
5. Select the **Wash Control** data pad to bring up **Offset**, **Softness**, and **Rotate** soft knob controls. If necessary, use the **Offset** and **Softness** knobs to make the wash edge visible on the screen. You can also turn on the **Rotate** button, and then adjust the angle of the edge using the **Rotate** soft knob.
6. Select the **Wash Color** data pad to delegate the soft knobs on the right to adjust **Wash Hue**, **Wash Saturation**, and **Wash Brightness** of the wash fill color.

Because all background matte parameters are keyframeable, you can build effects with constantly changing backgrounds using multiple keyframes.

## Splitting a Key

Sometimes you may wish to use the key cut signal of one source with the key fill or video signal of another source. For example, you may have a Character Generator creating matte filled characters, but wish to use a different signal to fill the characters. A split key is used to accomplish this.

**Note** On GV Switcher systems, the source select buses by default tally the key fill signal.

A split key can be created three different ways:

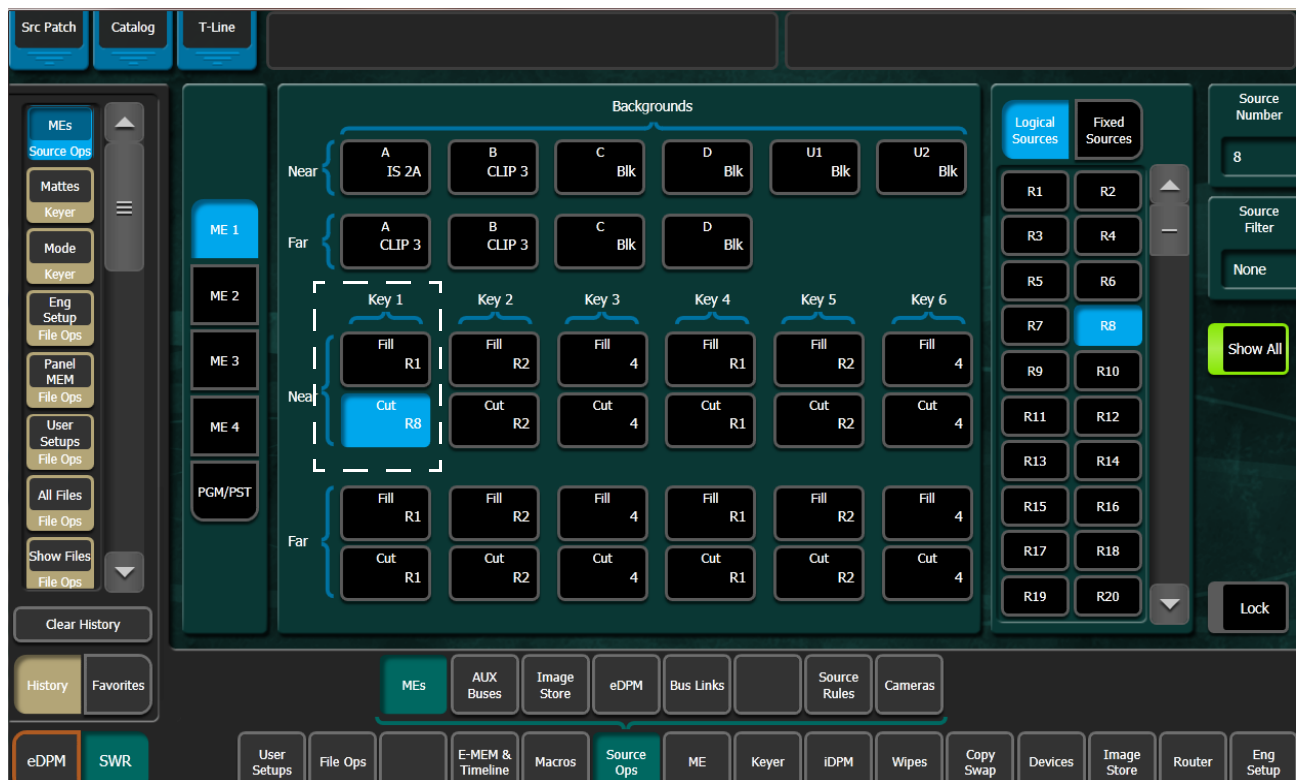
- Configure a source in the Eng Setup/Source Destination menu that uses different video for cut than for fill. That split key will initially be used whenever that engineering source is selected. See the *K-Frame Installation and Service Manual* for more information.
- Setup a key patch (an implicit split key). This split key is used whenever that logical source is selected, and adds operational flexibility. See *Patch a Key Input from One Source to a Different Source Using Patch Key* on [page 53](#) for more information.
- Setup an explicit split key using the Source Ops menu. This split key is used only at the time it has been set. Selecting a different source, then returning to that formerly split source removes the split key.

To create an explicit split key:

1. Select Source Ops, MEs.



Figure 52. Split Key—Source Ops, MEs Menu—Six Keyer System



2. Select an ME button (left).
3. Select the Cut signal data pad for the Keyer you wish to split (highlights blue).
4. Select a source from the scrolling Source List (right) and select that source.

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

**Note** Split Key will be shown in the Modifier area display.

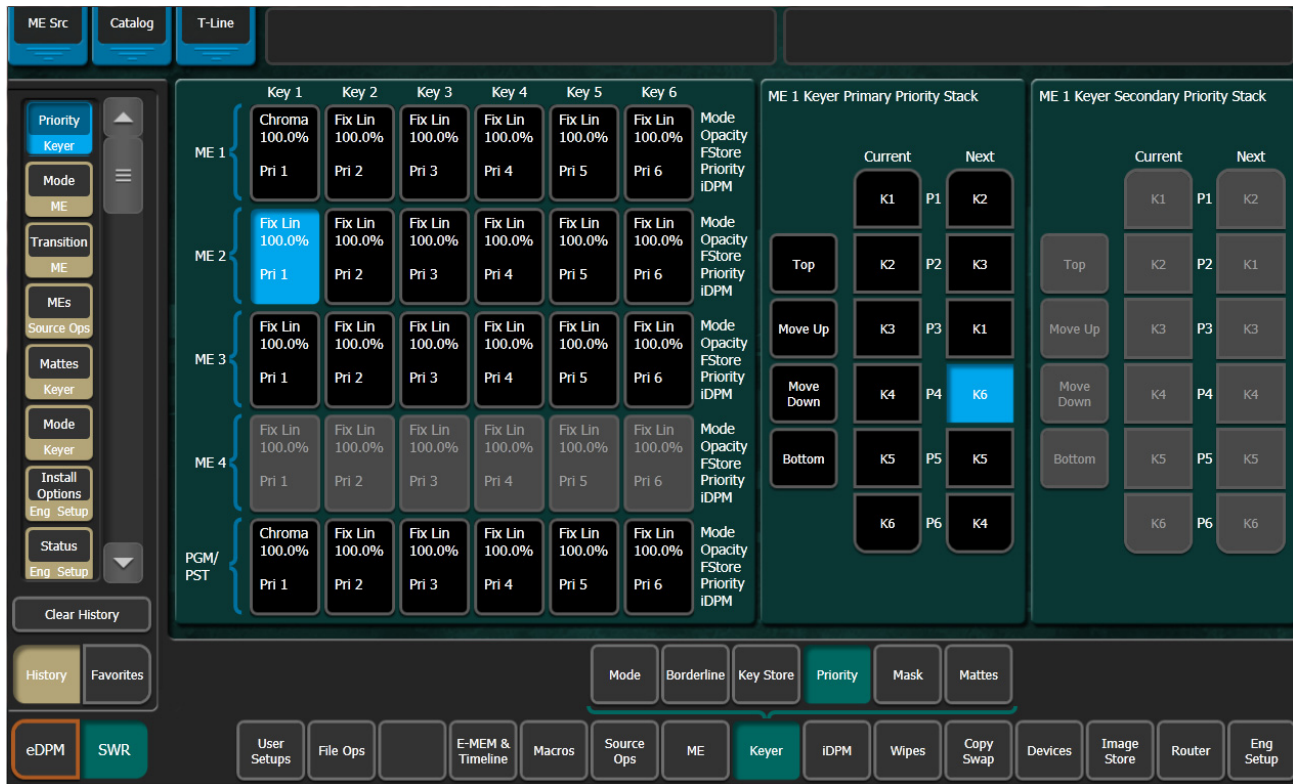
## Setting Keyer Priority

The GV Switcher system has six keyers per ME so complex stacking is possible. Keys can be placed between other keys, using key priority.

**Note** You can also apply the following to the Keyer Secondary Priority Stack when an ME is in Split Mode.

1. Select **Keyer, Priority**.

Figure 53. Keyer Priority Menu, Current Stack Selected—Six Keyer System



2. If not already set up, turn on the desired keys and arrange them so they overlap, observing the Program monitor. This will make the changes in key priority visible. For demonstration purposes, you can use four preset pattern keys.
3. Select the keyer you wish to move in the stack in the Current column, then use the **Top**, **Move Up**, **Move Down**, and **Bottom** buttons on the left to place the key in the desired location. The key priority order changes immediately, as a cut.

## Transitioning Between Different Keyer Priorities

Key priority transitions use a Current priority stack and a Next priority stack. The transition occurs between the two stacks.

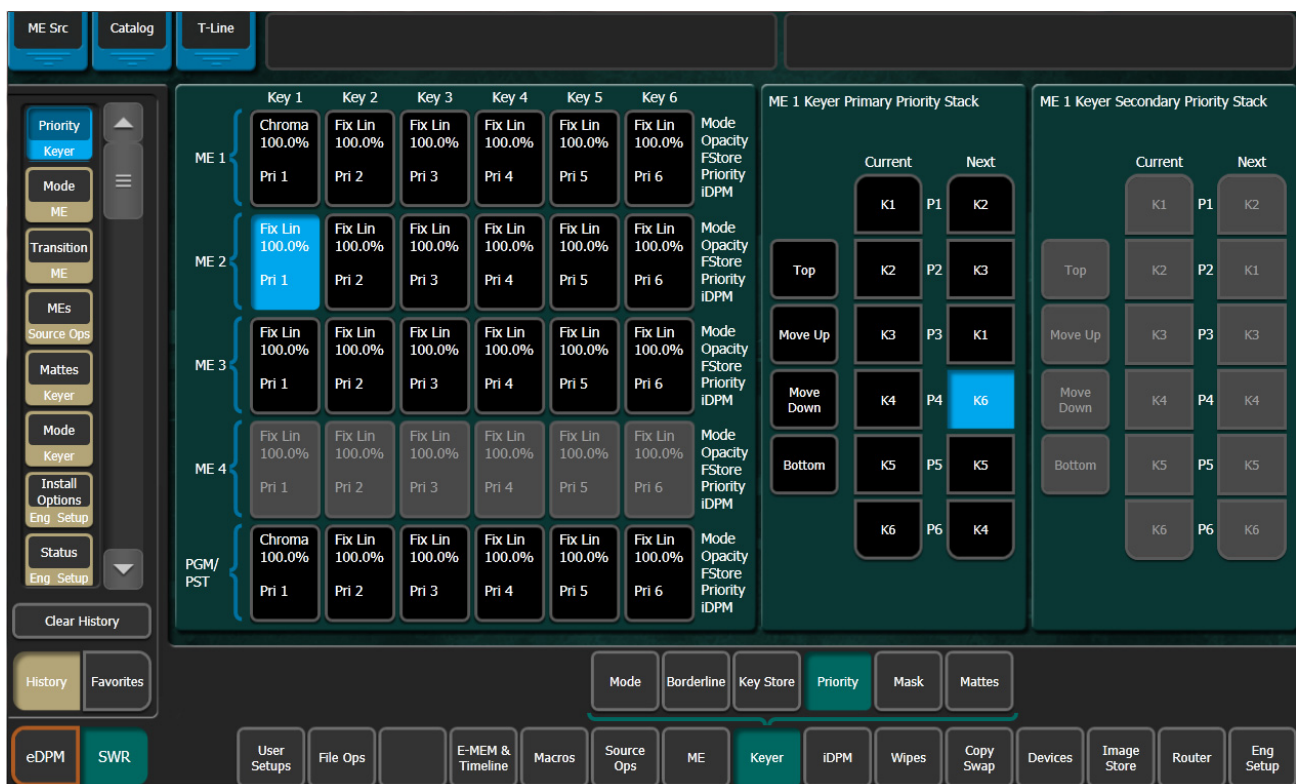
**Note** You can also apply the following to the Keyer Secondary Priority Stack when an ME is in Split Mode.

1. Press the **Key Prior** Transition Element button on the Control Panel.
2. If not already set up, turn on the desired keys and arrange them so they overlap, observing the Program monitor. This will make the changes in key priority visible. For demonstration purposes, you can use four preset pattern keys.



3. Delegate that ME for preview in the Preview button group on the System Bar. This shows the end result of the transition (the Next priority).
4. Go to the Keyer, Priority menu by pressing **Keyer, Priority** on the Control Panel or selecting **Keyer, Priority** in the menu.
5. The current stack in the menu is automatically set to what is currently being output. You can change the Current priority stacking order if desired, as described on [page 102](#).
6. Set up the Next priority stacking order, selecting the keyers in the Next column and then using the **Top**, **Move Up**, **Move Down**, and **Bottom** buttons. The new stack will be visible on the preview monitor.

Figure 54. Keyer Priority Menu, Next Stack Selected—Six Keyer System



7. Select the type of transition, using the **Mix**, **Wipe 1**, or **Wipe 2** transition buttons on the Control Panel. If you selected a wipe, go to the Wipes menu by double pressing one of the **Wipe** buttons, and then select the pattern and any modifiers to be used with the wipe.
8. Move the lever arm or press the **Auto** button in the Transition area to perform the key priority transition. The transition is shown on the Program monitor.

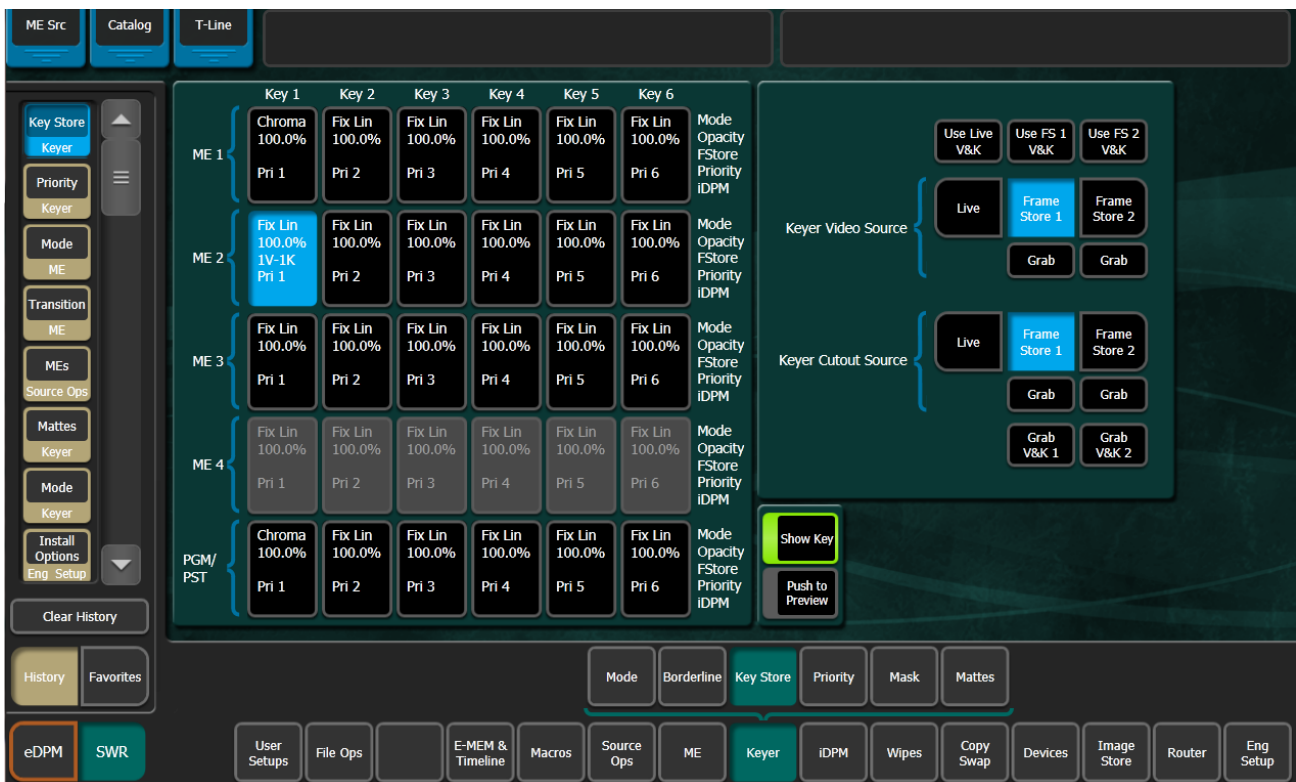
# Key Store

Key Store is available on six-keyer systems only. Each keyer can store two frames of memory; each frame containing both Keyer Video (fill) and Key (cut), that together create the Key Store.

Each Key Store can save the use of other switcher resources. For example instead of using an Image Store channel or another keyer, you could store a station ID or a replay graphic (still) for a sports show in a Key Store and switch the image within the keyer.

In the Keyer, Key Store menu, each Store has two frames, Frame Store 1 and Frame Store 2. Each can 'Grab', 'Store', and 'Use' a still image for a key source. So in addition to Live video, you have up to two fill/cut images that can be interchanged on any full keyer source.

Figure 55. Key Store Menu—Six Keyer System



**Show Key** button—Shows the cut signal for the selected Key Store source.

**Push to Preview** button—Shows the current Key Store image on Preview.

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

On power cycle or reboot, Key Stores will have to be reloaded with the correct video. They default to black keyed with black which will not show up on a monitor.

Key Store is E-MEMable and keyframeable.

## Keystore and 1080sf Mode

There are no odd fields in 1080sf mode, therefore to grab Keystore image while running in 1080sf mode, you must set the Field Dominance mode in the Eng Setup, Video Settings menu, Command Processing pane to either **Any Field** or **Even field**.

## Grabbing a Key Store Image

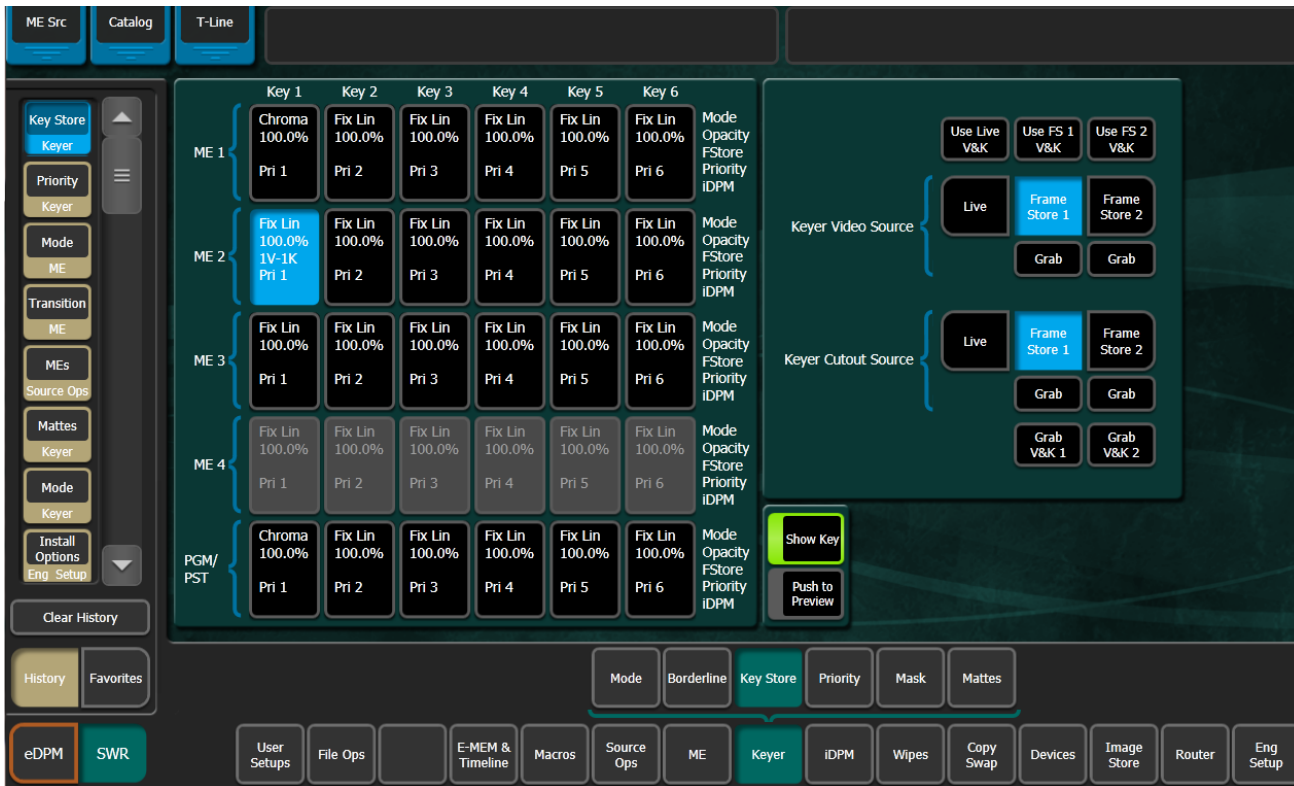
The keyer settings are defined in the Eng Setup, Source Definition menu where for example you can set a key to a Linear or Shaped Video. You will need to define these parameters when creating a Key Store, if not defined the key will be full raster white.

You can 'Grab' both a video and key frame simultaneously by selecting either the **Grab V&K 1** or **Grab V&K 2** button, located below each Frame Store page, or you can select a **Grab** button for any of the four Video/Cutout Frame Stores.

Once you grab fill and key images in Key Store, they are available for the selected key source:

1. Select **Keyer, Keystore**.

Figure 56. Key Store Menu—Six Keyer System



2. Select a keyer with which you want to use a Key Store (Figure 56, left).
3. Select either the **Use Live V&K**, **Use FS 1 V&K**, or **Use FS2 V&K** to select the Video and Key source image (Figure 56), or
  - a. Select the Keyer Video Source you want as fill.
  - b. Select the Keyer Cutout Source you want as the key cut.

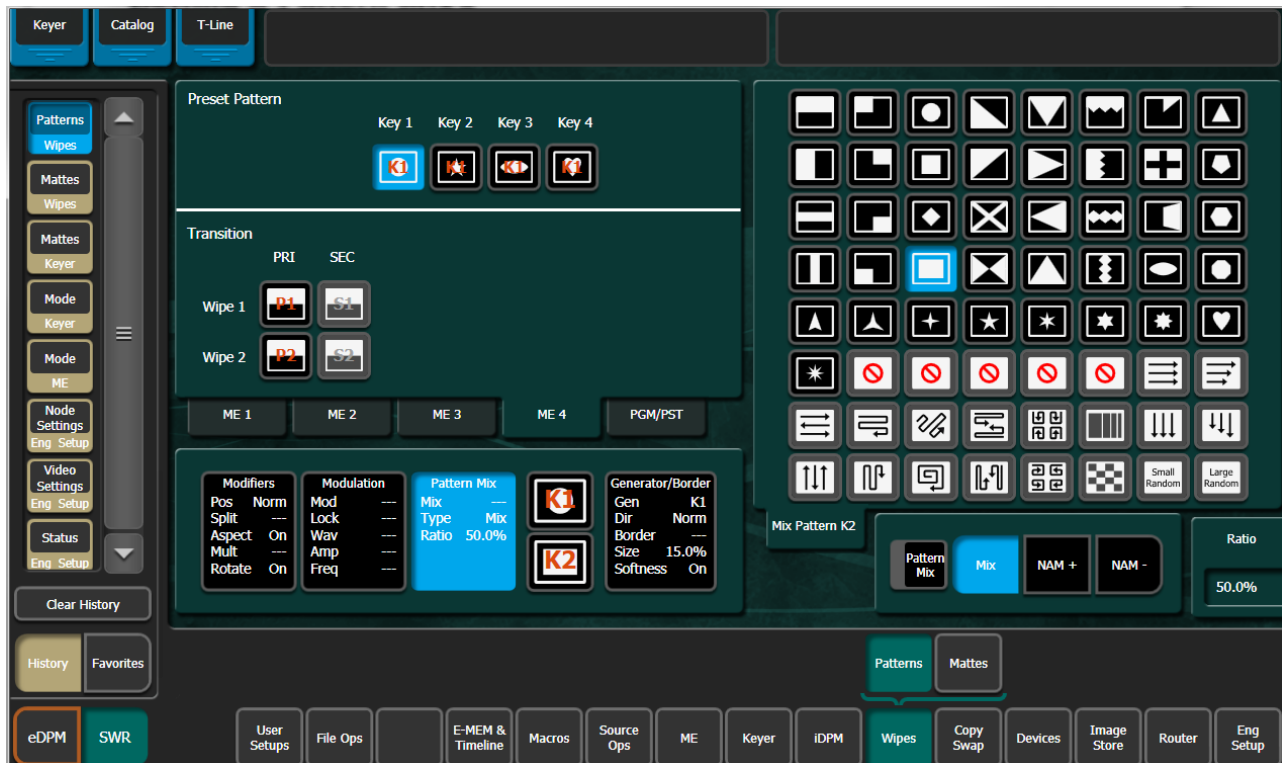
## Setting a Pattern Mix

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

**Note** See [4K Quadrant Mode Wipe Limitations and Supported Wipe Patterns](#) for information about 4K wipe limitations and supported patterns.

1. Double press the **Wipe 1** button in the Transition area. This selects **Wipe 1** as the next transition type, and also opens the Wipes menu with PRI Wipe 1 delegated for control.
2. Select the P1 pattern to be used by selecting the **Wipe Pattern** button between the **Pattern Mix** and **Generator/Border** data pads, and then selecting one of the displayed patterns in the Pattern tab on the right.

Figure 57. Wipes, Patterns Menu—Four Keyer System



3. Select the **Pattern Mix** data pad, this switches the Pattern tab on the right to the other generator; in this case P2 (to select the base wipe pattern again, select the Wipe Pattern button as in Step 2).
4. Select the **Mix** data pad located below the Pattern tab. Additional control buttons will appear at the bottom of the menu.
5. Delegate that ME for preview in the System Bar.
6. Press the **Trans PVW** button in the Transition area, and move the lever arm part way. This will display the P1 pattern on preview.
7. Select the delegation button in the Pri Wipe 1 column to delegate the menu to control the Pri Wipe 1 pattern generator.

8. Select the **Pattern Mix** button so its indicator illuminates. The preview monitor will now show the combined Mix 1 and Mix 2 pattern.
9. You can select the type of pattern mix with the Mix type buttons (**Mix**, **NAM +**, **NAM -**). The NAM buttons are used for And or Or pattern mixing.
10. You can also adjust the amount each wipe pattern contributes to the mix with the **Ratio** control. At 50%, each pattern contributes equally. At 25%, the other pattern contributes only 25% to the final pattern.

## Source Memory

Source Memory is a K-Frame system feature that can be used to retain keyer settings for each source on each keyer bus. Source Memory permits the operator to, for example, hot cut from one source to another on that keyer bus and automatically restore different settings learned for each keyer source.

Source Memory settings for a keyer source are only applied when that source is selected on that keyer bus. Selecting on that keyer bus a different source that does not have learned Source Memory will restore the previous keyer settings.

Source Memory keying settings include:

- Keyer Mode settings, including Preset Pattern and Chroma
- Keyer Mask settings
- Keyer and Wipes Mattes settings
- ME Video Proc settings (Keyer sources only)
- ME RGB Color Correct (Keyer sources only)
- Wipes settings (Keyer sources only)

Source Memory settings are explicitly learned and deleted, using the **Source Memory** button.

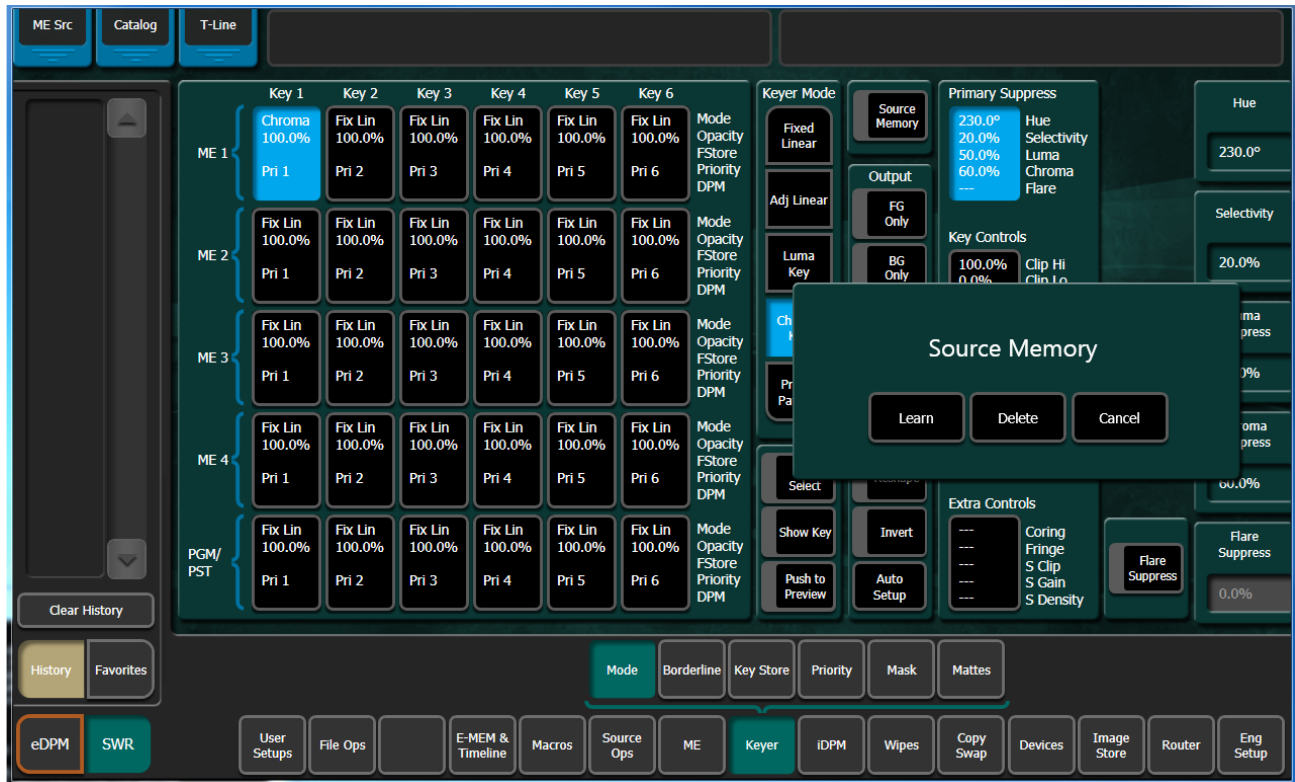
The following are NOT affected by Source Memory:

- Split keys
- Keyer Borderline settings
- Keystore settings
- Background sources
- Aux sources

## Learning Source Memory for a Keyer

1. Select a source on a keyer bus and setup the keyer with the desired settings, using the Control Panel and/or menus.
2. Go to the Keyer/Mode menu and select the keyer whose settings you want to save to that keyer source's Source Memory.
3. Select the **Source Memory** button. The Source Memory window appears.

Figure 58. Source Memory Window—Six Keyer System



- Selecting **Cancel** exits the Source Memory window without making any changes.
4. Select the **Learn** button. The settings are saved for that keyer source on that ME's keyer bus, and will be applied whenever that source is selected on that ME's keyer bus.

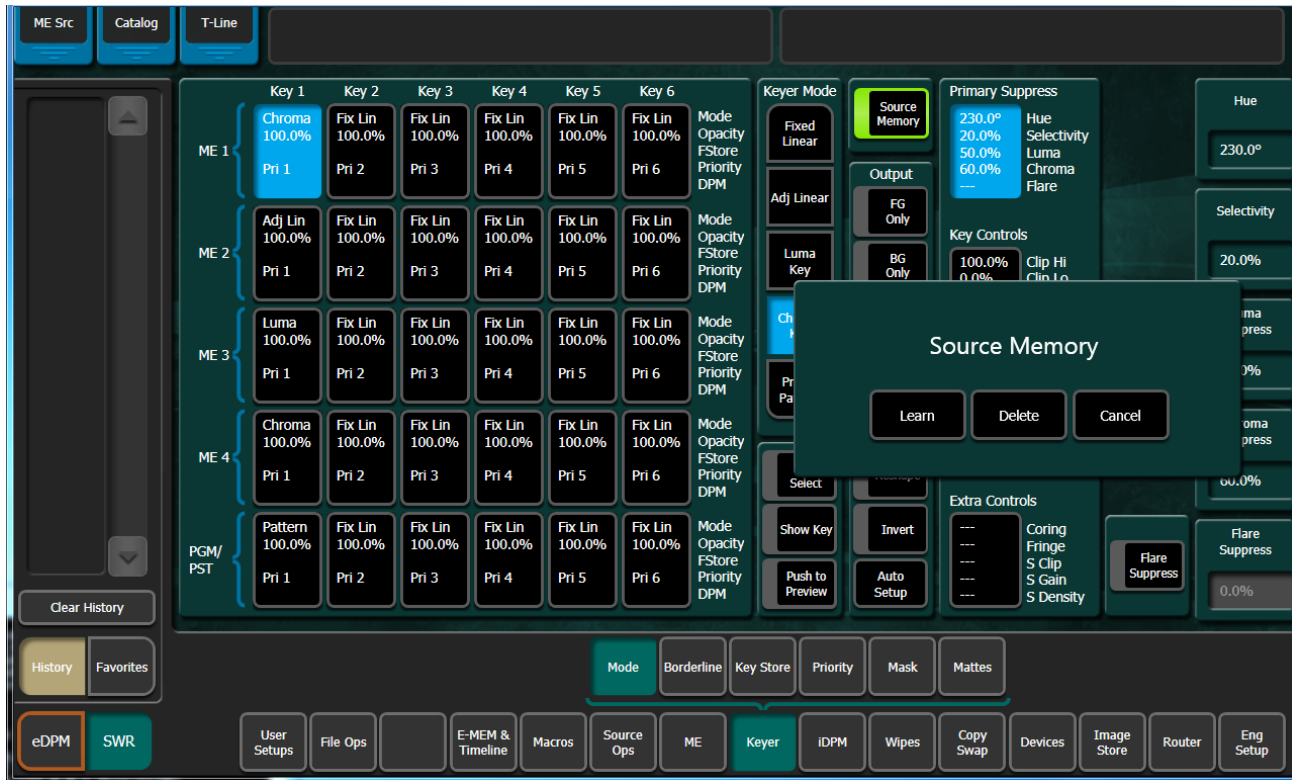
When a keyer source with settings saved to Source Memory is selected on a keyer bus, the **Source Memory** button is highlighted when that keyer is selected in the Keyer Mode menu.



## Deleting Source Memory from a Keyer

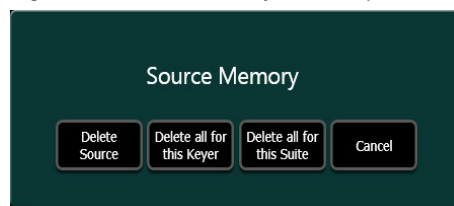
1. Select a keyer source with learned Source Memory on a keyer bus, using the Control Panel and/or Source Ops menu.
2. Go to the Keyer/Mode menu and select that keyer. The Source Memory button will be illuminated.
3. Select the **Source Memory** button. The Source Memory window appears.

Figure 59. Source Memory Window—Six Keyer System



4. Select the **Delete** button. The Source Memory delete options window appears.

Figure 60. Source Memory Delete Options





5. The following Source Memory delete options are available:
  - **Delete Source** - Removes Source Memory from only that keyer source on that ME's keyer bus, restoring the previous keyer setting.
  - **Delete all for this Keyer** - Removes Source Memory from all the keyer sources on that ME's keyer bus, restoring the previous keyer setting.
  - **Delete all for this Suite** - Clears all the settings for all the keyers on all the ME buses to default, and removes Source Memory from all the keyers.
  - **Cancel** - Exits the Source Memory window without making any changes.

## Learn Source Memory from the Control Panel

In addition to the GV Switcher menu, Source Memory can be saved from the Select Module on the Control Panel.

1. Press a Keyer bus source button on the Source Select Module.
2. Select keyer settings; Preset Pattern, Chroma, keyer mask, wipe, etc.
3. Press and hold a Source Select Keyer delegate button (for example Key 1) for the ME.
4. Press the **EMEM** button on the Source Select Module.

Result: Settings for the selected keyer source are learned in Source Memory and a horizontal line appears through the selected source's OLED indicating Source Memory has been learned.

Changes to keyer source settings with Source Memory learned do not auto-update. If you make a change, you must repeat the steps above to learn Source Memory.

Source Memory can only be deleted from the GV Switcher menu. Go to the Keyer, Mode menu.

K-Frame Keystores each have Source Memory.

## Acquiring DPMs

iDPMs and eDPMs are floating resources available to any full ME (not available to the Controller ME (ME-CT)). The number of licensed iDPMs in a suite appear in the Logical Resources of the Eng Setup, Acquire Resources menu, in the **DPM Chns** data pad. eDPM resources must be allocated.

**Note** 2D DPMs are available on all MEs including the Controller ME and eDPM.

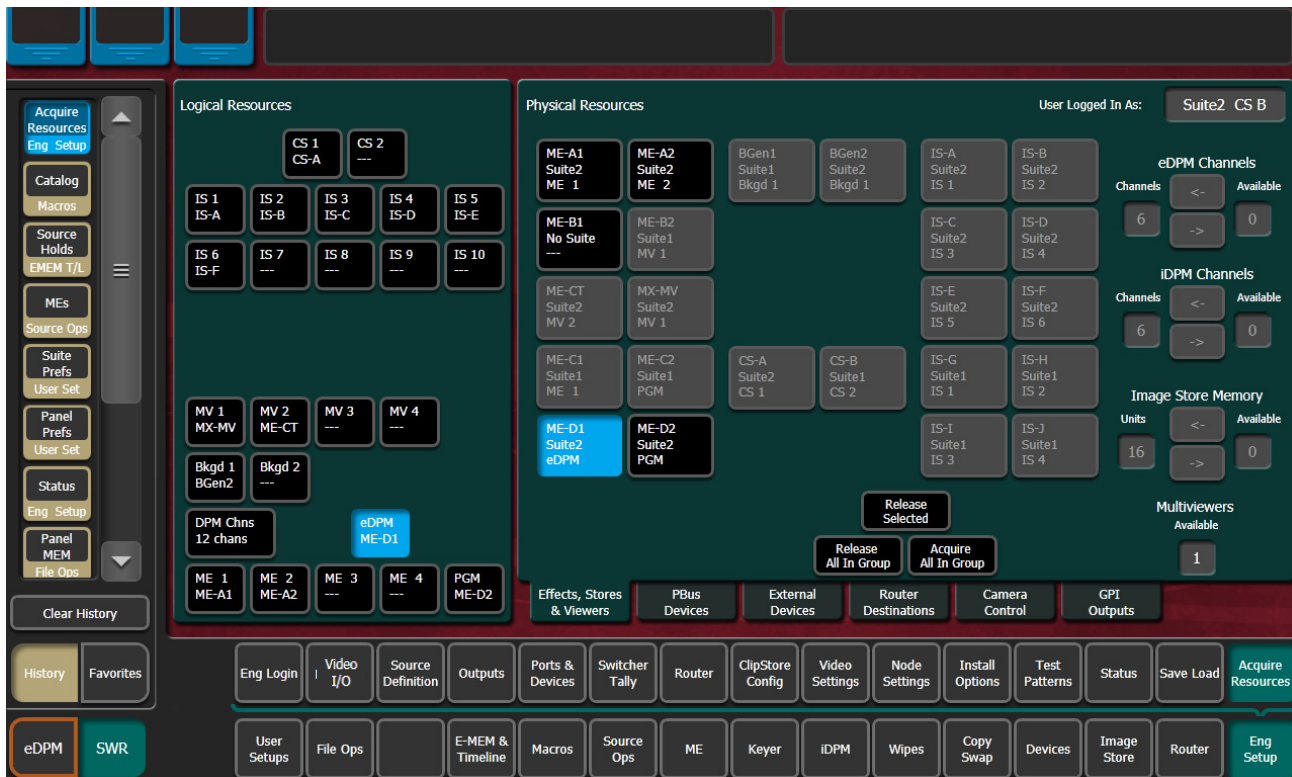
To move resources between suites, refer to the *K-Frame Installation & Service Manual*, version 5.1 or newer.

## Acquire an ME Resource for eDPM

A full ME used as an eDPM logical resource will be dedicated and unavailable for use as an ME until released.

1. Select **Eng Setup, Acquire Resources**, to open the menu.

Figure 61. Acquire eDPM ME Resource—Six Keyer System



2. Select the **eDPM** button in the Logical Resources pane.
3. Select a full ME resource in the Physical Resources pane.

## Release/Acquire DPM Resources between eDPMs/iDPMs

In the Physical Resources pane, release and/or acquire available DPM resources:

- In the Logical Resources pane of the Acquire Resources menu, turn on the **DPM Chns** button.
- Release channels by moving them from **Channels** to **Available** (up to six for acquisition by eDPM) using the **Right Arrow** button in the **eDPM/iDPM Channels** acquisition groups.
- Acquire available DPMS using the **Left Arrow** buttons.

Figure 62. DPM Channel Acquisition Groups



## Enable/Delegate DPM Channels

Once DPMs are acquired to a suite *Acquiring DPMs on page 111*, they can be assigned to keyers for creating effects and taking them to air. See *DPMs on page 116* for information about full DPM functions and features.

## Kayenne K-Frame Control Panel

### Enable DPMs

1. From the Kayenne K-Frame Control Panel, in the MFM (Multi-Function Module) Home menu, press an ME button.
2. Press a Key button 1-6 or hold and press for multiple channel control.
3. Press the iDPM button.

## Delegate eDPM Channels

1. From the Kayenne K-Frame Control Panel, in the MFM (Multi-Function Module) Home menu, press the eDPM button.
2. The acquired eDPM channels are available in the key row, displayed in cyan (blue).  
When allocated, eDPM channels are always enabled.
3. Press a channel button or hold and press for multiple channel control.

## Enable a 2D DPM on a Keyer

1. From the Kayenne K-Frame Control Panel, in the MFM (Multi-Function Module) Home menu, press an ME button.
2. Press a Key button 1-6 or hold and press for multiple channel control.
3. Press the 2DPM button.

## Karrera K-Frame Control Panel

### Enable an iDPM on a Keyer

1. From the Karrera K-Frame Control Panel, in the Modifier Area press an ME button.
2. Press a Key button 1-6 or hold and press for multiple channel control.
3. Press the **iDPM On** button.

### Delegate eDPM Channels

1. From the Karrera K-Frame Control Panel, in the Modifier Area, press the **eDPM** button.
2. The acquired eDPM channels are available in the key row, displayed in cyan (blue).  
When allocated, eDPM channels are always enabled.
3. Press a channel button or hold and press for multiple channel control.

### Enable a 2D DPM on a Keyer

1. From the Karrera K-Frame Control Panel, in the Modifier Area, press an ME button.
2. Press a Key button; 1, 2, 3, etc., or hold and press for multiple channel control.

3. Press the **2DPM On** button. Enable DPMs from the Menu

For DPMs, double-select the keyer/channel to delegate the DPM:

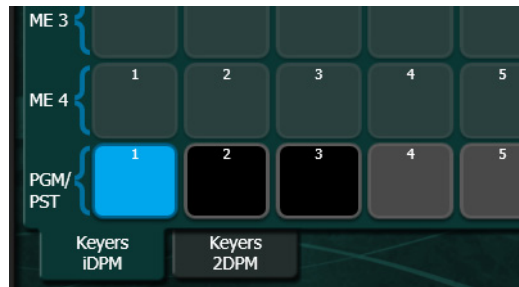
- iDPM— select **iDPM, Transform, Keyers iDPM** tab and double select one or more keyer buttons.

## Enable DPMs from the Menu

For DPMs, double-select the keyer/channel to delegate the DPM:

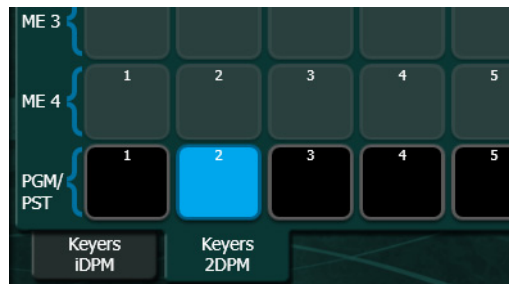
- iDPM— select **iDPM, Transform, Keyers iDPM** tab and double select one or more keyer buttons.

Figure 63. iDPM Menu Delegation



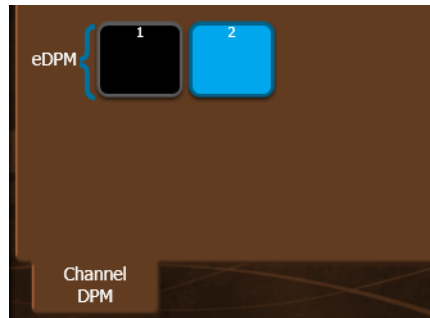
- 2D DPM—select **iDPM, Transform, Keyers 2DPM** tab and double select one or more keyer buttons.

Figure 64. iDPM Menu Delegation



- eDPM—select **eDPM** (bottom left of menu), **eDPM, Transform, Channel DPM** tab and select one or more eDPM Channel buttons.

Figure 65. eDPM Menu Delegation



## DPMs

iDPMs and eDPMs share from a pool of up to 16 physical DPMs (four DPMs per dual ME board). DPMs are licensed in pairs.

Kayenne K-Frame provides two DPM options:

- iDPM—Full DPM including transform engine for complex effect manipulation, up to 16 iDPMs can be licensed in pairs,
- eDPM— Up to six channels of DPM used inside the eDPM system which uses a separate control system and allows effects to be taken to air on any ME as a single source.

## 2D DPM

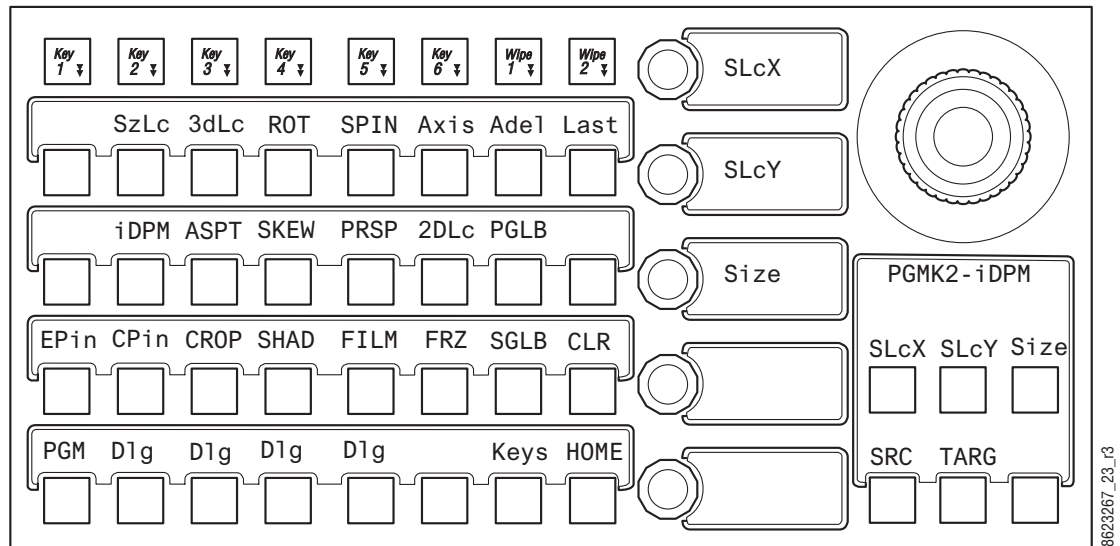
The 2D DPMs option enables six 2D DPMs per ME, including the Controller ME and eDPM. 2D DPMs provide DPM control including X, Y, Size, and Scale.

2D DPMs match the iDPM positioning of Post Transform control (not that of the iDPM Locate).

## Kayenne K-Frame (only) Parameter and Soft Knob Controls

When any of the MFM positioning parameter buttons are pressed, the soft knobs and joystick buttons are delegated for control of that parameter.

Figure 66. Multi-Function Module, iDPM Control Mode



- SzLc — Size Locate (within 3D space)

**Note** The X and Y modifiers are changing the same as the X and Y values for 3dLc.

- 3dLc — X, Y, and Z 3D Locate
- ROT — Rotate
- SPIN — Spin
- Axis — Locate Axis
- ASPT — Aspect
- SKEW — Skew
- PRSP — Perspective
- 2DLc — Post Transform (X, Y, and Z locate in 2D space)

The PGLB (Primary Global) and SGLB (Secondary Global) buttons available in the iDPM Mode in the MFM activate keyers delegated to Primary and Secondary Global Channels (iDPM Keyer delegations can only be made in the Menu Panel).

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

For the CROP, SHAD, FILM, and FRZ buttons, DELG must be pressed below each to delegate the MFM to those functions (not available for 2D DPMS).

## DPM Source and Target Space Explained

*Source* space refers to the key or keys moving along the X, Y, and Z axes of the partition global channel while *Target* space refers to the key or keys moving along the X, Y, and Z axes of the monitor (refer to the *Switcher Concepts Manual* for a complete description).

### Tally and DPM

Tally is available only for DPMs that are on-screen. For example if an DPM is flown in from off-screen with an E-MEM, tally is off until the DPM is on-screen.

### DPM Transform Menu

A DPM activated in a keyer can be controlled with the Transform menu. The Transform menu allows you to select the keyer or Global channel to control (delegation), select the desired type of transform control, and then adjust the parameters associated with the chosen control using the soft knobs or a pop-up keypad. The menu is accessed by selecting **iDPM, Transform**.

The Joystick (**X, Y, Z, Size**) can be controlled from the menu with the soft knobs or keypad entry.

### Enable DPM Transforms in the Menu

The Transform menu contains a data pad matrix in the upper left for delegation. Data pads for keyers with DPMs assigned will be active. Inactive keyers will be grayed out. Select an active data pad to delegate the menu to control keyers, or to control a Global Channel (see [DPM Global Channel Assignments](#)). The keyer data pads themselves indicate whether Crop is enabled, Global Assignment is on, and if the Key Signal is off.

### DPM Global Channel Assignments

The Primary Global and Secondary Global Channels are assigned in the iDPM, Transform menu, however the Secondary Global channel requires configuration in the ME, Mode menu (see [Set Up a DPM Secondary Global Channel on page 141](#)).

When a keyer is assigned to a Global Channel, it is also affected by transforms of that Global Channel, permitting the easy creation of complicated multi-channel moves. Multiple keyers can be assigned to a Global channel, allowing coordinated moves of all the assigned keyers.



A keyer is associated with the Global channel by delegating the keyer, then selecting the **Global** modifier button in the ME/Keyer matrix on the upper left side of the Transform menu so it is illuminated. Using the **Multi select** button, more than one keyer can be selected at a time. The first keyer matrix button selected with the Global channel turns blue while subsequent buttons are outlined in blue when selected.

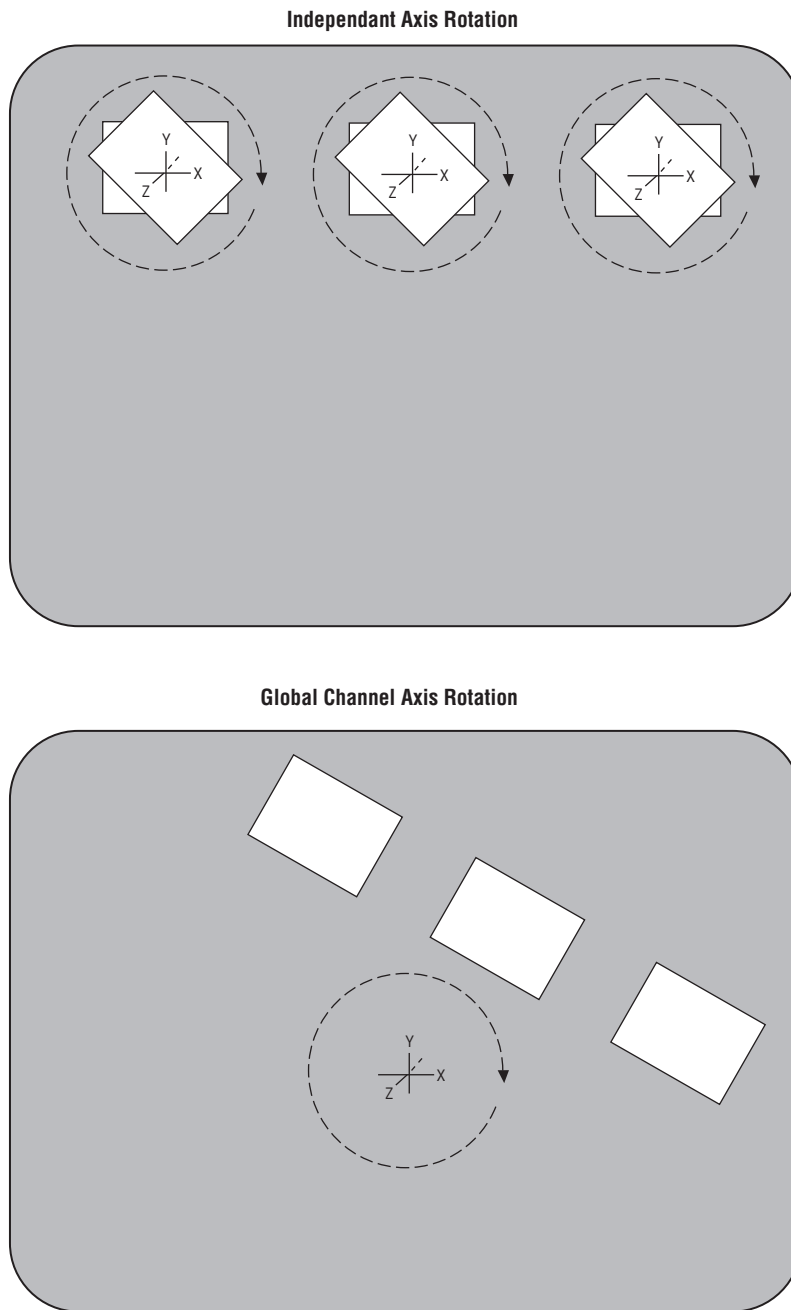
Some functions (Crop, Reverse, Skew, Aspect, and Post Transform) are inactive for these Global Channels so they are grayed out. Global Channel assignment information will appear in the ME/Keyer data pad (**PRI G1b / SEC G1b**).

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

**Note** Keyer transform modifiers, i.e. Shadow, Splits & Mirrors, Output Recursives, etc., are available on a channel by channel basis and are independent from Global Transforms.

If for example you created an effect with three keyers assigned to DPM channels on an ME, and selected those keyers and applied a Spin transform, all three keyers would spin independently around their own axis simultaneously. But if however you wanted all three to spin around one global axis, you could apply a Global channel to each of the three keyers for that ME, select those keyers, and apply a Spin transform. All three keyers would spin around the global axis.

Figure 67. Spin Transform



## Key Off Control

The **Key Off** button in the iDPM, Transform menu is used to turn off the key signal processing for the delegated keyer, resulting in a full raster image. For example, suppose you want to fly a graphic that is normally accompanied by a key signal. Turning the key off forces the graphic to full raster, ignoring the key. The **Key Off** button is inactive for Global channels.

## Easy Cube Control

When a channel is used to create a cube or slab, turning on the **Easy Cube** button iDPM, Transform menu automatically translates the delegated channel to the visible face of the shape as it is rotated in space.

## Transform Controls

The Source and Target transform controls below the delegation matrix delegate what 3-D transformation will be controlled with the soft knobs or pop-up keypad entry. Selecting one of the transform buttons activates the soft knobs on the right side of the Menu Panel to control specific parameters of that transform and delegates the Path Control pane to that transform.

The transform controls are organized on the menu according to Source and Target space capabilities.

The **Locate**, **Locate Axis**, **Target Rotate**, and **Spin** transforms can be assigned to work in either source or target space with the select buttons at the lower-left of their pane. Selecting the **Source** button provides image adjustment using that channel's coordinate system for reference. Selecting the **Target** button provides image adjustment using the screen as the reference. Only one space button is selectable at a time.

**Note**     **Target Rotate** displays only Target Rotate transform parameter values, even when Source space is selected. The soft knobs still adjust either the Target or Source space rotation parameters, however.

## Crop Controls

The **Crop On** button located in the Crop pane, right side of the iDPM, Transform menu, is used to activate the crop feature for the delegated keyer (this button is inactive for Global channels). The Crop Edge data pad delegates the soft knobs to control each side's cropping, while the Crop Softness data pad delegates edge softness control.

## Reverse Controls

The Reverse controls are located to the left of the Crop pane, in the iDPM, Transform menu. The front and back sides of the transformed picture can be reversed vertically and/or horizontally with these controls.

## Path Controls

The path control pane is located at the top-right of the iDPM, Transform menu. **S Linear**, **Linear**, and **Curve** interpolation select buttons are available. When **Curve** is selected, soft knob controls for **Tension**, **Continuity**, and **Bias** soft knob become available. You can also turn off transform interpolation and hold each keyframe's values with the **Path Hold** select button.

**Note** Use the Path controls in the E-MEM & Timeline menu to affect all DPM transform and effect modifiers. Path controls in the DPM menus are only used to adjust path parameters of individual values of a transform or effect modifiers.

To specify a path for a transform, select the category of transform with the data pads at the lower area of the screen. Then select the path type in the upper-right pane, which will be labeled with that transform category. When **Curve** is selected, use the soft knobs or associated data pads to enter values for tension, continuity, and bias.

All transforms except **Spin** apply the same path control to all that transform's parameters. **Spin** allows different paths to be specified for each axis of the transform. When **Spin** is selected, the **X**, **Y**, **Z**, and **All** select buttons are activated. The selected path will only be applied to the specified axis.

## Clear Transforms

Two buttons located on the lower right side of the Enables pane of the iDPM, Transform menu are used to clear transform settings.

**Clear X-Forms** – Sets all transform parameters of the delegated keyer (or global channel) to Default Keyframe values. The transform parameters reside in the panels below the data pad delegation matrix and do not include Crop. Multi-Functions of other iDPM settings, i.e. Shadow, Kurl, and Lighting are not affected.

**Clear All** – Sets all transform parameters and all other menu settings, including Crop values, of the delegated keyer to Default Keyframe values.

**Note** Corner Pinning is a function of i/eDPM and is an advanced operation. For operation information see *Corner Pinning* on page 373.

## Border Menu

The DPM Border feature provides an independently controlled border for each licensed iDPM/eDPM, and 2D DPM. The borders are added “outside” of normal blanking. This means that when a border is added it does not crop into the original image so a border can be added to a full-sized image and it will not be visible until the image size is slightly reduced.

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

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

## iDPM Borderline Menu

The Borderline menu is accessed by selecting **iDPM, Borderline**.

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

## Shadow Controls

The Shadow feature is turned on with the **Shadow On** button in the lower left pane. When turned on, soft knob controls become available on the right. Different soft knob controls appear, depending on which data pad has been selected in that pane. The current parameter names and values are displayed on each data pad.

When **Shadow** is selected soft knobs for **X Offset**, **Y Offset**, **Size**, and **Opacity** are available.

When **Shadow Color** is selected soft knobs for Hue, Saturation, and Brightness are available.

## iDPM Shadow Crop Controls

The Crop controls in the Shadow pane are used to adjust shadow cropping and edge softness. The current parameter names and values are displayed on the data pads.

When **Crop Follow Image** is selected, crop values of the shadow match the crop values used for the primary image. Only shadow edge softness controls are active in this mode. When the **Crop Softness** data pad is selected soft knob controls for shadow edge softness are available (Top, Bottom, Left, and Right). The total softness of the shadow edges will be the softness of the shadow edge combined with any softness of the primary image.

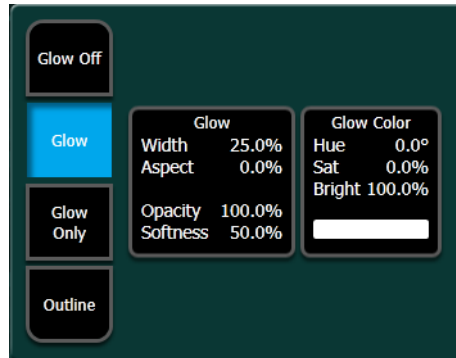
When **Separate Crop** is selected, the edges of the shadow can be given crop values different from the primary image. Selecting the **Crop Edge** data pad

delegates the soft knobs to control shadow edge cropping (Top, Bottom, Left, and Right).

## Glow Pane Controls

Select the **Glow** data pad button to access the Glow controls in the Borderline menu.

Figure 68. Glow Pane



Glow adds a soft edged variable opacity border around keys, leaving the original keyed image unmodified, and is a standard feature available on all GV Switcher systems.

**Off** — The Glow effect is deactivated.

**Glow** — The Glow effect is applied around the keyed image which remains visible.

**Note** Full raster video must be resized or cropped for glow to be visible.

**Glow Only** — The glow effect is applied to the entire keyed area, replacing the original keyed image. Only the glow is shown.

**Outline** — The glow effect is shown around the keyed area, but the original keyed image is not shown. Only the border area of the glow is visible.

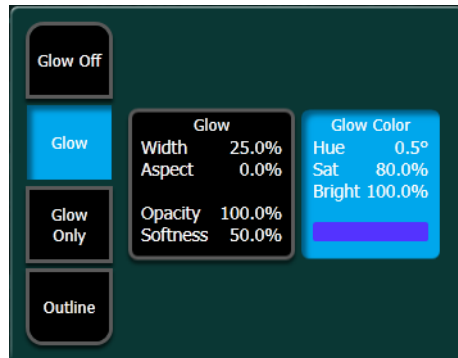
When the Glow pane is activated, knob controls for Glow **Width**, **Aspect**, **Opacity**, and **Softness** are available.

**Note** The Glow Softness parameter value is shared with Shadow Softness. Adjusting either Glow or Shadow Softness will affect both Glow and Shadow Softness.

## Glow Color

When the Glow Color pane is activated, knob controls for matte **Hue**, **Saturation**, and **Brightness** become available. An approximation of the color of the matte is shown at the bottom of the pane. Use these controls to adjust the color of the Glow.

Figure 69. Glow Color



## Glow Path Control Pane

Controls for glow path, using the standard **Hold**, **S Linear**, **Linear**, and **Curve** parameters, can be applied when the **Adjust Path** button is on (top right of Borderline menu).

## iDPM/2D DPM Film Look Menus

With Film Look, you can create a flicker or strobe effect (similar to an old film run through a movie projector). The affect can be adjusted to the desired look by setting the interpolation (Frame, Field, or Adaptive for Video and Key), turning on Input Freeze and/or Strobe and adjusting those parameters with the soft knobs. Thresholds can also be adjusted for when working with cuts and artifacts.

## iDPM Kurl Menu

The Kurl effects are grouped into modes, each of which has its own set of menu panes and related soft knob controls. To access the Kurl menu, select **iDPM, Kurl**.

The Kurl modes are:

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

Only one set of Kurl mode parameters can be applied at a time. If you wish to use more than one mode of Kurl effects simultaneously on the same video (for example, size modulation of an effect), use multiple iDPMs with re-entry (for information about re-entry, see the *Switcher Concepts Manual*).

## Kurl Position/Size Modulation Mode

Position and Size Modulation is an effect in which the source video is positioned or size-modulated through an additive process with either a single wave train, or two wave trains with the second wave at a right angle to the first. Each of the two wave trains (horizontal, vertical) may be selected independently from a set of modulation patterns.

Select the **Pos/Size Mod** Kurl Mode button to access the position and size modulation controls.

## Modulation Pane

In the Modulation pane you select the wave train axis (**Horizontal** or **Vertical**) for which the rest of the menu controls will apply. The following Soft knob controls appear on the right for the selected axis:

**Amplitude** — defines the modulation amplitude (the height of the pattern waves).

**Frequency** — defines the modulation frequency and therefore the number of pattern cycles to appear across the source.

**Phase** knobs — The **Phase Lock** button on the right controls whether the pattern is fixed (on) or moving (off). When **Phase Lock** is on, the **Phase** soft knob is available to control the static location of the phase of the pattern. When off, the **Speed** soft knob is available to adjust the speed of the pattern's motion. Negative values can be entered to reverse the direction of the motion.

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



## Mod Type Pane

With an axis selected, you select the type of modulation to be applied to that axis (**Position Mod** or **Size Mod**), or no modulation at all with the **Mod Off** button in the Modulation Mode pane. When the **Vertical** axis is selected, you can choose to have that axis' modulation values match the horizontal values with the **Track Horiz** button.

When **Size Mod** is selected in the Modulation Mode pane, the Size Mod Center data pad in the Modulation pane is active. When this data pad is selected soft knob controls for **H Position**, **V Position**, and **H/V Angle** are available.

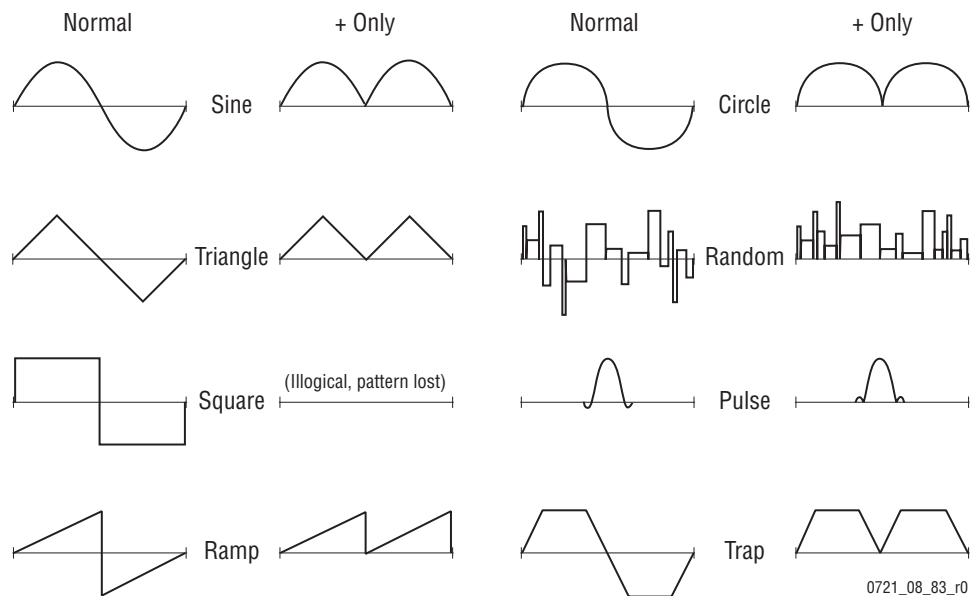
## Pattern Pane

The type of wave pattern to be applied to the selected axis and modulation type is selected in the Pattern pane.

**Cycle Limiting** — activates the Cycles soft knob. This control can be used to limit the number of wave pattern cycles.

**Cycles + ve Only** — selects only the positive portion of the wave cycle. Representative wave shapes are shown in [Figure 70](#).

Figure 70. Available Wave Patterns



## Page Turn/Roll Mode

Page Turn is a transition effect with the video being mapped to an original plane, a cylinder, and a final plane parallel to the original plane. Page Roll

maps the video to an original plane and a cylinder. Page Turn and Roll are parallel projections to the target screen with no perspective.

Select the **Page Turn/Roll** Kurl Mode button to access the Page Turn and Roll controls.

## Page Turn Pane

The page mode (**Page Turn** or **Page Roll**), and orientation of the fold (**Fold Over** or **Fold Under** the original plane) are selected in the Page Turn pane, bottom right of menu.

When the Page Fold data pad is selected, the following soft knob controls are available:

**Radius** — adjusts the radius of the page turn cylinder affecting the sharpness of the curl.

**Angle** — defines the orientation of the page turn cylinder with respect to the source X and Y axes, and specifies the direction of the turn.

**Offset** — positions the page turn cylinder with respect to the source plane and, when interpolated between keyframes, causes the page to turn. The offset would typically change from one edge or corner of the source raster to the opposite edge or corner for the turn.

## Show Sides Pane

Choices of what sides of the effect to display (**Show Both**, **Show Front**, **Show Back**) are available in the Show Sides pane. Selecting only a portion of the effect can be used for multi-pass effect creation.

When **Back is Matte** is selected, the back of the effect will be a matte color. The color of the matte can be changed by selecting the Back Color data pad to bring up soft knob controls for Hue, Saturation, and Brightness.

### Split Axis Pane

Split page turn and roll effects are controlled with the Split Axis pane, bottom left of menu. The effect can be split horizontally, vertically, or both ways using the labeled buttons (**Horiz Split**/**Vertical Split**).

Selecting the **Split Axis Position** data pad brings up **Horizontal** and **Vertical** soft knobs that control the location of the split.

# Ripple Mode

Ripple is an effect in which the source video mapped to a plane is effectively distorted into and out of the target screen by a train of concentric waves. This is a parallel projection to the target screen with no perspective.

Select the **Ripple** Kurl Mode button to access the Ripple controls.

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

The Ripple soft knob controls and wave patterns are the same as Position/Size (except no H/V Angle control).

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

**H Position** — controls the horizontal position of the center of the ripple.

**V Position** — controls the vertical position of the center of the ripple.

**Aspect** — stretches the ripple horizontally or vertically.

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

## Slits Mode

Slits is an effect in which the source video is split into a number of parallel slits. The width of the slits may be uniform or random, and an angle may be specified. An offset function is provided which controls the amount of displacement of alternating slits in opposite directions (to cause a transition type effect).

Select the **Slits** Kurl Mode button to access the slits controls.

The Slits modulation soft knob controls and wave patterns are the same as Position/Size.

Selecting the **Slits Controls** data pad changes the Kurl menu to display Slits controls:

**Offset** — sets the distance adjoining slits move away from each other. This can be used for transition effects, using a zero offset for the starting key-frame and an off the screen offset for the ending keyframe.

**# of Slits** — defines the number of slits.

**Phase** — determines the starting point or phase of the modulation to occur at the center point.

**Random** — defines the degree of randomization of slit width.

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

## Sphere Mode

Sphere is an effect in which the source video is mapped to the surface of a sphere. Controls are provided which change the aspect and size of the sphere, the point in source video to be mapped to the center of the front surface of the sphere, and the horizontal and vertical scaling of the source video to be mapped.

Select the **Sphere** Kurl Mode button to access the sphere controls.

The following soft knob controls are available:

**Size** — defines the radius of the sphere before it is modified by Aspect.

**Aspect** — scales the horizontal and vertical dimensions of the sphere.

When the **Position/Wrap** data pad is selected in the Sphere pane, the following soft knob controls are available:

**Horizontal Position** — controls where the image is mapped onto the sphere by moving the image horizontally on the sphere's surface.

**Horizontal Wrap** — controls how much of the image is mapped onto the sphere by compressing or stretching the image horizontally.

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

**Vertical Wrap** — controls how much of the image is mapped onto the sphere by compressing or stretching the image vertically.

## **iDPM Splits Mirrors Menu**

The Splits and Mirrors effect allows you to divide a picture horizontally and/or vertically, and create mirror images of the image along these axes. Select the **iDPM, Splits & Mirrors** button to access the Splits and Mirrors controls.

### **Splits Pane**

Select the **Splits On** button in the Splits Enable pane (bottom right) to bring up the Splits controls:

When the **Splits** button in the Splits data pad is selected, the following soft knob controls are available. (Values are displayed in screen units.)

**Horizontal Center** — controls the horizontal position of the split.

**Vertical Center** — controls the vertical position of the split.

**Horizontal Separation** — controls the amount of horizontal separation between the split images.

**Vertical Separation** — controls the amount of vertical separation between the split images.

**All Separation** — controls both horizontal and vertical separation simultaneously. This control is additive with the other separation controls, such that changing its values changes the H and V separation values.

When the **Separate Sides** data pad is selected, individual soft knob controls for separation are available. These controls allow movement of individual Top, Bottom, Left, and Right portions of the split image.

### **Splits & Mirrors Modifiers Pane**

The Splits & Mirrors Modifiers pane has mirror and double image controls.

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

picture for that side is always reflected. A side that has been mirrored to the opposite side will not be mirrored a second time.

When **Double Image** is on, the area of separation is filled by extending the interior sides of each half of the original split picture to the axis position. At large separation values the picture will be doubled about the axis. This control only has an effect when separation exists between the splits.

## iDPM Defocus Menu

Defocus blurs the actual keyed image, and is available with the iDPM option. Select **iDPM, Defocus** to access the Defocus menu.

### Defocus Pane

**Defocus Off** — The Defocus effect is deactivated.

**Defocus** — The Defocus effect is applied to the original keyed image.

**Defocus NAM +** — The defocused image is compared to the original image on a pixel by pixel basis, and the lighter (higher luminance) pixel of the two is used in the final image. *Defocus NAM + can be used to simulate a fog filter type effect.*

**Defocus NAM -** — The defocused image is compared to the original image on a pixel by pixel basis, and the darker (lower luminance) pixel of the two is used in the final image.

When the Defocus pane is activated, soft knob controls for **Video Defocus**, **Video Aspect**, and **NAM Ratio** are available.

**Video Defocus** — adjusts the total amount of defocus applied to the image.

**Video Aspect** — adjusts the percentage of defocus applied to the vertical and horizontal axes of the image.

**NAM Ratio** — adjusts the level of luminance at which the Defocus effect will be applied to NAM pixels. This value applies to both NAM + and NAM - modes.

### NAM Matte Pane

**NAM Matte On** button — When selected a matte color is applied to the selected NAM (lighter or darker) portion of the keyed image.

When the NAM Matte pane is activated, knob controls for matte **Hue**, **Saturation**, and **Brightness** become available. An approximation of the color of the matte is shown at the bottom of the pane.

## iDPM Lighting Menu

The Lighting menu provides four colored light sources positional in 3D space for each delegated keyer. Each light source can be a Point, Bar, or Plane. The apparent reflection of the light source simulates the physics of incident light falling on a surface, including specular effects and light falloff due to distance and geometry. The lighting parameters interact with one another, permitting the creation of subtle effects, and are keyframeable.

Some extremely low lighting values (particularly **Light Softness**) when used in combination with other lighting values can create visible artifacts (stair-step aliasing). Due to the intricate lighting parameter interactions, if these values were restricted to prevent all potential artifacts, other useful lighting effects would be impossible. For this reason, values that might cause aliasing are allowed. If a lighting effect looks bad, adjust the settings to correct its appearance.

The Lighting menu is accessed by selecting **iDPM, Lighting**.

### Shadow Control Pane

The Shadow Control pane applies to all of the light sources for the delegated keyer and controls ambient lighting effects. You can control the color of the ambient lighting, and the amount of shadow falloff for the light sources. Soft knobs for **Hue** degrees, and **Sat**, **Bright**, and **Shadow** percentage are available when the data pad has been selected.

### Light Type Pane

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

The Light Type pane is used to turn on or off the delegated light source and provides various other controls of that light source. Soft knobs are activated when appropriate to control the various lighting parameters.

### Light Type

**OFF** — turns off the light source.

**Point** — simulates a spotlight type of lighting effect that radiates light evenly in all directions.

**Bar** — simulates lighting from a bar-shaped long, thin lighting source.

**Plane** — simulates the glare that would be reflected from an image if a bright light were shined on it from infinity.

## Light Control Pane

### Position

Used with **Point** and **Bar** light sources to control the position of the point light, or the position of some point along the bar light, with respect to the X, Y and Z axes in 3D space.

### Rotation

Used with **Bar** and **Plane** light sources to control the direction of the bar light, or the direction that the plane light faces along the X, Y and Z axes. Setting Rotation to 0 places the Plane light directly behind the viewer's head.

### Appearance

**Intensity** — provides soft knob control of the overall reflectivity of the surface of the picture.

**Softness** — control of softness of the edge of the light. 100% creates maximum softness, 0% gives a hard edge. At extremely small values some aliasing artifacts may appear.

**Gloss** — provides soft knob control of how much light is scattered as it is reflected off the surface of the picture. At 100% the lighting acts like it is reflecting off of a mirror. At 0% the light acts like it is reflecting off of a frosted piece of glass.

### Flare

When light reflects off a surface two lighting components result, the primary reflected light and a glare (flared halo) of scattered light. The Flare controls provide soft knobs to adjust this lighting component.

**Intensity** — controls the amount of the flare light scattered off the surface.

**Ratio** — controls the ratio between the primary light and the flare light. 100% is all primary light, 0% all flare light.

### Independent Flare Intensity

This button allows independent control of the primary and flare components of the light. When Off, changing the value of one control will alter the appearance of the other component of the light. The actual values reported on the menu will not be different, but the changes will interact automatically to create the resulting image. When On, changing the values for one lighting component will not affect the appearance of the other component.

### Light Color, Flare Color

Provides soft knob controls of the Hue, Saturation, and Brightness of the Light or Flare lighting.



## Lighting Path Controls

Path controls are available for Lighting parameters and provide soft knob control for Light Tension, Continuity, and Bias when the Curve button and Curved data pad are selected. A **Path Hold** button is also provided.

## Lighting with Page Turn/Roll Effects

To use Lighting with Page Turn/Roll, you need to use one keyer for the Front side of the Page Turn and another keyer for the Back side. The same effect then needs to be loaded on both keyers, with one having only the Front selected in the Page Turn menu and the other having only the Back selected. The keyer priority will also need to be set appropriately to support fold over or under.

## Lighting and Post Transform Space

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

# Output Recursive Menu

The Output Recursive menu is used to select the keyers you wish to control (delegation), the desired type of output recursive control, and then adjust the parameters associated with the chosen control using the soft knobs or pop-up keypads.

The menu is accessed by selecting **iDPM, Output Recursive**.

## Output Recursive Presets

The Output Recursive system has a set of presets that can be selected to simplify creating effects with Output Recursive.

**Rain, Wind, Smoke, Fire, Paint,** and **Erase** effect buttons are provided.

Further adjustments can be made using the soft knobs and data pads available with the effects menu that is displayed (Trails, Montage, etc.):

**Rain** — provides a vertical streaking of the image that resembles rain.

**Wind** — provides trailing particles that resemble wind.

**Smoke** — provides a dark gray, disintegrating trail that resembles smoke.

**Fire** — provides a red, disintegrating flame effect.

**Paint** — allows you to apply or “paint” the current image anywhere on the display using the joystick.

**Erase** — allows you to erase the current effect using the joystick.

## Output Recursive Modes

Select any of the four modes in the Output Recursive Mode pane to create keyer special effects. Each mode displays specific controls for parameters when selected.

## Motion Decay Mode

Causes motion in the image to leave a blurred remnant in the area from which it was removed.

**Appearance** button — displays the “Pic” or Picture Decay value from the soft knob data pad.

**Wind** button — displays the Direction and Velocity (speed) values from the soft knob data pads.

**Loop** button —

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

**Keyframe Reset** button — used to control when images are frozen, only available when the **Keyframe** mode button is selected as the Strobe Type.

- **ON** — A keyframe triggers a reset, followed by a new single strobe. It resets that loop by creating a new frozen image at each keyframe that has the **Keyframe Reset** button on.
- **OFF** — does not change the frozen image at each keyframe

**Force Strobe** — When an effect passes over or stops on a keyframe, a single strobe event is triggered. While the effect sits on a keyframe with keyframe-strobe on, no additional events are triggered. The “history” of the prior single event is discarded, and a single strobe is triggered again.

- **ON** — accumulates a field/frame of video within the Output Recursive loop.
- **OFF** — No action is taken.

## Freeze Mode

Freeze is used to freeze and modify an image using the soft knobs for playback.

Soft knob parameters are also displayed in the **Appearance** data pad:

**Picture Decay** — causes the frozen image in the Output Recursive to fade away evenly over time.

**Note** Additive effect with Star Decay.

**Star Decay** — causes random pixels of the frozen image in the Output Recursive to fade away over time.

**Note** Additive effect with Picture Decay.

**Period** — defines the number of frames in a Strobe Cycle. **Period** is only available when **Time** is selected as the Strobe Type.

**On Time** — sets the percentage of the period that the image is unfrozen. The default is 0.0%. **On Time** is only available when **Time** is selected as the Strobe Type.

**Strobe Type** buttons — set the type of strobe effect that will cause the automatic freezing of the new image.

- **None** button — turns Strobe Off
- **Time** button — freezes a new image at an adjustable time interval (normal strobe)
- **Keyframe** button — freezes a new image at each keyframe

**Loop** button

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

**Keyframe Reset** button — is used to control a frozen image. It is only available when the **Keyframe** mode button is selected as the Strobe Type.

**ON** — A keyframe triggers a reset, followed by a new single strobe. It resets that loop by creating a new frozen image at each keyframe that has the **Keyframe Reset** button on.

**OFF** — does not change the frozen image at each keyframe

**Force Strobe** button — When an effect passes over or stops on a keyframe, a single strobe event is triggered. While the effect sits on a keyframe with keyframe-strobe on, no additional events are triggered. The “history” of the prior single event is discarded and a single strobe is triggered again.

- **ON** — Accumulates a field/frame of video within the Output Recursive loop.
- **OFF** — No action is taken.

## Montage Mode

Creates a montage of still images.

Soft Knob Button Group:

**Picture Decay** — causes the frozen image in the Output Recursive to fade away evenly over time.

**Note** Additive effect with Star Decay.

**Star Decay** — causes random pixels of the frozen image in the Output Recursive to fade away over time.

**Note** Additive effect with Picture Decay.

**Strobe Timing:**

**Period** — defines the number of frames in a Strobe Cycle. **Period** is only available when **Time** is selected as the Strobe Type.

**On Time** — sets the percentage of the period that the image is unfrozen. The default is 0.0%. **On Time** is only available when **Time** is selected as the Strobe Type.

**Strobe Type** buttons — set the type of strobe effect that will cause the automatic capture of the new image.

- **None** — turns Strobe Off
- **Time** — freezes a new image at an adjustable time interval (normal strobe)
- **Keyframe** — freezes a new image at each keyframe

**Loop** button —

**ON** — starts the recursive effect

**OFF** — stops the recursive effect and returns to live video

**Keyframe Reset** button — used to control when images are frozen. It is only available when the **Keyframe** mode button is selected as the Strobe Type.

- **ON** — A keyframe triggers a reset, followed by a new single strobe. It resets that loop by creating a new frozen image at each keyframe that has the **Keyframe Reset** button on.
- **OFF** — does not change the frozen image at each keyframe

**Force Strobe** button — When an effect passes over or stops on a keyframe, a single strobe event is triggered. While the effect sits on a keyframe with keyframe-strobe on, no additional events are triggered. The “history” of the prior single event is discarded, and a single strobe is triggered again.

- **ON** — accumulates a field/frame of video within the Output Recursive loop.
- **OFF** — No action is taken.

**Mode** buttons —

- **Over** — places the image over the remnant or “montage”.
- **Under** — places the image under the remnant.
- **Erase** — erases the image and remnant.

**Show Picture** parameter button —

- **ON** — (default) displays the live video image in addition to the still montage.
- **OFF** — displays only the montage without the live video image.

**Matte Control** buttons —

**None** — No matte

**Matte** — allows you to create a matte fill for the montage and activates the Hue, Saturation, and Brightness soft knobs for modifying the matte.

**Rainbow** — allows you to create an alternating RGB rainbow matte fill for the montage and activates the Hue Speed, Saturation, and Brightness soft knobs for modifying the matte.

**Matte Parameter** — activates the soft knobs for Hue (or Hue Speed for Rainbow Matte), Saturation, and Brightness and displays those values.

## Trails Mode

Leaves a trail of partial images behind as the image is moved around the screen. A “wind blown” effect can be added to the images (decay settings can be adjusted to look like particles).

Soft Knob Button Group:

**Picture Decay** — causes the frozen image in the Output Recursive to fade away evenly over time.

**Note** Additive effect with Star Decay.

**Star Decay** — causes random pixels of the frozen image in the Output Recursive to fade away over time.

**Note** Additive effect with Picture Decay.

**Strobe Timing:**

**Period** — defines the number of frames in a Strobe Cycle. **Period** is only available when **Time** is selected as the Strobe Type.

**On Time** — sets the percentage of the period that the image is unfrozen. The default is 0.0%. **On Time** is only available when **Time** is selected as the Strobe Type.

**Appearance** button — located bottom left of the menu, displays the “Pic” or Picture Decay value from the soft knob data pad.

**Wind** button— displays the Direction and Velocity (speed) values from the soft knob data pads.

**Strobe Type** buttons — set the type of strobe effect that will cause the automatic capture of the new image.

- **None** button — turns Strobe Off.
- **Time** button — freezes a new image at an adjustable time interval (normal strobe).
- **Keyframe** button — freezes a new image at each keyframe.

**Loop** button —

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

**Keyframe Reset** button — is used to control when images are frozen. It is only available when the **Keyframe** mode button is selected as the Strobe Type.

- **ON** — A keyframe triggers a reset, followed by a new single strobe. It resets that loop by creating a new frozen image at each keyframe that has the **Keyframe Reset** button on.
- **OFF** — does not change the frozen image at each keyframe

**Force Strobe** button — When an effect passes over or stops on a keyframe, a single strobe event is triggered. While the effect sits on a keyframe with keyframe-strobe on, no additional events are triggered. The “history” of the prior single event is discarded, and a single strobe is triggered again.

- **ON** — accumulates a field/frame of video within the Output Recursive loop.
- **OFF** — No action is taken.

Mode buttons —

- **Over** — places the image over the remnant or “montage”.
- **Under** — places the image under the remnant.
- **Erase** — erases the image and remnant.

**Show Picture Parameter**

- **ON** — (default) displays the live video image in addition to the still montage.
- **OFF** — displays only the montage without the live video image.

**Matte Control** buttons —

- **None** — No matte.
- **Matte** — allows you to create a matte fill for the montage and activates the Hue, Saturation, and Brightness soft knobs for modifying the matte.
- **Rainbow** — allows you to create an alternating RGB rainbow matte fill for the montage and activates the Hue Speed, Saturation, and Brightness soft knobs for modifying the matte.
- **Matte Parameter** — activates the soft knobs for Hue (or Hue Speed for Rainbow Matte), Saturation, and Brightness and displays those values.

## DPM Global Channel Control Over Multiple MEs

In the *Menu Panel only*, multiple ME Global channels can be controlled. For example if three keyers in PGM and three keyers in ME-3 are assigned to Global control, the two MEs can be combined to control all six keyers globally by selecting the **PRI Global** (or **SEC Global** if configured with Split ME) button data pad for each ME. All keyers on PGM and ME-3 execute the same transform.

## Set Up a DPM Secondary Global Channel

By splitting the ME into Primary and Secondary partitions, you can assign keyers in the Secondary Partition to global control just as with the Primary Partition. This allows you to create very complex effects on both outputs, including making keys on the Primary Partition visible on the Secondary Partition and vice versa.

The ME partition must be split into Primary and Secondary before the Secondary Global channel can be assigned.

1. Select **ME, Mode** to access the Mode menu.

2. Select the ME button (far left) of the ME you wish to split for Secondary iDPM Global channel assignment.
3. Select the **Split** button in the pane second from the left.
4. Select and select the keys you wish to assign to the Secondary Global Channel in the Secondary Assign pane.
5. Repeat Steps 2-4 for each ME you wish to split and assign keyers to the Secondary Partition.
6. Select **iDPM, Transform** to go to the Transform menu.
7. Activate the keyers assigned to the Secondary Partition by selecting the assigned ME keyer button and selecting the Global toggle button to highlight it.

The ME keyer button displays **SEC G1b** to signify the keyers Secondary Global assignment.

## Adjust iDPM/2D DPM Border Edges

To adjust the border edges together, perform the following.

1. Access the Borders Menu by selecting **iDPM or 2DPM, Borders**.
2. Select to select an ME/Keyer data pad on the left side of the menu (or use the **Multi select** button for multiple keyers).

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

3. Turn on DPM Borders by selecting either the **Square Border** or **Round Border** button in the **Border Enable** menu pane.
4. Select a path type by selecting the **S-Linear, Linear, or Curve** data pads in the Border menu pane.
  - a. If Curve is selected, the Tension, Continuity, and Bias can be adjusted using the soft knobs or pop-up keypads.
5. Select the **Width** or **Softness** data pads and use the **Size** or **Softness** soft knobs or pop-up keypads to adjust those values.

## iDPM/2D DPM Border Color

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

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



## Adjust iDPM/2D DPM Border Edges

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

1. Access the Borders Menu by selecting **iDPM, Borders**.
2. In the iDPM (or eDPM in eDPM mode), Border menu, select the **Square Border** or **Round Border** button to enable Borders.
3. Select the **Separate Edges** button to enable the function.
4. Select the **Width** or **Softness** data pad to select it.
5. Use the **Border Size/Softness Top, Right, All, Left, or Bottom** soft knobs or pop-up keypads to adjust the edges independently of the others.

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

## eDPMs

The GV Switcher eDPM option is like an external two channel DVE built into the switcher. Either of the outputs (eDA for the Primary Partition and eDC for the Secondary Partition) can be combined and composited for re-entry, allowing multiple eDPM Channels on one keyer. eDPM channels run on their own timelines which makes this feature very flexible.

Combining iDPMs with eDPMs can be very powerful. With the addition of eDPMs, you could:

- On the same ME, create four iDPM transforms on Keyers 1-6 and then create two eDPM transforms (perhaps a graphic and a clock) and assign those transformed sources to Keyers 5 and 6,
- Map the ME to a PGM PST source select button and have a composite of six DVEs on one source to take to air, then
- Assign the ME source to one of the four keyers on PGM PST and key the composite of DPMs, or
- Apply an additional transform to the composite with a PGM PST iDPM on any of the first four keyers and transform the entire composite.

eDPM Channels assigned to the Primary Partition can be made visible in the Secondary and vice versa.

The GV Switcher eDPM option has similar menus and controls to the iDPM option.

## eDPM and Effects

eDPM is completely separate from the rest of the Switcher Master E-MEM so you can recall and run effects from the eDPM independently, or, you can use the Master E-MEM timeline to recall and run the eDPM. This allows you to control the eDPM exactly as you would with an external DPM. Also, you can have multiple E-MEM registers recalling the same eDPM effect.

The switcher timeline and the eDPM timeline can be different registers and have different lengths. If you run the timeline from the eDPM Timeline, it will run the effect as created in the eDPM or if you run it from the Master E-MEM timeline (Switcher mode), it will run until the Master E-MEM timeline is complete.

If your E-MEM effect in the Master E-MEM only has one keyframe, you must insert an additional keyframe to run the entire eDPM effect timeline.

**Note** For E-MEMs learned using versions earlier than 2.0 to work properly, you must reconstruct a timeline for the proxy sub-levels to run. The proxy sub-level register has been created but is limited to a single keyframe.

Recalling and editing eDPM timelines from the Master E-MEM timeline is truly independent and does not effect the keyframes in the eDPM. Inserting keyframes in the Master E-MEM's eDPM sub-level timeline creates a key-frame which is a 'proxy' to drive the eDPM's timeline.

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

## eDPM Partitioning

The eDPM partition boundary is a sub-level in the eDPM Primary partition. The **Select All**, **EDPM Pri** and **EDPM Sec**, and **PART** buttons are used to enable/disable the partition settings and control the Channel settings in the Picture, Combiner menu.

**Note** Unlike Master E-MEM Part level, the PART in eDPM is a sub-level of eDPM Primary and cannot be enabled unless eDPM Primary is also enabled.

Figure 71. eDPM Partitions



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

**Note** The **PART** button is provided in the E-MEM & Timeline menu so the eDPM Master E-MEM partition can be enabled/disabled.

## eDPM Definable Sub-levels

The Master E-MEM eDPM sub-levels (eDPM Pri and eDPM Sec) can be configured as Definable (controlled) or Not Assigned in the User Setups, Suite Prefs, E-MEM Prefs, eDPM menu (see *Define E-MEM* on page 324 for information about defining/assigning E-MEM sub-levels).

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

Figure 72. eDPM Sub-levels in the E-MEM Master Timeline



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

## Assign Sources

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

To assign sources in the eDPM Mode Source Ops, eDPM menu (also available in the Switcher Source Ops menu):

1. In the menu, select **Source Ops, eDPM**.

2. Select the input channel button for the channel you wish to assign a source.
3. Scroll and select the source you wish to assign to the eDPM channel from the Sources scrolling list (right side of menu).

**Note** If you select an eDPM Fill button first, then a source, the Cut and Fill signal for that channel will be the same. Select the Cut button to assign a different source for the Cut button (split key).

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

## Button Mapping eDPMs to an ME

Map the eDPM outputs to the source select buttons on the MEs in the User Setups, Panel Prefs, Button Mapping menu (see *Control Panel Source Select Button Mapping on page 37*).

**Note** eDPM sources are identified as eDA and eDC and have a corresponding key (cut) signal already associated with those outputs, therefore the key signal outputs of the eDPM channels do not need to be mapped on the switcher for normal operations.

## eDPM Mode Menus

Selecting the **eDPM Mode** button (bottom left) changes the menu to the eDPM Mode.

### eDPM 2DPM Menu

When the 2D DPMs option is enabled, the eDPM Transform menu's **Channel 2DPM** tab will be active.

### Enabling eDPM 2D DPMs

1. Go to the eDPM Transform Menu.
2. Select the Channel 2DPM tab.
3. Double click on an eDPM channel to enable 2D DPM on that channel.

## eDPM Effects Menus

The eDPM Transform menu is identical to the DPM Transform menu (*DPM Transform Menu on page 118*) in all ways except the ME/Keyer selection matrix (upper left pane) is replaced with the six channels of the eDPM,

however the functionality is the same in regard to selecting channels and Global Channels.

The remainder of the eDPM effects menus operate the same as in iDPM:

- Transform (*Transform Controls on page 121*)
- Border (*Border Menu on page 122*)
- Borderline (*iDPM Borderline Menu on page 123*),
- Film Look (*iDPM/2D DPM Film Look Menus on page 125*),
- Kurl (*iDPM Kurl Menu on page 125*),
- Splits & Mirrors (*iDPM Splits Mirrors Menu on page 131*),
- Defocus (*iDPM Defocus Menu on page 132*)
- Lighting (*iDPM Lighting Menu on page 133*), and
- Output Recursives (*Output Recursive Menu on page 135*).

## eDPM Category Menus

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

## File Ops Menu

The eDPM File Ops menu allows you to create folders and save, load, and manage the 1000 eDPM register files and all files.

To access the eDPM File Ops menu, select **File Ops**, and either the **eDPM** or **All Files** menu button. The eDPM File menu controls are identical to the Switcher Mode file operations (*File Operations on page 59*).

Figure 73. eDPM File Ops, eDPM Files Menu



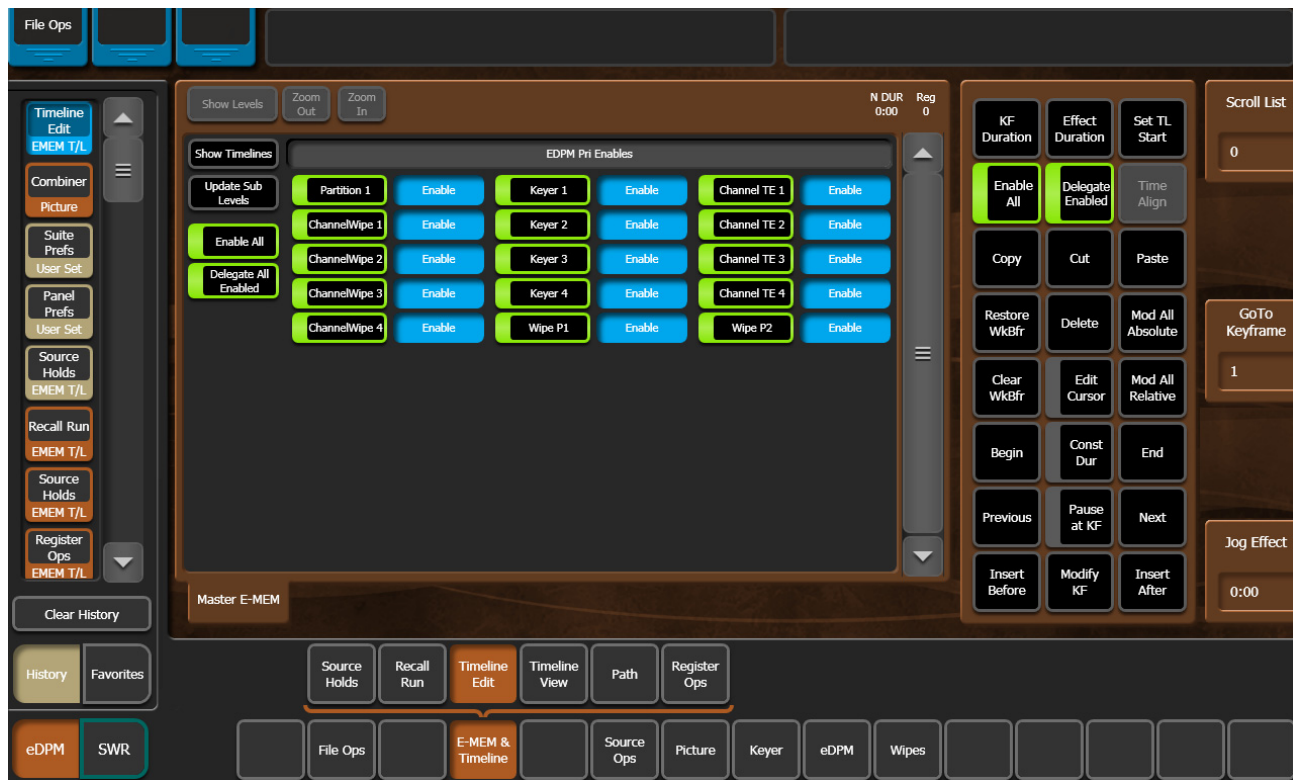
## E-MEM & Timeline Menu

The eDPM E-MEM & Timeline menu controls are identical to that of the Switcher Mode (*Basic E-MEM Operations on page 153*), including the advanced Partial Keyframing (*Partial Keyframing on page 321*) and Define E-MEM (*Define E-MEM on page 324*) features.

**Note** Define E-MEM for eDPM partitions are enabled in the E-MEM Prefs, ME Partition menu.

To access the eDPM Timeline Edit menu, select **E-MEM & Timeline, Timeline Edit** (Figure 74).

Figure 74. E-MEM &amp; Timeline, Timeline Edit Menu



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

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

## Source Ops Menu

The eDPM **Source Ops** menu provides Source Holds (*Source Holds in Effects on page 316*) and Near and Far side (see the *Switcher Concepts Manual* for more information) source selection for eDPM Channels using the scrolling list with **Lock** button at the right of the menu.

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

## Picture Menu

The eDPM Picture menu provides controls for the Combiner, Video Processor, and RGB Color Correction functionality. The Video Processor and RGB Color Correction menu controls function identically to those in the Switcher Mode.



## Combiner Menu

For eDPM, the Combiner assigns which channels will be controlled by the eDPM Secondary E-MEM system. eDPM channels can be made visible on both Primary and Secondary partitions.

The Primary Partition is made up of output eDA and eDC for the Secondary Partition. Also, as with iDPM, the eDPM channel on the Primary Partition can be made visible on the Secondary Partition and vice versa (see *Keyer Partition Visibility on page 359*).

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

The process for assigning a Global Channel to eDPMs is the same as assigning Global Channels to iDPMs (see *DPM Global Channel Assignments on page 118*).



# Switcher Control

## Basic E-MEM Operations

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

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

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

## Time Value Entry

Time values are input on the GV Switcher Control Panel Local E-MEM and Master E-MEM areas in seconds, frames, odd field format, using the • button the separator (indicated below as “•”) and pressing the hard button below “Enter” in the display to complete the entry:

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

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

**15, Enter**

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

**1, •, Enter**

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

**1, •, 15, •, 1, Enter**

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

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

**•, •, 30, Enter**

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

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

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

**•, Enter**

The GV Switcher Menu Panel also provides a select activated keypad for entering values directly into menus, using similar procedures.

## Learning E-MEM Registers from the Control Panel

The current operational settings in the work buffer of a control surface Stripe in the Local E-MEM, or any number of Stripes in the Master E-MEM, can be learned into an E-MEM register. To learn more about E-MEMs, work buffers, and registers, see the *Switcher Concepts Manual*.

### Learn a Register in the Current Bank

To learn registers in the current bank from the Control Panel:

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

### Learn a Register to a Different Bank

1. Create the effect.

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

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

## Copying E-MEM Timeline Information with Get and Put

The Put and Get feature buttons are provided in the Master E-MEM Module.

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

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

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

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

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

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

## Recalling E-MEM Registers from the Control Panel

If recalling effects from the Master E-MEM area with Auto Recall off, you first need to specify which levels you wish to control with the Enable buttons in the E-MEM & Timeline, Register Ops menu.

To recall an E-MEM register:

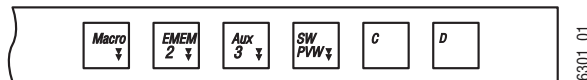
1. Press the **Page** button (if necessary).
2. Press the button for the desired page: 0, 100-900.
3. Press the **BNK/Bank** button.
4. Press the button of the desired bank.
5. Press the keypad button of the desired E-MEM register.

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

## GV Korona E-MEM Run from the Control Panel

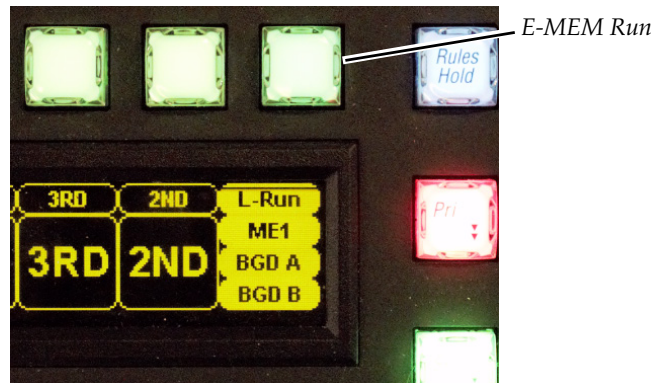
A Local/Master E-MEM **Run** button (L-Run/M-Run) is available on the GV Korona Control Panel. When the top Source Select button row is delegated to E-MEM (by pressing the **E-MEM** delegation button) the right-most Source Select button is delegated as a **Run** button.

Figure 75. GV Korona Source Select Delegation Buttons



Local E-MEM is the default (L-Run is displayed in the OLED below the button).

Figure 76. GV Korona E-MEM Run



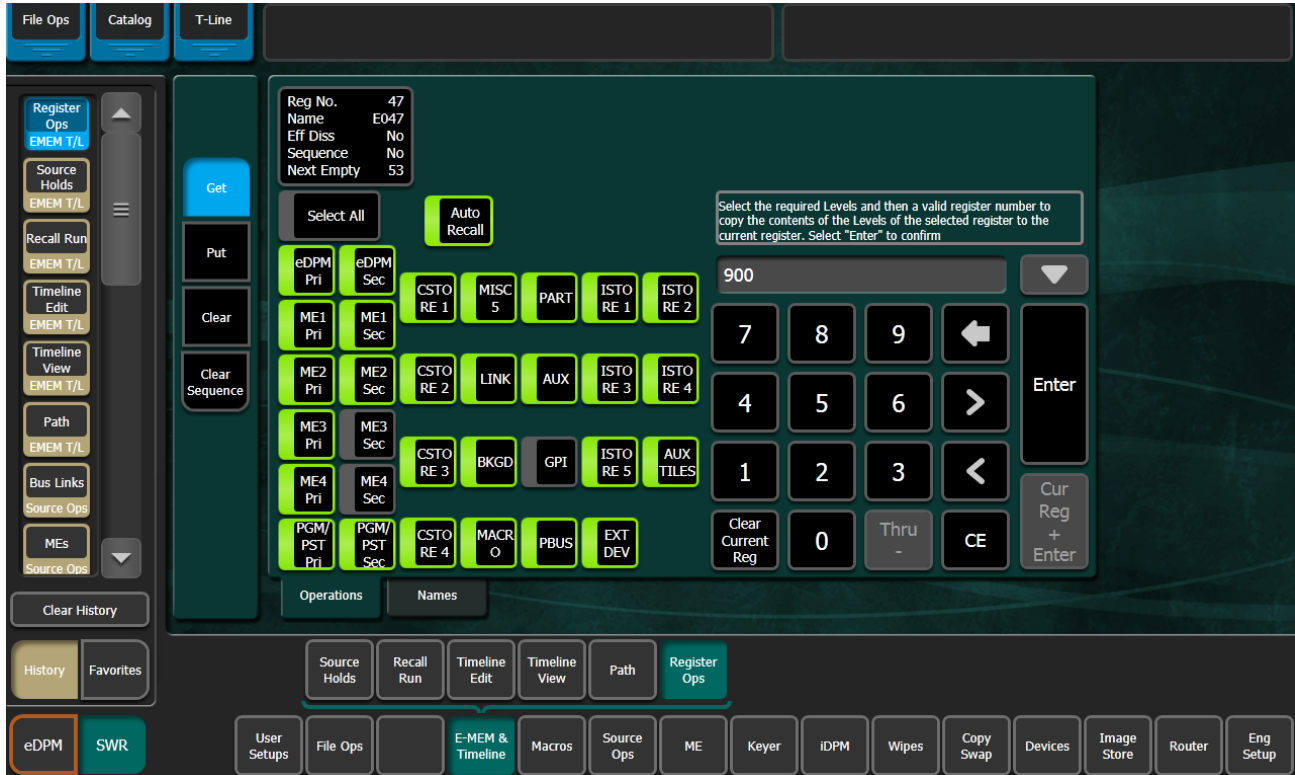
Pressing and holding the E-MEM delegation button changes the delegation to Master E-MEM (button colors change and M-Run is displayed in the OLED below the right-most button). Press and hold again to return to Local E-MEM.

Press any E-MEM button in the delegated row then the **Run** button to run the Local or Master E-MEM.

## Clearing E-MEM Registers

Both currently selected and different registers can be cleared from the E-MEM & Timeline, Register Ops menu (Figure 77).

Figure 77. E-MEM and Timeline, Register Ops menu



To clear the currently selected register:

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

To clear a different register:

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

## Running an E-MEM Effect and Auto Run

To run an E-MEM with Auto Run off:

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



To run an E-MEM with Auto Run on:

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

## Learning E-MEM Sequences

To Learn a Sequence of Registers:

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

To Play a Sequence of Registers:

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

To Break a Sequence:

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

## Advanced E-MEM Operations: Define E-MEM/Partial Keyframe Settings

When using Partial Keyframing and/or Define E-MEM, learning registers will restore advanced settings back to default unless one of the following procedures are followed:

Before selecting an E-MEM register, to retain Partial Keyframing/Define E-MEM settings, either:

- Hold down the **LRN/Lrn** button on the Local or Master E-MEM Module on the Control Panel and then select a register (the Learn button turns blue indicating the advanced settings are retained), or
- Enable the **Learn Partial** mode button in the E-MEM & Timeline, Recall Run menu.

# Macros

Macros provide a mechanism to record a series of actions and then play them back by pressing a single button. Macro steps specify commands sent to the Video Processor Frame, rather than simple button presses. Macros are fundamentally different from E-MEMs. E-MEMs store the complete state of a portion of the switcher (level and sublevel) into keyframes. For example, an E-MEM keyframe for ME 1 captures all the source selections, keyer settings, transition type, wipe patterns, etc. for all the buses of ME 1 at the time that keyframe was added to the E-MEM register. A macro, on the other hand, affects only the specific elements involved in the recording of that macro. For example, a macro can be recorded that sets up only the Preset bus with a particular source and selects a specific wipe pattern and transition rate. You can recall an E-MEM to put the ME in a known state, and when you want to prepare that specific transition to just that source, simply play the macro. In this example, different macros can be recorded with different sources to allow rapid and reliable variations on the E-MEM effect that was originally recalled.

A macro can contain several steps. Macros are executed as quickly as possible in the order the steps are recorded. It is also possible to insert delays in a macro sequence during recording to accommodate external devices or allow for completion of internal system events.

Macros add enormous power and flexibility to the GV Switcher system. Simple tasks can be recorded into a macro quickly and easily for rapid and reliable playback. Complex series of actions can also be programmed into a macro, but careful planning is required to ensure the macro accomplishes its intended actions for all the conditions under which it may be played back.

**Note** Macro attachments are saved and loaded with Panel Prefs. One set of attachments exists for each control surface. Be sure the Panel Prefs you load are compatible with the Macro registers you are currently using, to avoid accidentally running incorrect attached Macros.

## Macro Recording

Macros are recorded into macro registers. The GV Switcher system has 999 macro registers. The number of steps in any specific macro or the total number of macro steps across all macros is limited only by the amount of available memory in the Video Processor Frame.

The number of macros per configuration is determined by the size and number of Stripes in the GV Switcher system. The following is used to determine the total number:

- Stripes (1-4),
- Key row number (1-2),
- Shift level number (1-4), and
- Source button number (1-32).

For example:

4-ME with 35 button rows:

- 2 key rows
- 4 shift levels
- 32 source buttons for macros

=999 macros (maximum supported) or,

2ME with 25 source button rows:

- 2-ME
- 2 key rows
- 4 shift levels
- 22 source buttons for macros

=352 macros

Macro registers can be saved to disk and reloaded, making the total number of pre-made macros available to a GV Switcher system unlimited.

Macros apply to the point of use active during the macro recording. For example, recording a macro that turns on Matte Fill on ME 1 Keyer 1 will affect ME 1 Keyer 1 when it is played back, regardless of what keyer the Control Panel happens to be delegated to when the macro is played.

Macros record triggers, not the result of a trigger. For example, a macro containing a Key Mix transition, when run, will trigger the key transition from its current state to the other state. If the keyer is on, it will mix off, and if off, it will mix on.

## Macro Playback

Macros can be played back from the currently delegated Macro row of source select buttons on the Control Panel and the Macros menu. Macros can also be attached to other panel buttons for playback.

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

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

Macros can also be incorporated into E-MEMs and be executed when that E-MEM runs.

## Macro Attachments

Macros can be attached to other Control Panel buttons. Attached macros can either augment the button's normal function or replace it. A Pre Attach macro executes when the button is pressed, followed by the button's normal action. A Post Attach macro executes after the button's normal action. A Replace Attach macro substitutes the macro for the button's normal action. Any combination of Pre, Post, or Replace Attach macros can be associated with the same button. This makes it possible to have a single button press play three separate macros though this is not a typical scenario.

**Note** Macro attachments to buttons without colors do not appear to flash when Pre-/Post-Attached macros are attached. To verify that a macro is or is not attached, see the Macros, Attach menu.

## “Disabled” is the Default for the Macro Attachable Control Panel Preference

The ability to attach macros from the .Control Panel (in addition to the menu) is provided by the Macro Attachable panel preference. Starting with version 9.1 of the GV switcher software, the default state for Macro Attachable is 'disabled' (enabled in earlier versions).

The Macro Attachable panel preference is controlled using the **Macro Attachable** button in the User Setups, Panel Prefs, Panel User Interactions menu.

**Note** Macro Attachable is a Panel Preference and does not affect or limit macro functionality including macro attachment from the GV switcher Macros menu.

## Macro Attachments and Importing Show Files

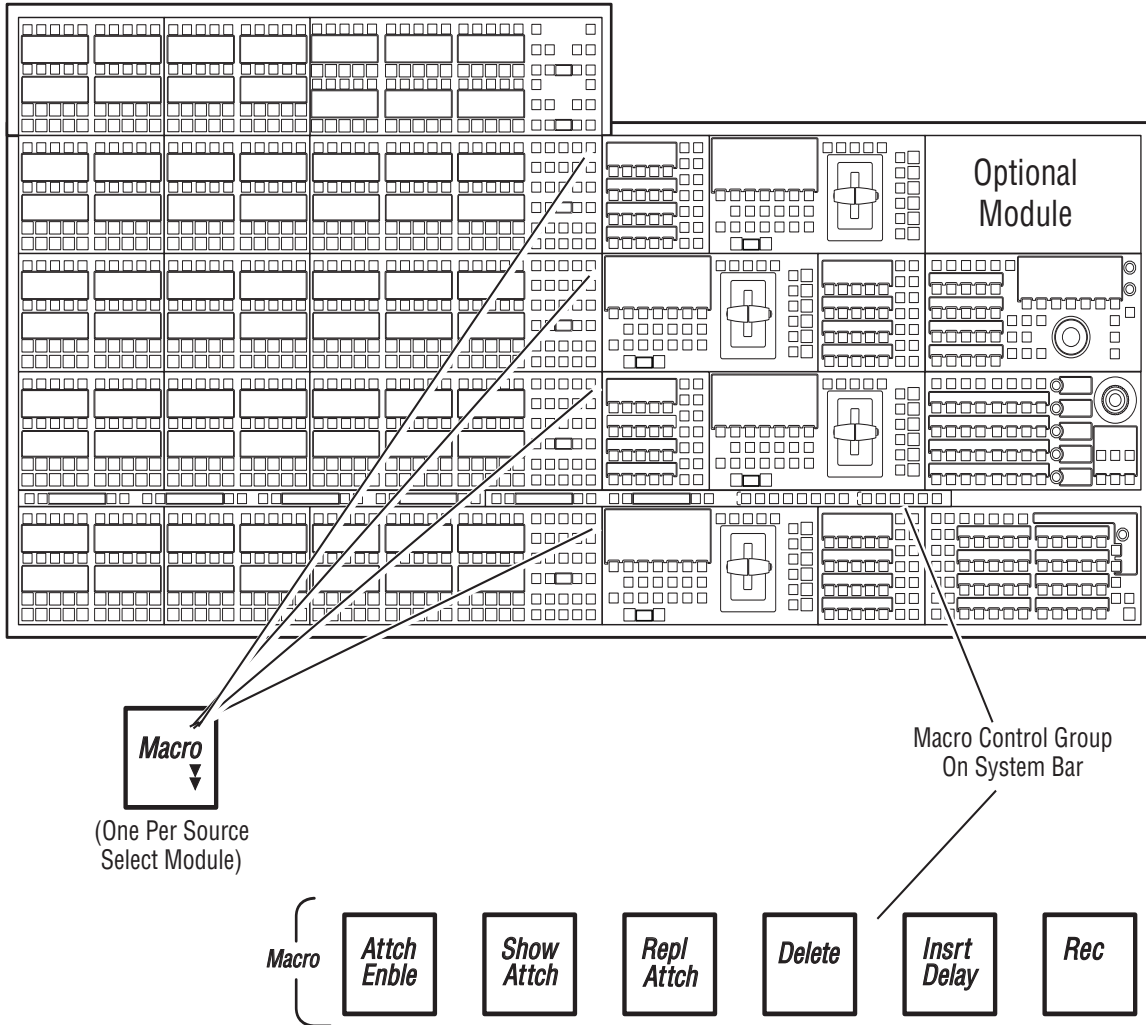
Shows created using versions earlier than 9.1 with Macro Attachable enabled will have the Macro Attachable panel preference *disabled* (the 9.1 or newer default) when imported. The show can be updated to the previous state by enabling the **Macro Attachable** button and saving the show.

# Kayenne K-Frame Macro Operations

## Macro Control Button Group

The Macro Control Button group on the System Bar has six buttons. These controls are located above the PGM PST stripe, at the far right of the System Bar, as shown in (Figure 78).

Figure 78. Macro Buttons



## Macro Button Function Summary

The Macro button on the Control Panel, (one per Source Select Module), see (Figure 78), delegates keyer source select button Rows 1 and 2 for macro operations and reports that macro mode is active (MCR appears in the bus display). To delegate one bus row for macro operations, press and hold down the Macro button, then press a bus delegation button for the row to be delegated. MCRO appears in the bus display reporting that the row is

active for macro operations. Macro names, when displayed, will also appear on the bus row(s).

The Rec button activates or terminates macro Record mode. In this mode, you select the macro register into which you wish to record, using the delegated keyer row, perform the desired actions, and then finish the recording by either pressing the Rec button again or pressing the newly recorded macro register button.

During a macro recording, time delays can be inserted into macros. The Insert Delay button activates macro Insert Delay mode. In this mode the macro delegated ME's source name displays show time durations which can be selected by pressing the corresponding keyer buttons.

The Delete button activates macro Delete mode. When delete mode is on, pressing a macro button deletes the macro associated with that button.

When macro mode is on, pressing the Repl Attach button activates attach mode. You then select the macro register of the desired pre-defined macro and press the button to which you wish to attach that macro.

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

The Attach Enable button enables and disables all macro button attachments globally. When on, pressing Control Panel buttons with macros attached will run those macros. When off, macros can only be played back by activating macro mode and pressing the macro register buttons, or with the Macro menu.

## Record a Macro

1. Turn on Macro record mode by pressing the **Rec** button.
2. Press the macro row button of the desired macro register. Use the Shift button to access shifted macro registers.
3. Perform the steps you wish recorded into the macro, in the order they are to be performed, using the Control Panel and/or the menus.
4. Complete the recording by pressing the **Rec** button, or pressing the keyer row macro button.

## Insert a Macro Delay

While recording a macro, press the Insert Delay button then press the keyer source select button of the desired delay time. The 2nd Shift button (3rd and 4th are undefined for this function) splits the time interval selection between fields (upper key row) and seconds (lower key row). Multiple selections can be made to insert longer delays in both fields and seconds.

## Playback a Macro Register

1. Turn on Macro mode with the Macro button. If not already on, you may also want to press the Show Attach button to display the macro names on the source name displays.
2. Select the macro to be played
  - On the Control Panel, press the keyer button of the desired macro register. The Shift button accesses shifted macros (2nd, 3rd, and 4th).
  - In the Macro menu, select the macro register button of the desired macro register, then select the Play button.

## Pre-Attach a Macro

1. Delegate the bus rows to Macro by pressing the **Macro** button (see [Figure 78 on page 163](#)).
2. Press and hold down the macro button to be attached.
3. Press the keyer row button to which the macro will be attached (if Show Attach is on, the panel button will flash until Show Attach is turned off).

## Post-Attach a Macro

1. Delegate the bus rows to Macro by pressing the **Macro** button (see [Figure 78 on page 163](#)).
2. Press and hold down the keyer row button to which the macro is to be attached.
3. Press the macro button to be attached (if Show Attach is on, the newly defined macro button will flash until Show Attach is turned off).

**Note**      Macros attach to physical buttons, not to the delegated target of that button. This means, for example, if you attach a macro to the Chroma Key button, pressing that button runs the macro regardless of which keyer the Transition area has been delegated to control.

## Attach Multiple Macros to the Same Button

Up to three macros (one of each type) can be attached to the same button.

1. Select an attach mode.
2. Select the macro register of the additional macro.
3. Press the button to which you wish to attach the additional macro.

## Remove a Macro Attachment

1. Press the **Delete** button on the System Bar.
2. Press the **Show** button so that panel buttons with macros attached blink low tally.
3. Without selecting a macro register, press the blinking button that has the attachment you wish to remove. The blinking button will turn off.
4. Press **Show** to turn off the mode.

To remove all macros, go to the Macros Attach menu and select Remove All Macros button (warning will appear to confirm remove all).

## Append to a Macro

1. Turn on Macro append mode by holding down the Record button for a full second. The button will turn blue and blink slowly until a macro is selected.
2. Press the macro register button on the delegated keyer row of an existing macro to which you wish to append additional steps. The Record button will remain colored blue and blink fast, indicating a Macro is being recorded.
3. Perform the additional steps using the Control Panel and/or the menus.
4. Complete the append by pressing the blinking Record button, or pressing the blinking keyer row macro register button.

## K-Frame Karrera Macro Operations

### Macro Control Button Group

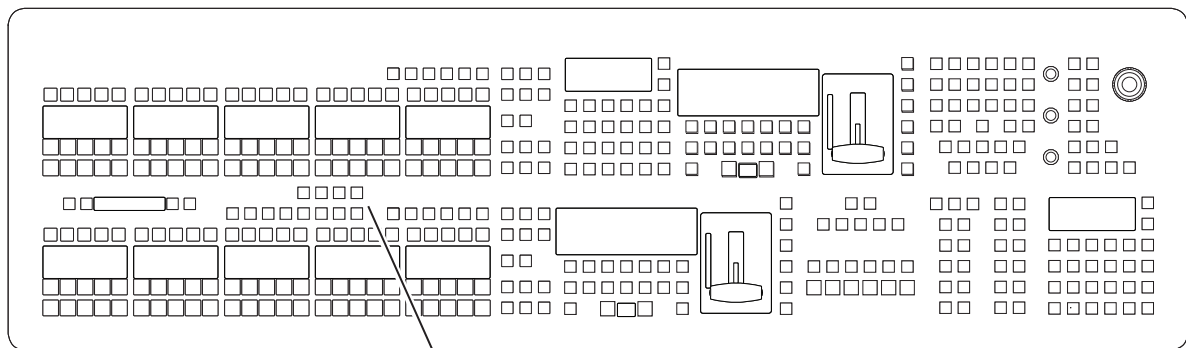
The Macro Control Button group on the System Bar area has eight buttons. These controls are located above the PGM PST stripe, at the far right of the System Bar area, as shown in (Figure 78). Pressing the **Macro Ctrl** (Control)



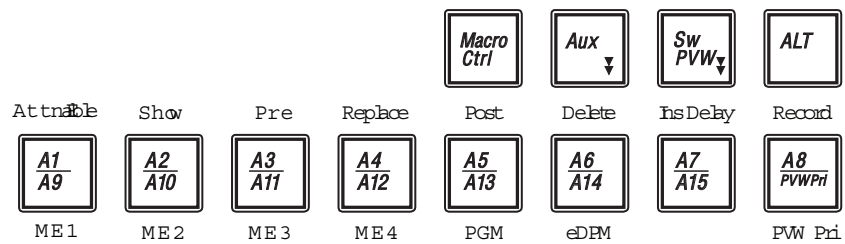
button delegates the buttons for macros. The eight buttons are from left to right:

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

Figure 79. Macro Buttons



Macro Control Group  
On System Bar



8005\_4

## Macro Button Function Summary

The **Macro** button on the Control Panel, (one per Source Select area) delegates keyer source select button Rows 1 and 2 for macro operations and reports that macro mode is active (MCR appears in the bus display). To delegate one bus row for macro operations, press and hold down the **Macro** button, then press a bus delegation button for the row to be delegated. MCR appears in the bus display reporting that the row is active for macro operations. Macro names, when displayed, will also appear on the bus row(s).

For information about the Pre-Attached (**Pre** button), Post-Attached (**Post** button), and Replacing (**Replace** button) attached macros, see *Macro Attachments on page 162*.

The **Att Enable** button enables and disables all macro button attachments globally. When on, pressing Control Panel buttons with macros attached will run those macros. When off, macros can only be played back by activating macro mode and pressing the macro register buttons, or with the Macro menu.

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

The **Delete** button activates macro Delete mode. When delete mode is on, pressing a macro button deletes the macro associated with that button.

When macro mode is on, pressing the **Replace** button activates attach mode. You then select the macro register of the desired pre-defined macro and press the button to which you wish to attach that macro.

During a macro recording, time delays can be inserted into macros. The **Ins Delay** button activates macro Insert Delay mode. In this mode the macro delegated ME's source name displays show time durations which can be selected by pressing the corresponding keyer buttons.

The **Record** button activates or terminates macro Record mode. In this mode, you select the macro register into which you wish to record, using the delegated keyer row, perform the desired actions, and then finish the recording by either pressing the **Record** button again or pressing the newly recorded macro register button.

## Record a Macro

1. Turn on Macro record mode by pressing the **Record** button.
2. Press the macro row button of the desired macro register. Use the **Shift** button to access shifted macro registers.
3. Perform the steps you wish recorded into the macro, in the order they are to be performed, using the Control Panel and/or the menus.

4. Complete the recording by pressing the **Record** button, or pressing the keyer row macro button.

## Insert a Macro Delay

While recording a macro, press the **Ins Delay** button then press the keyer source select button of the desired delay time. The **2nd Shift** button (3rd and 4th are undefined for this function) splits the time interval selection between fields (upper key row) and seconds (lower key row). Multiple selections can be made to insert longer delays in both fields and seconds.

## Recall a Macro Register

If the macro is not attached to a Control Panel button, you can recall a macro from the Master E-MEM area or from the menu.

To recall a macro from the Master E-MEM area, press Menu, Macro (**Lrn/CWB**) select a register page button

1. Turn on Macro mode with the **Macro** button. If not already on, you may also want to press the **Show (Attach)** button to display the macro names on the source name displays.
2. Select the macro to be played
  - On the Control Panel, press the keyer button of the desired macro register. The **Shift** button accesses shifted macros (2nd, 3rd, and 4th).
  - On the Macro menu, select the macro register button of the desired macro register, then select the **Play** button.

## Pre-Attach a Macro

1. Delegate the bus rows to Macro by pressing the **Macro** button (see [Figure 78 on page 163](#)).
2. Press and hold down the macro button to be attached.
3. Press the keyer row button to which the macro will be attached (if **Show (Attach)** is on, the panel button will flash until **Show** is turned off).

## Post-Attach a Macro

1. Delegate the bus rows to Macro by pressing the **Macro** button (see [Figure 78 on page 163](#)).
2. Press and hold down the keyer row button to which the macro is to be attached.
3. Press the macro button to be attached (if **Show (Attach)** is on, the newly defined macro button will flash until **Show** is turned off).

**Note** Macros attach to physical buttons, not to the delegated target of that button. This means, for example, if you attach a macro to the Chroma Key button, pressing that button runs the macro regardless of which keyer the Transition area has been delegated to control.

## Attach Multiple Macros to the Same Button

Up to three macros (one of each type) can be attached to the same button.

1. Select an attach mode.
2. Select the macro register of the additional macro.
3. Press the button to which you wish to attach the additional macro.

## Remove a Macro Attachment

1. Press the **Delete** button on the System Bar.
1. Press the **Show** button so that panel buttons with macros attached blink low tally.
2. Without selecting a macro register, press the blinking button that has the attachment you wish to remove. The blinking button will turn off.
3. Press **Show** to turn off the mode.

To remove all macros, go to the Macros Attach menu and select **Remove All Macros** button (warning will appear to confirm remove all).

## Append to a Macro

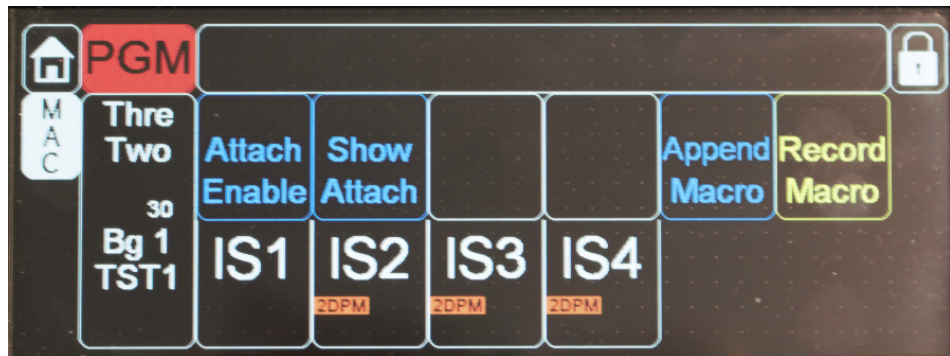
1. Turn on Macro append mode by holding down the **Record** button for a full second. The button will turn blue and blink slowly until a macro is selected.
2. Press the macro register button on the delegated keyer row of an existing macro to which you wish to append additional steps. The Record button will remain colored blue and blink fast, indicating a Macro is being recorded.
3. Perform the additional steps using the Control Panel and/or the menus.
4. Complete the append by pressing the blinking **Record** button, or pressing the blinking keyer row macro register button.

## GV Korona K-Frame Macro Operations

### Recording Macros with GV Korona

You can record, enable, append, and show the macro attachments on the Control Panel using the GV Korona Status Display. Use the GV switcher menu for the other macros functions, including pre-attach, post-attach, delete, etc.

Figure 80. Status Display in Macro Mode



The **Att Enable** button enables and disables all macro button attachments globally. When on, pressing Control Panel buttons with macros attached will run those macros. When off, macros can only be played back by activating macro mode and pressing the macro register buttons, or with the Macro menu.

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

The **Record** button activates or terminates macro Record mode (**Stop Record**). In this mode, you select the macro register into which you wish to record, using the delegated keyer row, perform the desired actions, and then finish the recording by either pressing the **Stop Record** or pressing the newly recorded macro register button.

The **Append Macro** button allows you to append actions to an existing macro.

### Record a Macro

1. In the Master E-MEM area on the Control Panel, press **Menu, Macro (Lrn/CWB)**
2. Turn on Macro record mode by selecting the **MAC** button in the Status Display.
3. Hold down a Macro register in the Master E-MEM while selecting the **Record Macro** button in the Status Display.

4. Perform the steps you wish recorded into the macro, in the order they are to be performed, using the Control Panel and/or the menus.
5. Complete the recording by either selecting **Stop Record Macro** in the Status Display or pressing the Macro register button again.

## Attach a macro to a Control Panel Button

Macro registers can be assigned to any Control Panel buttons including Keyers, Source Selection, Transition, etc. so you can trigger a macro with one button press.

1. In the Master E-MEM area on the Control Panel, press **Menu, Macro (Lrn/CWB)**.
2. Choose a Control Panel button to attach the macro:
  - a. Press the **Macro** button in a Source Selection area to place the ME in Macro mode or,
  - b. Select any button on the Control Panel including Keyers, Transition,
3. Press and hold a macro register button and press a Control Panel button.

## Recall a Macro Register

Recall a macro from a Control Panel button attachment, Master E-MEM, or the menu.

**Note** Press the **Show Attach** button in the Status display to high tally buttons with macros attached on the Control Panel, including the Master E-MEM.

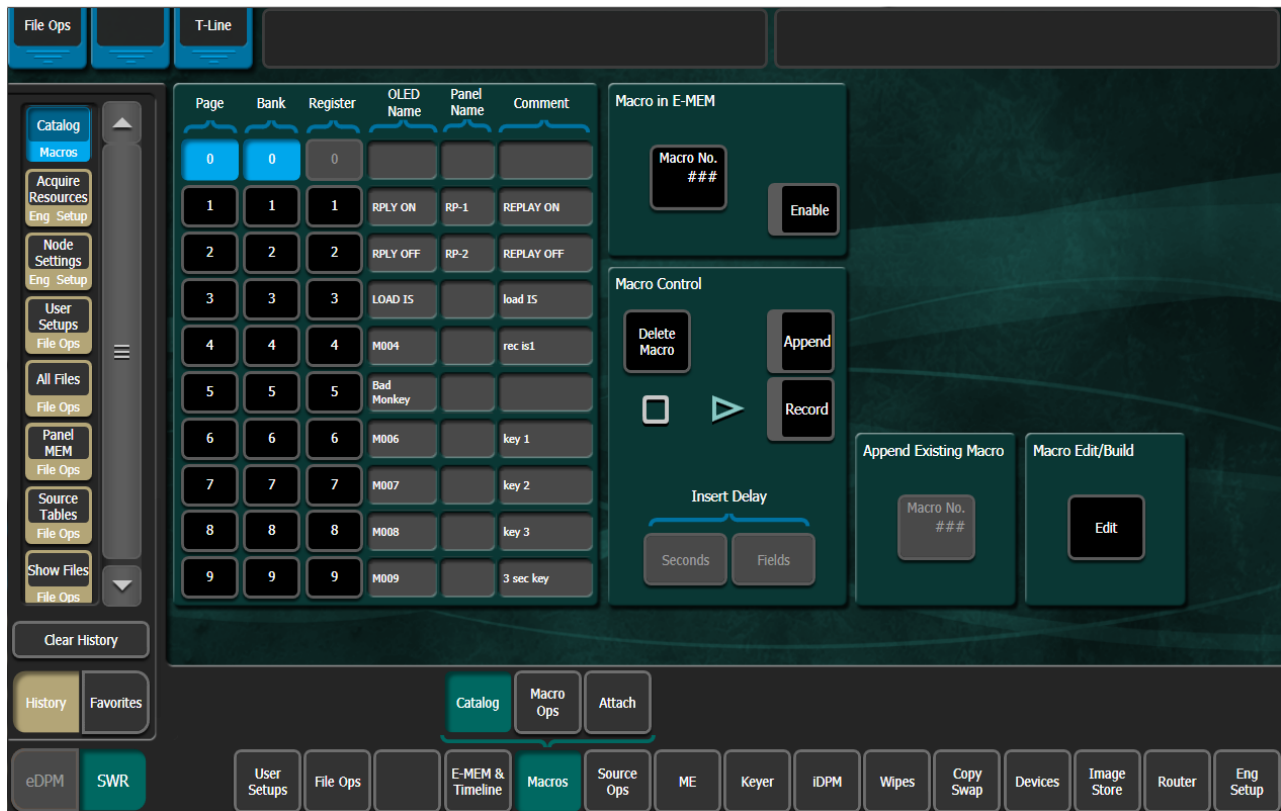
- To recall a macro from a Control Panel button attachment, press the button with macro attached; if attached to a Macro button in the Source Select Module, press the **Macro** button to display Macro Mode.
- To recall a macro from the Master E-MEM area on the Control Panel, press **Menu, Macro (Lrn/CWB)** and press a macro register button.
- To recall a macro from the menu, select **Macros, Macro Ops**, select a Page, Bank, and Register, select **Execute**.

## Performing Macro Operations from the Menu

### Recording a Macro

Access the Macros menu by selecting **Macros**.

Figure 81. Macros Catalog Menu



1. Go to the Macro Catalog menu (press **Macro**, **Catalog**).
2. Select the Macro Register number button of the register you wish to record into, in the scrolling list.
3. Select the **Record** button.
4. Perform the steps you wish recorded into the macro, in the order they are to be performed, using the Control Panel and/or the menus.
5. Select the **Stop** button to end the macro recording.

You can name the macro either before you record it, or after by selecting the name data pad for that macro register to bring up a keypad.

## Enter a Macro Panel Name

The “Panel Name” column is provided in the Macro Catalog menu’s, Macro List pane; four characters maximum. GV Switcher displays that name in place of the Macro Register Number in the Local E-MEM area (when the Macro menu is delegated by pressing the **Macro** button in that ME).

1. Select Macros, Catalog in the menu.
2. Select the **Panel Name** data pad next to the desired macro register.

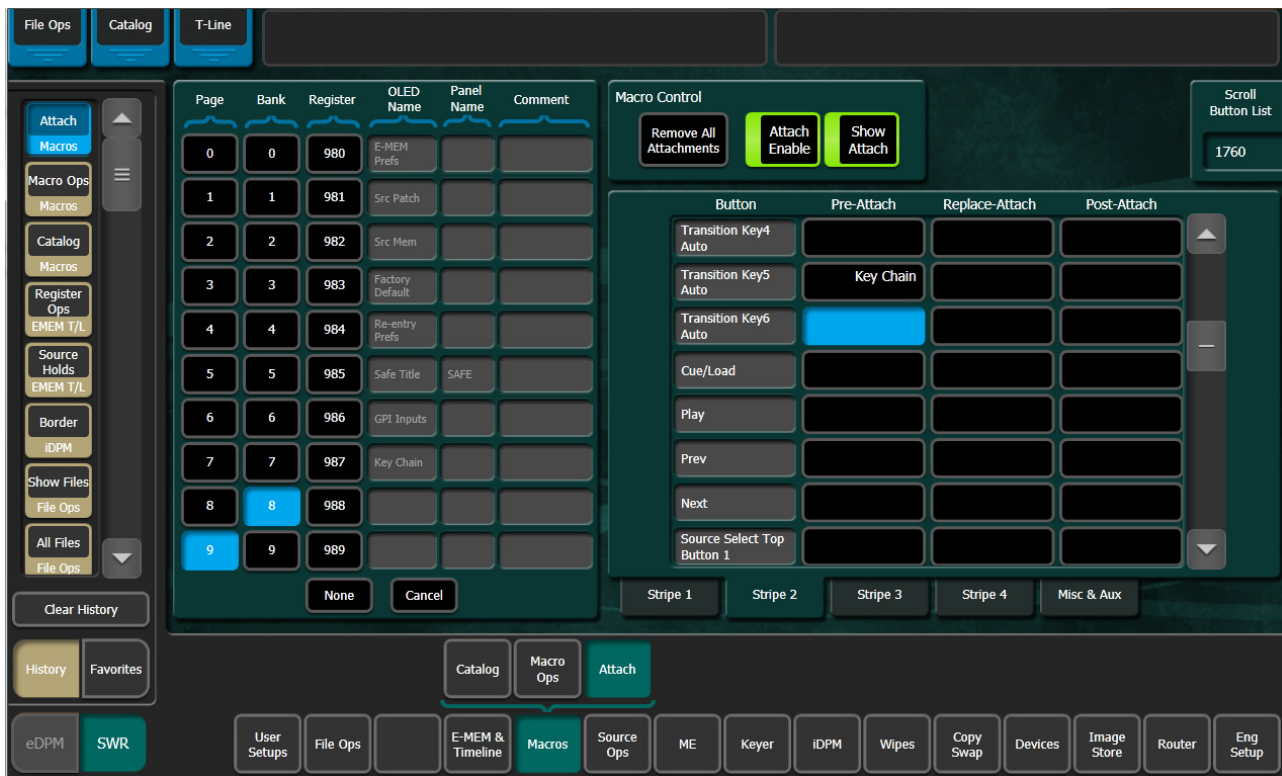
3. Enter a four-character name in the pop-up keyboard, and select **Enter**.

**Note** If there is no Panel Name entered, the Macro menu in the Local E-MEM Module will display the macro register number; it does not display the OLED name.

## Attaching a Macro

1. Go to the Macros Attach menu (select **Macros, Attach**).

Figure 82. Macros Attach Menu



2. Select the button you wish to attach a macro to. You can either select the physical panel button while **Show Attach** mode is active, which will scroll to and blink that button on the Macros Attach menu, or you can use the menu to select the panel section and then scroll the Macro Attachments list to display the desired button.
3. Select the **Pre**, **Replace**, or **Post** parameter select button (upper right).
4. Select the menu button for the macro register to be attached.
5. If desired, name the macro by selecting the Name data pad and entering the name in the pop-up keyboard. Press **Enter**.



## Playing an Attached Macro

1. Turn on the attachment playback feature by pressing the **Attach Enable** button so it is illuminated. You may also want to press the **Show Attach** button so that panel buttons with macros attached can be identified (they blink low tally).
2. Press the panel button that has the macro attached.

## Appending to a Macro

1. Go to the Macros Catalog menu (press **Macro, Catalog**).
2. Select the Macro Register number button of the register you wish to record additional steps into.
3. Select the **Append** button.
4. Perform the additional steps, using the Control Panel and/or the menus.
5. Select the **Stop** button to end the macro append.

## Appending a Macro to Another Macro in the Menu

1. Go to the Macro Catalog menu (press **Macros, Catalog**).
2. Select the Macro Register number button of the register to which you wish to add the contents of another macro.
3. Select the **Macro #** data pad in the Append Existing Macro pane.
4. Select the macro you wish to append to the target macro in the pop-up, and select the **Do Append** button (or select the **Cancel** button if you wish to cancel the operation).

**Note** The contents of the indicated macro will be appended to the originally selected macro. Only the current contents of the macro is appended to another macro. Deleting or changing the source macro will not change the behavior of the macro that has received its contents through an append.

## Saving Macro Registers

1. Go to the File Ops, Macro menu.
2. Press the Save button in the File Operations pane.
3. Navigate to the folder (System Storage or Remote Storage tab) into which you wish to save the Macro files (left pane). You can create a new folder if you wish.
4. Select **All**, **Enter Reg(s)**, or the **Select Reg(s)** buttons (enter or select a range for the latter two).

5. Select the **Save** button.

**Note** Only the macro registers themselves are saved with this procedure, not any macro attachments.

## Loading Macro Registers

Macro registers are loaded by selecting the macro register file or a folder of macros and selecting the **Load** button in the File Ops, Macros menu.

**Note** Only the macro registers themselves are loaded with this procedure, not any macro attachments.

## Macros for Multiple Copies or Swaps

When copying or swapping several settings in turn (copying an ME to several other MEs, for example) time may be required for one command to complete before the next command can be serviced. If you create a macro that performs multiple copy or swap operations, add a short delay after each operation to ensure each completes successfully. For example, to copy ME 1 to ME 2 and then copy ME 1 to ME 3 with a macro, include a short delay after the ME 1 to ME 2 copy.

## Macros and E-MEMs

Macros and E-MEMs can interact in two fundamentally different ways. A Macro can be created that recalls one or more E-MEMs, or an E-MEM can be programmed to execute one or more Macros. With care, operating both control mechanisms together can be extremely powerful. However, improper use can create infinite loops or other undesirable behavior. It is especially important that your GV Switcher system be loaded with the correct E-MEMs and Macros and is operating in the correct mode, or unpredictable system behavior will result from the mismatched E-MEMs and macros.

## E-MEM Recalls in a Macro

The state of the **Effects Dis** and **SEQ** buttons are sent as part of each E-MEM recall command. When recording E-MEM recalls to a Macro, make sure these states are correct when you build the Macro. For example, if you want the E-MEM effect to automatically run as a Sequence, make sure that button is on when the E-MEM recall is recorded into the Macro.

Certain E-MEM commands that directly affect the work buffer require special field-rate processing. This ensures all necessary processing occurs once per field and is in sync with all the other changes occurring in that

same field. Delays are needed for multiple time cursor changes (**Next KF**, **Prev KF**, **Begin**, **End**, **Go To KF**, **Go To Time**, and **Rewind**). If you wish to use two or more of these commands adjacent to each other in a macro, a delay of at least one frame between them is required for consistent system behavior.

See *Macros and E-MEMs* on [page 176](#) for related information.

## Macros, Suites, and Surfaces

K-Frame systems can be configured as multiple suites, and each suite can have up to two control surfaces. Each suite has a completely independent set of Macros, and both surfaces can run or record a macro at the same time. For example, one operator using suite 1 surface A can run one macro, while another operator using suite 1 surface B is recording a different Macro. The set of Macros in each suite are shared by both surfaces in that suite.

Multiple operators cannot simultaneously record the same macro or run a macro that is being recorded or loaded by the other surface. If user attempt to do so the macro button will turn purple to indicate the macro is busy.

### GPI Macros

A Macro can also be triggered from a GPI input. Any GPI Macro is considered triggered from surface B of that suite. This ensures surface A will be able to record or run a Macro even during the running of a GPI triggered Macro. Surface B operators will need to coordinate their Macro use around any GPI triggered Macros.

## Source Select Button Row Mode Delegation

Keyer, Background, E-MEM and Macro registers, and Utility buses can be delegated for control to a Source Select button row. On the Kayenne Control Panel, Aux bus and Router modes can also be delegated.

Table 9. Source Select Button Row Mode Descriptions

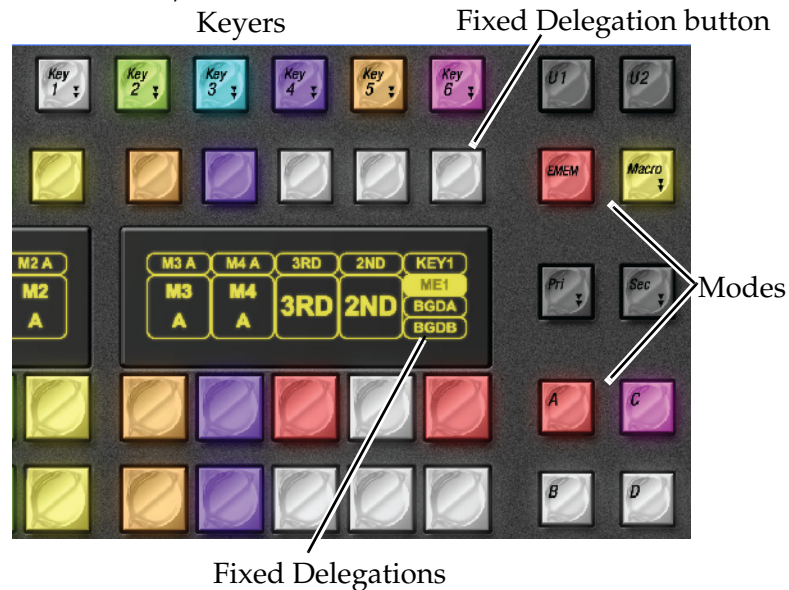
Mode	Source Select Button Row Description
E-MEM	E-MEM registers are mapped
Macro	Macro registers are mapped
Keyer 1-6	Mapped sources used as keyer video/key
Backgrounds A,B,C,D	Mapped sources used as background video
Utility Buses U1, U2	Mapped keyer sources for wipe generators/custom border wash patterns
<b>Additional Kayenne Control Panel Modes</b>	
Aux	Mapped aux bus inputs
Router	Router sources mapped alphabetically from router (use PREV/NEXT to change input source button delegation)

### Delegate a Switcher Mode to a Source Select Button Row

Once a mode is delegated to a Source Select button row, it is fixed until changed. Button row delegations can be saved in Panel Memory (see [K-Frame Panel Memory and P-MEM Registers](#)).

1. Hold down the **Fixed Delegation** source select button, top right (default), in the Source Select area on an ME.

Source Select Area Example



2. Press a keyer or mode button.

## Source Select Button Row to Aux Mode Delegation

Source Select button rows can be delegated to Aux outputs on the GV switcher Control Panels that can for example be assigned to monitors, ImageStore, ClipStore, etc.

### Delegate a Kayenne Source Select Button Row to Aux Mode

1. Press and hold the Aux mode button and press a fixed Delegation button.
2. Select an Aux output.
3. Select an Aux source.

### Delegate a Karrera Source Select Button Row to Aux Mode

1. Press the Aux button (high tallies blue).
2. Press an Aux output button; A/1 to A/19?.
3. Press a Source Select button with the desired source mapped.

### Delegate a GV Korona Source Select Button Row to Aux Mode

1. Press and hold the Aux button (high tallies blue).
2. Press an Aux output button; A/1 to A/19?.
3. Press a Source Select button with the desired source mapped.
- 4.

## K-Frame Panel Memory and P-MEM Registers

P-MEMs (Panel Memory Registers) store operational states or levels (also sub-levels for Kayenne) for Control Surface Stripes. You could for example, quickly change Source Select button row delegation (see [Source Select Button Row Mode Delegation](#)) from Aux outputs to Macro registers with a P-MEM recall.

There are 99 P-MEM registers available, numbered from 1 to 99.

**Note** P-MEM register 0 (zero) is not writable.

P-MEMs learn Source Select button row mode delegations for:

- E-MEM registers,
- Macro registers,
- Shift levels, and

Additionally for Kayenne,

- Aux outputs and
- Router sources.

**Note** Individual button selections are not saved in P-MEM registers, the first Source Select button in the row will be switched on when recalled.

Other states are learned including:

- Macro offsets and
- Stripe to ME delegation.

## Learn a Kayenne P-MEM Register

See [Switching Basics](#) for more information about Local E-MEM register operations.

1. In the Local E-MEM Module of the Control Panel, press the **Panel Mem** button.
2. To enable/disable a stripe, press to toggle the Stripe buttons (STR 1-4 and Aux) positioned vertically on the right side of the Local E-MEM keypad ([Figure 123 on page 257](#)).
3. Press **LRN**.
4. Press **0-9** in the keypad (or the dot button (.) to learn into the next available register) in the current bank or **BNK 0-9**, then **0-9**.

Example: Pressing **BNK,2,2** learns into P-MEM register 22.

## Recall a Kayenne P-MEM Register

1. In the Local E-MEM Module of the Control Panel, press the **Panel Mem** button.
2. Press **0-9** in the keypad for the current bank or **BNK, 0-9, 0-9** for a different bank.

## Learn a Karrera/GV Korona P-MEM Register

See [Switching Basics](#) for more information about Local E-MEM register operations.

1. In the Local E-MEM area of the Control Panel, press the **Menu**, then **Panel Mem** button.
2. Press **Lrn**.
3. Stripe delegation to include or exclude Stripes as part of the P-MEM can be performed or skipped at this point. Keypad buttons 1 through 5 (5 for Aux) are toggle buttons; high tally is on. Enable or disable Stripes and/or press **Enter** to continue.
4. Press **0-9** in the keypad (or the dot button (.) to select the next available register) in the current bank, or, **Bank 0/4, 1/5, 2/6, 3/7** or **Bank** then **8** or **9**, then **0-9**.

Examples:

- Double-pressing **Bank 0/4** then pressing **2** learns into P-MEM register 42.
- Pressing **Bank,8,4**, learns into register 84.

## Recall a Karrera/GV Korona P-MEM Register

1. In the Local E-MEM Module of the Control Panel, press the **Menu**, then **Panel Mem** button.
2. Press **0-9** in the keypad (or the dot button (.) to select the next available register) in the current bank, or, **Bank 0/4, 1/5, 2/6, 3/7** or **Bank** then **8** or **9**, then **0-9**.

## Panel Memory Default Setting

Recalling P-MEM register 0 (zero) on the Local E-MEM keypad returns selected stripes to their default configuration.

- Kayenne—Keyer 1, Keyer 2, Background A, Background B
- Karrera/GV Korona—Keyer 1, Background A, Background B

## Source Rules

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

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

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

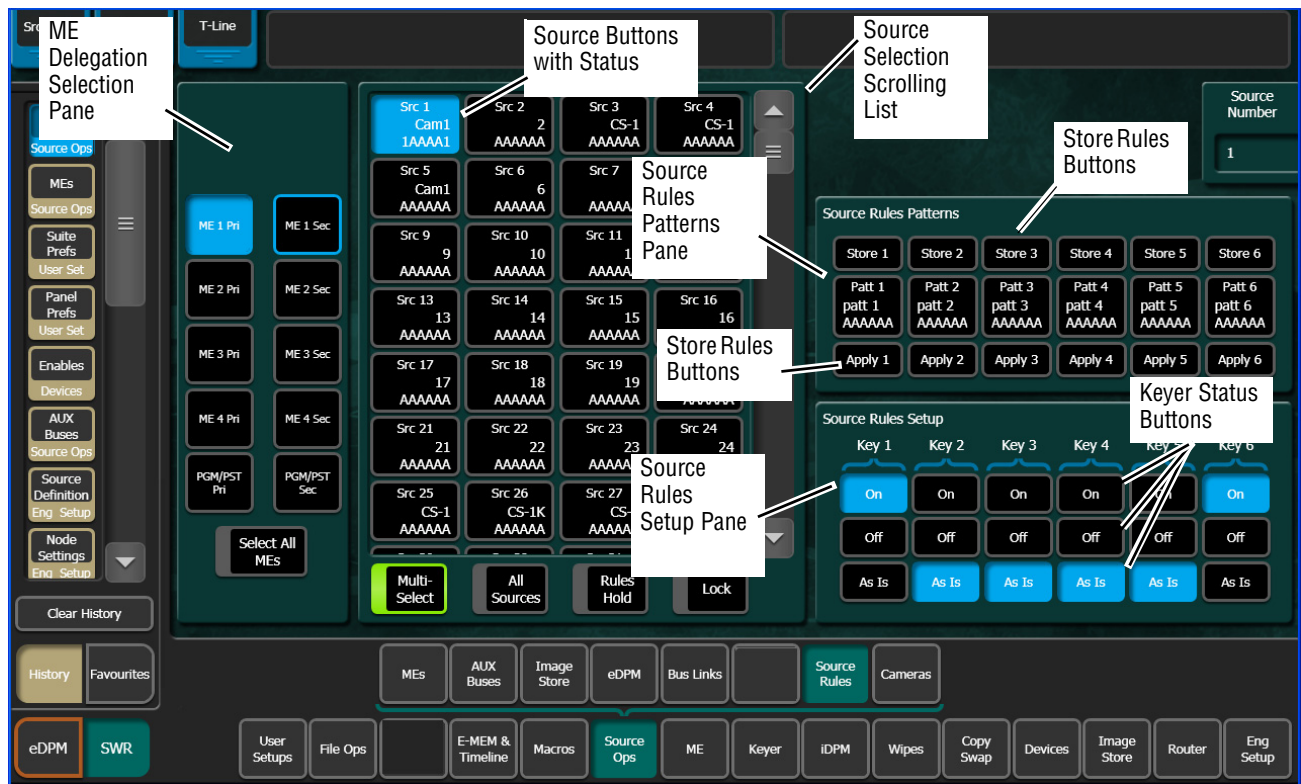
Source Rules are saved as part of a Show file (unless deselected).

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

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



Figure 83. Source Ops, Source Rules Menu



## Create a Source Rules Pattern

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

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

2. Select the source buttons in the scrolling source list menu pane (multiple selection is supported), right of the ME delegation buttons, you wish to setup as a Source Rules Pattern.
3. Select the **On**, **off**, or **As Is** Source Rules state buttons in the Source Rules Setup menu pane for each Keyer you wish to set the state.

## Store a Source Rules Pattern

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

## Apply a Source Rules Pattern to other Sources

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

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

## Source Rules Hold

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

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

## Bus Linking

You can create single and multiple bus links, referred to as *Parallel* and *Cascading* links. Also, you can define and associate one of the 15 definable Source Substitution Tables to a bus (each bus link can be associated with any source table), and save bus links as part of an E-MEM. Bus links are E-MEMable and their enables are Keyframeable.

**Bus Link** is an E-MEM sub-level in the User Setups, Suite Prefs, E-MEM Prefs menu therefore all the features and controls of a GV Switcher sub-level apply.

## Bus Linking Examples

A typical use of Bus Linking is to have the buses of one ME follow the selections on another with a few source substitutions. For example, if there's a special camera only used for the primary customer's feed, a Linked bus used for a secondary customer's feed might select a wide shot whenever that camera was selected on the Controlling bus.

Another example is to prevent feedback when selecting a studio wide shot. Many modern sets include monitors, and these will typically be fed from an aux bus of the switcher with program output selected. When the wide shot camera is selected on PGM-PST A bus, the camera might pick up the

monitor wall and generate video feedback. This can be prevented by associating all source selections on PGM-PST A except the wide shot camera to select PGM-PST A on the aux bus. The wide shot camera source is then associated to an alternative graphics source on the aux bus appropriate to the show.

Another possibility is to program the ME 3 A row as an extension of the PGM-PST A bus for shows that need instant access to more than 32 sources without pressing the Shift button. In this case ME 3 A is the Controlling bus and PGM-PST A is the Linked bus. In this scenario, the easiest way to set this up is to link the buses and map the sources one to one, then set the shift preference for ME 3 A to Shifted. An alternative method is to map each source on ME 3 A to a specific alternate source on PGM-PST A. Other ME 3 buses could be linked for additional extended selection. A third alternative is to map all sources on ME 3 A to select ME 3 A on PGM-PST A.

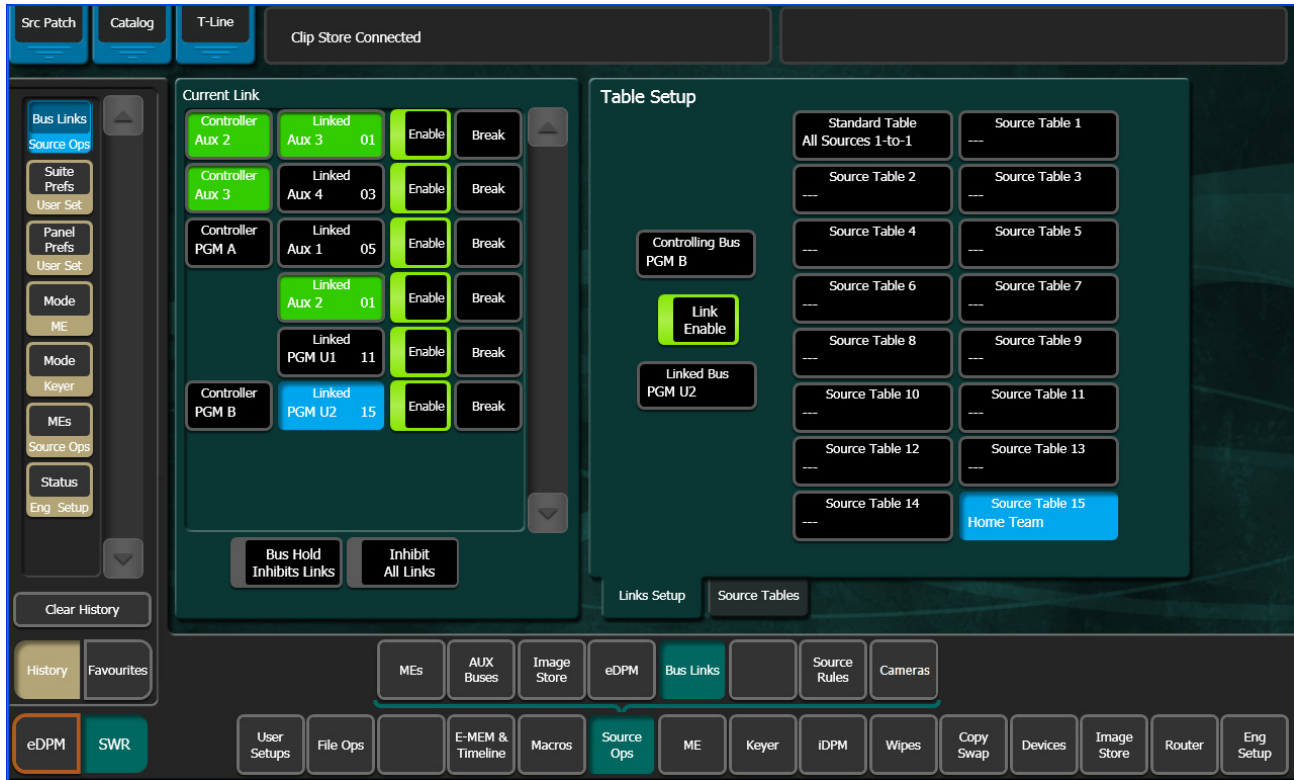
## **Bus Linking Menu**

One-to-one (Single), one-to-many (Parallel), and one-to-one-to-one (Cascading) bus links can exist simultaneously in the Bus Links, Links Setup menu.

The Bus Links menu is divided into two tabs, the Links Setup menu and the Source Tables menu. The Links Setup menu has the Current Link pane (on the left) and the Table Setup menu (on the right).

Use the Bus Links menu to link, enable/disable, break, and choose the source table for bus links. (*Standard Table All Sources 1-to-1* is the default Source Table.)

Figure 84. Link Setup Menu

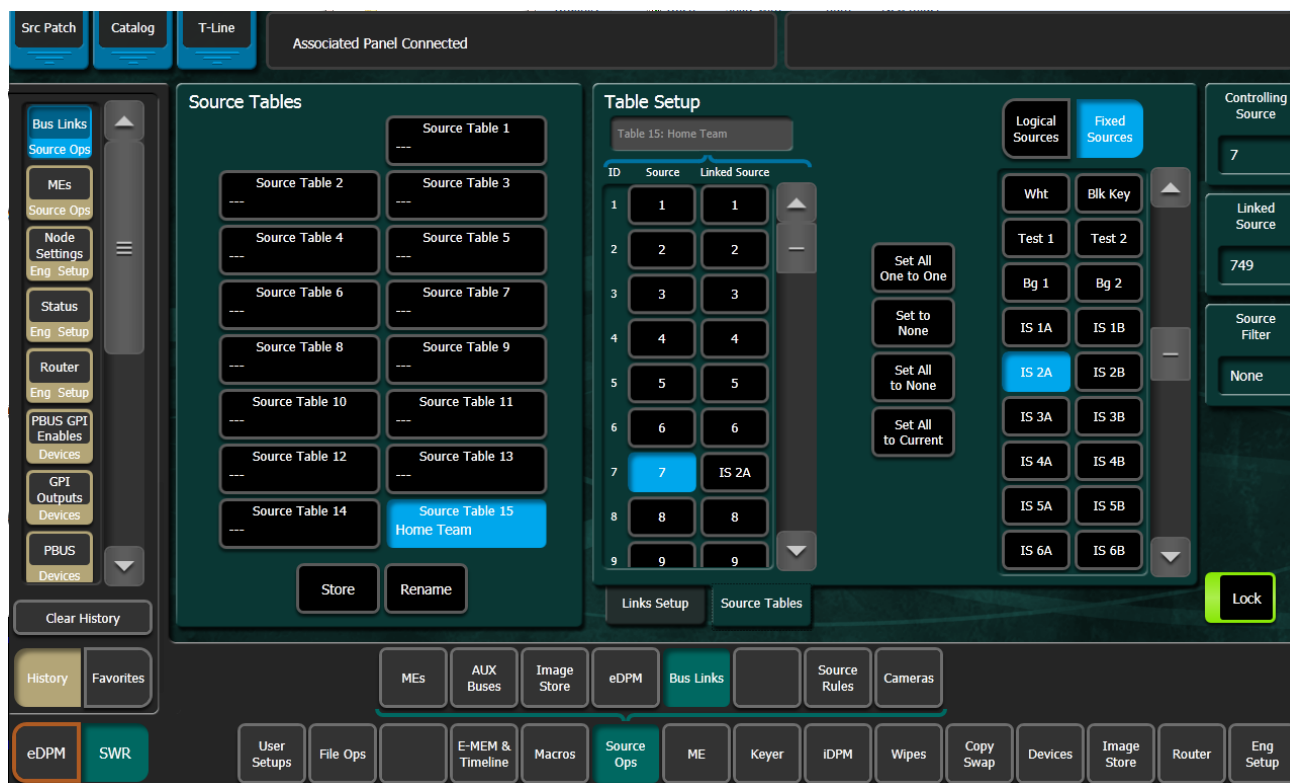


Selected **Controller** bus and **Linked** bus buttons turn blue when selected in the Current Link pane. In the example in [Figure 84](#), the Linked bus button **PGM U2** is the selected button.

The Source Tables menu has the Source Tables pane (on the left) and the Table Setup pane (on the right). The Source Tables menu is used to select source substitutions within source tables and create a named relationship between the source table and the links to which they are assigned.

Give a source table a descriptive Source Table Name or rename a source table by selecting the **Rename** button.

Figure 85. Source Tables Menu



## Bus Linking Source Substitution Tables

There are 15 configurable *Source Tables*. Each can be assigned to one, many, or all bus links once configured in the Source Tables menu.

A source table (or lookup table) can be configured and applied to every bus link. This frees up resources and allows a faster more efficient way of applying the same source substitutions to multiple bus links. Also, you are able to create named relationships between the source table and the bus links to which they are assigned.

The *Standard Table All Sources 1-to-1* Source Table is the default. One of the other 15 configurable Source Tables can be assigned once configured.

## Linked Source Buttons

**Set All One to One**—Sets all sources one-to-one.

**Set to None**—Sets selected source's Linked Source to none (blank).

**Set All to None**—Sets all Linked Sources to none (blank).

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

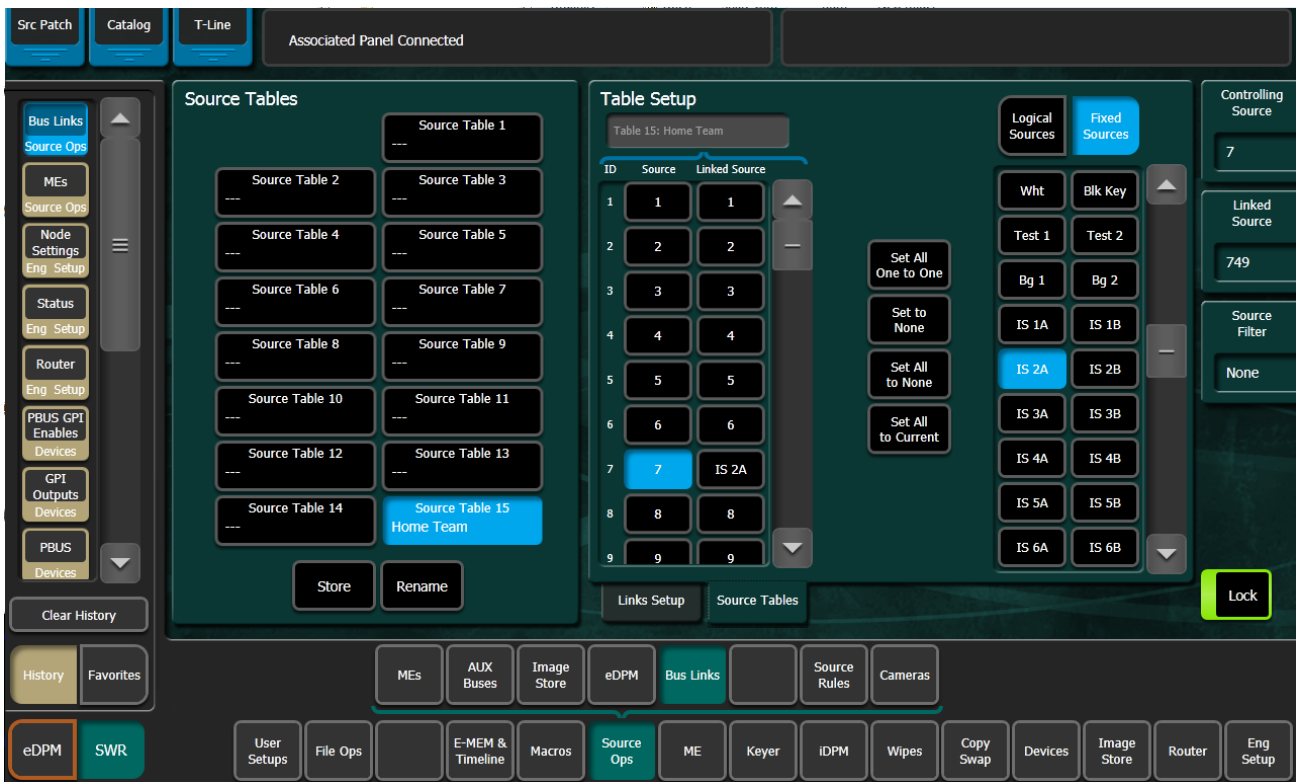
**Store** button—Allows the current source table to be stored (copied) to another source table.

## Configuring a Source Table with Source Substitutions

The default is one-to-one, i.e. Source 1, Linked Source 1, Source 2, Linked Source 2, etc. You can substitute the current Linked Source (Linked Source column) with any source from the scrolling Source List.

1. Select a source table in the Source Tables list.

Figure 86. Source Substitutions—Source Tables Menu



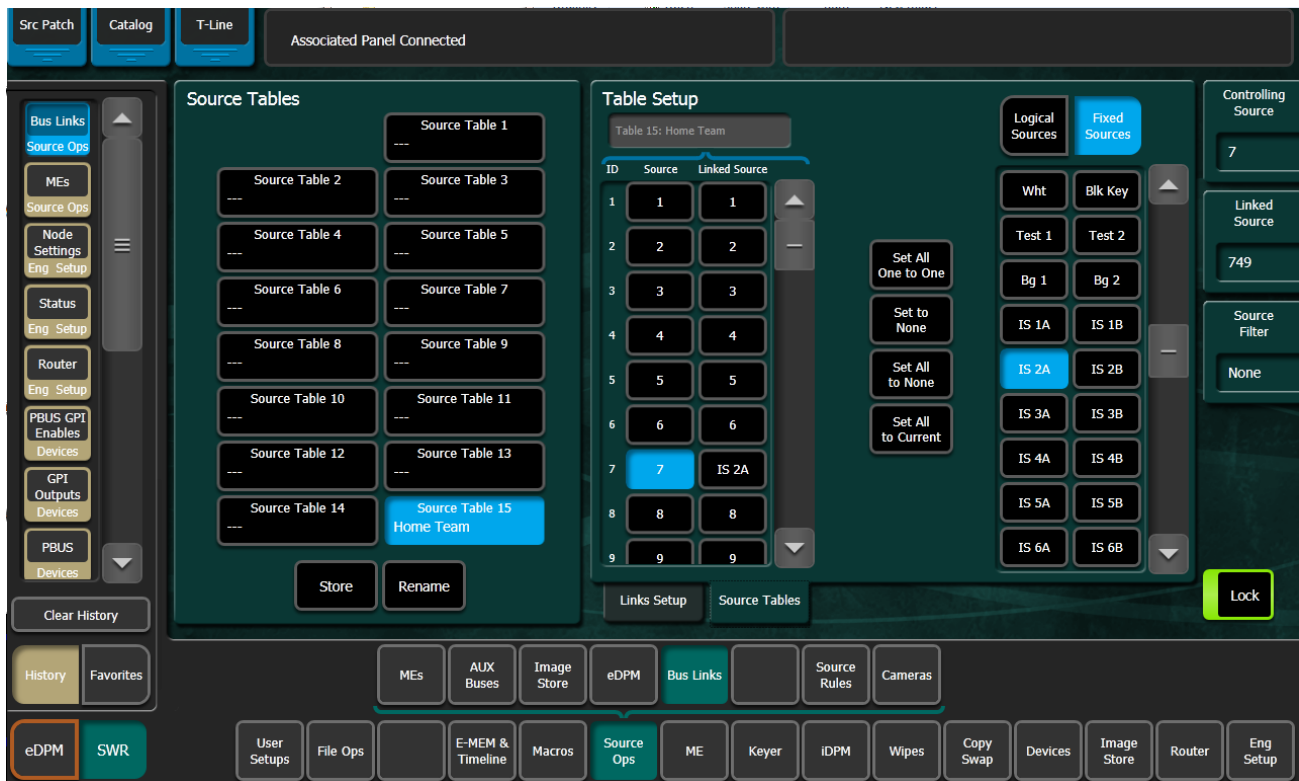
2. Rename the Source Table (recommended) by selecting a Source Table data pad, selecting the **Rename** button, and entering a new name.
3. Select a source in the Linked Source column of the Source/Link Source scrolling list the Table Setup pane.
4. Select the substitute source in the scrolling Source List.
5. Repeat the first two steps for all source substitutions.

## Storing (Copying) Source Table Substitutions to another Source Table

Source Table configurations from one source table can be stored (copied) to another using the **Store** button.

1. Select the source table from the Source Tables scrolling list you wish to store (copy) from, to another source table.

Figure 87. Storing Source Substitutions—Source Tables Menu



2. Select the **Store** button.
3. Select the source table you wish to store the configuration to (destination).

## Changing Source Tables for a Bus Link

The Source Table is assigned to the bus link. Select the **Linked** bus data pad in the Link Setup menu, Current Link pane, to change the Source Table for that bus link. The Source Tables column becomes available. Select another source table for the bus link.

## Source Table File Operations

Source Tables are part of GV Switcher file operations: File Ops, Source Tables menu. You can perform all the same file operations: copy, paste, save, load, etc., as with other File Ops menus. For more about File Operations, see *File Operations on page 59*.

## Linking Busses one-to-one

1. In the Links Setup menu, select the **Controlling Bus** data pad.
2. Select the ME/Aux/eDPM menu tab.
3. Select the desired bus or eDPM input.
4. Select the **Linked Bus** data pad and repeat Steps 1-3.

The Link Setup menu displays the newly linked busses in the Current Link pane. The link is enabled and the Standard Source Table is selected as the default (Source Tables are grayed out).

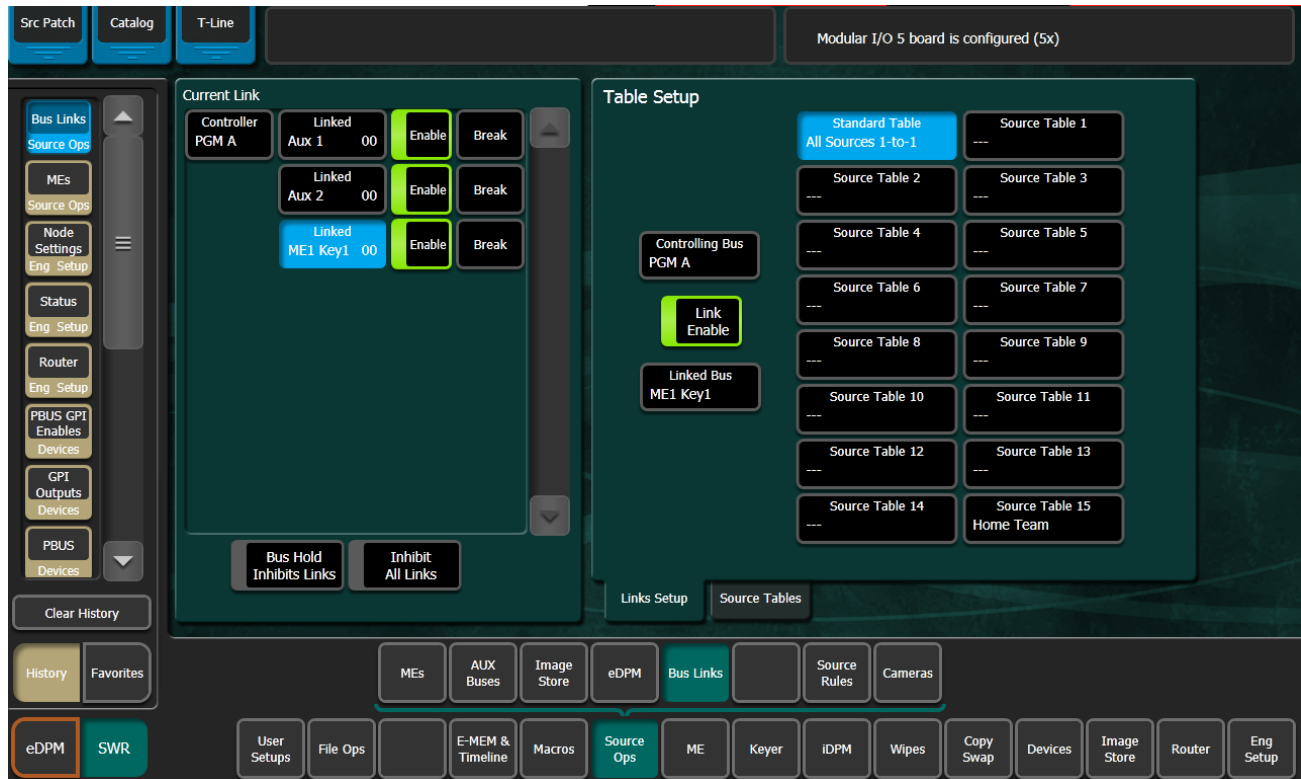
You can disable or break the link using the **Enable/Break** buttons in the Current Link pane (the **Enable** button in the Table Setup pane will also enable/disable the selected link).



## Creating Parallel Bus Links

*Parallel Links* allow the controlling bus to control more than one linked bus. In the example in [Figure 88](#), PGM A is the controlling bus and Aux 1, Aux 2, and ME1 Key1, are all linked in parallel to PGM A.

Figure 88. Parallel Links



1. Select the **Controlling Bus** data pad in the Table Setup pane; the Controlling Bus selection menu is displayed.
2. Select the **ME Busses**, **Aux Busses**, or **eDPM Inputs** tab and select the desired bus. The selected bus is displayed in the **Controlling Bus** data pad (in the example in [Figure 88](#), the selected bus is PGM A).
3. Select the **Linked Bus** data pad in the Table Setup pane; the Linked Bus selection menu is displayed.
4. Select the **ME Busses**, **Aux Busses**, or **eDPM Inputs** tab and select the desired bus. The menu closes and returns to the Bus Links menu. The selected bus is displayed in the **Linked Bus** data pad.
5. Select the **Linked Bus** data pad again and select the next bus you wish to link to the controlling bus.
6. If desired, assign different source tables to the bus links:
  - a. Select a **Linked Bus** data pad in the Current Link pane.

- b. Select a source table in the Table Setup pane.

## Creating Cascading Bus Links

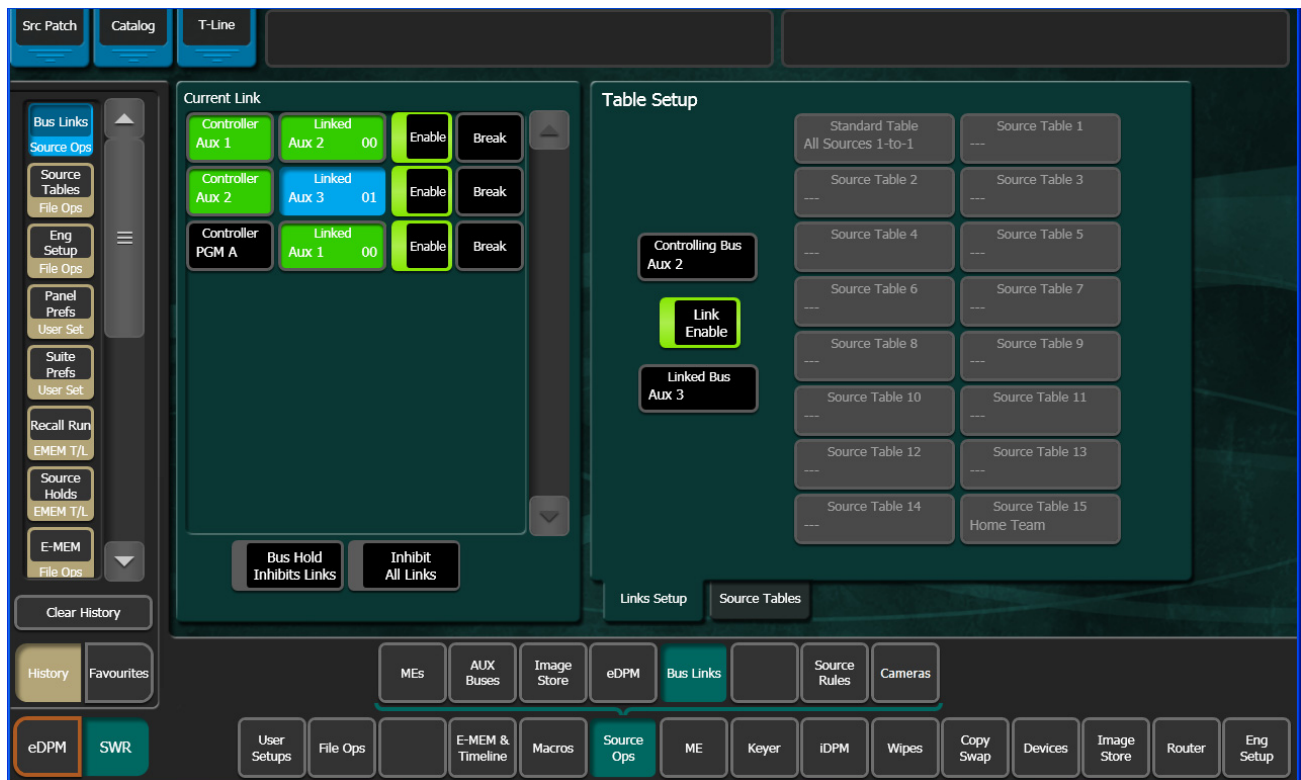
In *Cascading Links*, a controlling bus (A) has a linked bus (B) which in turn acts as the controlling bus for another linked bus (C), and so on. Changing a source on the controlling bus (A) will cause a change on both linked busses (B and C).

Example: In [Figure 89](#), Controller PGM A controls Linked Aux 1, Linked Aux 1 is the controller for Linked Aux 2, and Linked Aux 2 is the controller for Linked Aux 3.

**Button Color Definitions**—The following applies for Cascading Links in the Current Link pane, as seen in the example in [Figure 89](#):

- **Black**—Controller but not controlled: PGM A Bus is a controller but is not controlled so it is black in color.
- **Green**—Controlled and controls: Aux 1 Bus and Aux 2 Bus although controllers, are also controlled so they are green in color.
- **Blue**—Aux 3 Bus is controlled but is not a controller therefore it is blue.

Figure 89. Cascading Bus Links



1. Select the **Controlling Bus** data pad in the Table Setup pane; the Controlling Bus selection menu is displayed.
2. Select the **ME Busses**, **Aux Busses**, or **eDPM Inputs** tab and select the desired bus. The menu closes and returns to the Bus Links menu. The selected bus is displayed in the **Controlling Bus** data pad (in the example in [Figure 89](#), the selected bus is PGM A).
3. Select the **Linked Bus** data pad in the Table Setup pane; the Linked Bus selection menu is displayed.
4. Select the **ME Busses**, **Aux Busses**, or **eDPM Inputs** tab and select the desired bus. The menu closes and returns to the Bus Links menu. The selected bus is displayed in the **Linked Bus** data pad.
5. Select the **Controlling Bus** data pad again, in the Table Setup pane; the Controlling Bus selection menu is displayed. Select the same bus as is currently displayed in the **Linked Bus** data pad (your previous selection). The linked bus is now also a controlling bus.
6. Select the **Linked Bus** data pad again in the Table Setup pane and select another linked bus.

Repeat this process for each controlling and linked bus you wish to add to the cascading links.

7. If desired, assign different source tables to the bus links:
  - a. Select a **Linked** Bus data pad in the Current Link pane.
  - b. Select a source table in the Table Setup pane.

**Note** The **Inhibit All Links** button at the bottom of the Current Links pane must be off for the links to be active.

## Bus Linking Rules and Restrictions

- The Switched Preview, Primary Preview, and Image Store input buses cannot be configured as Linked buses.
- An Aux bus associated with a DPM cannot be configured as a Controlling bus. However, these buses may be configured as Linked buses.
- Once the Bus Linking associations have been established and are enabled, selecting a source on a Controlling bus that is associated with a source on a Linked bus will make the Linked bus select its associated source.

Special operating rules:

- Source Override—Holding down a source select button on a Linked bus prevents that bus from changing its sources when Controlling bus source selections change.
- Bus Pair Rules—GV Switcher source selection buses can operate in pairs. ME keyer buses operate in video fill/key cut mode. Aux buses can be configured in pairs, either as video fill/key cut or as video/video for external DPMs.

When a bus pair is involved in bus linking, the following rules apply:

- Key cut selections on video fill/key cut bus pairs does not affect the key cut source on a linked bus (split key cut selections don't link).
- The fill/A side of the Controlling bus is always sent to the fill/A side of the Linked bus.
- If the Controlling bus is in video/video mode, the B side selection will be sent to the Linked bus.
- If the Linked bus is in video-video mode, a B side source change from the Controlling bus will change the Linked bus's B side.

**Note** A video-only bus behaves as if it is the A side of a bus pair.

## Bus Linking Management

Individual bus links are enabled and disabled with the **Link Enable** button in the Controlling bus pane. When enabled, commands will be sent from the

Controlling bus to the Linked bus, provided all links are not inhibited (see below). Link Enable is keyframeable.

Other controls on this menu can be used to manage bus links.

**Bus Hold Inhibits Links** – This control affects the behavior of the Control Panel **Hold** button for all Linked buses. When **Bus Hold Inhibits Links** is On and the **Hold** button on a Linked bus is also On, that Linked bus will ignore bus link commands and will not change sources when Controlling bus sources change. Note that the **Hold** button retains its existing functionality, keeping that bus from changing sources when an E-MEM register is recalled.

**Inhibit All Links** – Overrides all **Link Enable** settings to disable all active bus links. This does not change the individual **Link Enable** settings, however. Turning **Disable All Links** off will re-enable any bus links with **Link Enable** on.



# *Device Control*

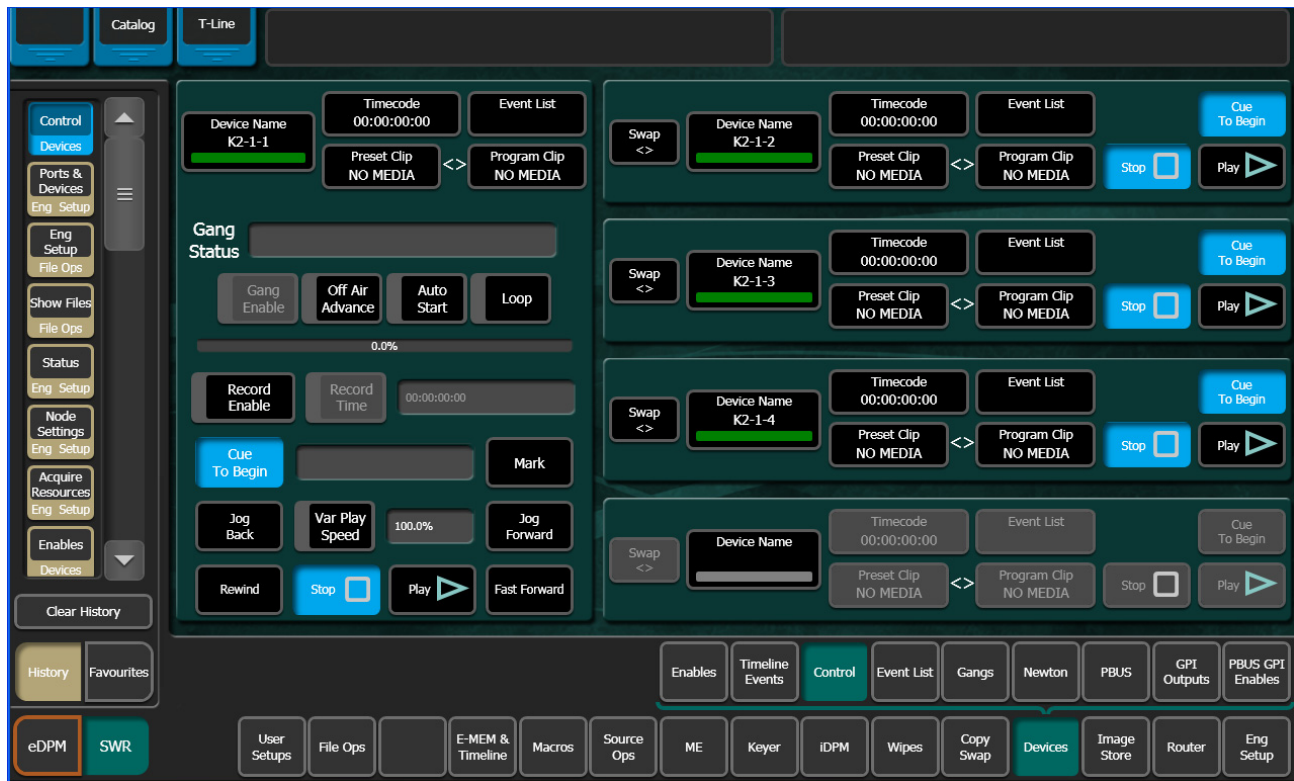
The GV Switcher system can control devices like DDRs, VTRs, character generators, etc., and can also control the Image Store clips and stills and GPIs to any external device. GV Switcher device control only supports devices that have been associated with GV Switcher sources.

## **Device Control with the Menu**

External devices can be controlled from the menu application. There is also Control Panel device control for Karrera K-Frame and more extensively for Kayenne K-Frame. Device Control for GV Korona K-Frame systems is provided by the menu only, however devices can be controlled using E-MEMs from the Master E-MEM module in all K-Frame Control Panels.

To control devices with the Menu Panel, select **Device, Control**.

Figure 90. Devices Control Menu



Standard **Cue To Begin**, **Stop** and **Play** controls are available for all devices configured for control. The **Swap** buttons transfer the control of devices between panes.

Additional **Rewind**, **Fast Forward**, **Var Play Speed**, **Mark** and **Jog Forward/Back** controls are available in the larger control pane on the left.

## Clip Loading

External devices are controlled using various protocols (BVW, Odetics, AMP). These protocols have different capabilities, and specific models of external devices may support only specific protocols. The exact clip loading procedures, if available, will vary depending on the device model and protocol being employed.

In general, clips are loaded from the Devices Control menu by selecting the **Program Clip** data pad in a Device Control pane, and then selecting the clip from the list displayed.



## Clip Directory (AMP Protocol)

On the Devices Control menu, selecting a **Preset Clip** or **Program Clip** data pad brings up a menu from which you can select the desired folder and then choose a clip in that folder to load for playback (Figure 91). A similar menu is used with the Clip Browser on the Devices Event List menu, and for loading clips in the Timeline Events menu.

**Note** GV Switcher systems do not support Unicode characters in the AMP Protocol.

If you change a clip locally on the Summit/Solo server, that clip name will be updated on the GV Switcher Devices menus. If the folder list or clip list are incomplete, re-enabling the device will fetch the entire folder and clip list. A maximum of 20 folders is recommended along with a maximum of 20 clips per folder.

**Note** Do not create file or folder names that have the pound character (#) along with either the dash (-) or underscore (\_) character, and avoid blank spaces (for example, use “DeadEnd” not “Dead End”. This can inhibit clip access).

Figure 91. Folder and Clip Selection Menu



## Timeline Event Information and Work Buffer Values

The **Device Summaries** and **Current Device** data pads update to show the current state of the work buffer. This indicates two things. First, it shows what

events exist on each keyframe as it is encountered during effect run or time cursor navigation. Second, it shows what events will be added to the timeline if a new keyframe is inserted or one is modified. This is consistent with other work buffer parameters, but requires some discipline when working with events. For other parameters, inserting keyframes without changing values will result in no change between keyframes. But for events, this same practice will result in reissuing the event at each keyframe. It is a good practice to use the **Clear All Events** or **Clear Delegated Device Events** button after inserting or modifying a keyframe containing external device events. This prevents those same events from being duplicated when the next keyframe is inserted.

## Preparing the External Device for Control

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

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

2. Go to the Devices, Enables menu, and select the device you wish to enable in the Device Enables pane (left), and select the **Enable Selected** button (or enable all using the **Enable All** button) in the Enables pane.

Figure 92. External Device Enables Menu



## Controlling an External Device (Example)

1. Go to the Timeline Events menu, select the **Clear All Events** button. This ensures only that device's events will be specified in the keyframe.
2. Go to the Timeline Events menu and select the button of the desired device to delegate the menu to that device.

Figure 93. Timeline Events Menu, Device Delegated



3. Select the **Load** button on the right.
4. Select the **Cue** button to enter the timecode:
  - If you want to play the clip from its starting point, it will automatically cue to this location when loaded.
  - If you do not want to play the clip from its starting point, either cue the device to the desired location or enter the timecode value manually.

## Controlling an External Device Using Timeline Events and E-MEM

1. Set up the Control Panel to the desired state, making sure the DDR source is *not* selected on the PGM PST A bus.
2. Learn this state to an E-MEM register as the first keyframe of the effect.
3. Go to a point later in your effect giving sufficient time for the clip to load and cue. For example, go to three seconds by pressing **GoTm, 3, •, ENT**.
4. Select the **Clear Events** button in the Events pane to deselect the old commands. This helps prevent accidental multiple load and cue commands in the same effect.

5. Select the **Play** button on the Timeline Events menu.
6. Set up your control panel to the desired state, including selecting the DDR on the PGM-PST A bus.
7. Press **<Insert** or **>Insert** to add the keyframe information to the E-MEM register.
8. Go to a point later in your effect giving sufficient time for the desired material in the clip to play. For example, for a 20 second clip that started at three seconds, press **GoTm, 23, •, ENT**.
9. Select the **Clear Events** button in the Events pane to deselect the old commands.
10. Select the **Stop** button.
11. Set up your control panel to the desired state, including selecting an alternate source on the PGM-PST A bus.
12. Press **<Insert** or **>Insert** to add the keyframe information to the E-MEM register.
13. Select the **Clear Events** button in the Events pane to deselect the commands.
14. Recall and run the register. The clip will load and cue, be taken on-air, play automatically, be taken off-air and then stop.

## Playing a Video and Key Pair of Sources in Sync from an External Device

1. Besides **EXT DEV** (or whichever button your machine control device has been associated with), make sure **PGM PST** level is also enabled in the Master E-MEM Module.
2. In the Timeline Events menu, delegate the device to be used for the video signal, and select **Load** and **Cue** events for it. Do not add these events to a keyframe yet.
3. Delegate the device to be used for the key signal, and select **Load** and **Cue** events for it.
4. Set up the Control Panel so PGM PST **Key 1** is not on-air and the DDR source is not selected on the PGM PST A bus.
5. Add this to the first keyframe of the effect by pressing **<Insert** or **>Insert**.
6. Go to a later point in your effect giving sufficient time for the clips to load and cue. For example, press **GoTm, 3, •, Enter**.
7. Select PGM PST **Key 1** in the Next Transition area so it will mix on, and setup a split key with the two DDR channels.

8. Select the **Clear Events** button in the Events pane to deselect the old commands.
9. Delegate the device playing the video and select a **Play** event for it.
10. Delegate the device playing the key and select a **Play** event for it.
11. Add these events to the same keyframe of the effect by pressing **<Insert** or **>Insert**.
12. Select the **Clear Events** button on the Timeline Events menu to un-select the commands.
13. Put the PGM PST A bus in *Hold* to prevent the effect from changing its source.
14. Recall and run the effect. Both DDR channels will roll in sync and the system will mix the key on air at the instant they play.

## Loading a Clip to Play On Air Later with Auto Start

1. In the Timeline Events menu, select the button of the desired device to delegate the menu to that device.
2. Select the **Load** button on the right. If the correct clip is not displayed, select the data pad and select the clip from the list.
3. Set up the Control Panel to the desired state, making sure the DDR source is *not* selected on the PGM PST A bus. DDRs cannot cue and buffer instantaneously, so should not be placed on-air immediately when the effect is recalled.
4. Learn this state to an E-MEM register.
5. Select the **Clear Events** button on the right to un-select the Load command. This helps prevent accidentally creating unwanted load and cue commands when editing effects later.
6. Make sure **Auto Start** is on in the Devices, Control menu. Each device has its own auto start flag. Note that this is not a keyframeable E-MEM control, and so it must be selected manually for use.
7. Recall the register. The clip will load.
8. After allowing sufficient time for the clip to load and buffer (which varies with different DDR models), take the DDR on-air. The clip will play automatically.

Because a Stop command was not entered, the clip will continue to play till it reaches its end or it is stopped.

## Building an Event List

The event list editor is designed for speed and does not follow traditional editing operations. For example, a normal insert operation would have the operator select the insert point in the event list, select the clip to be inserted in the browser, and then press **Insert Before** or **Insert After**. Instead, the Event List editor makes insert and replace operations a mode and modifies what happens when a clip in the browser is selected. This allows an event list to be built by turning on **Insert After**, then selecting clips in the order they should appear in the event list. An insert operation is reduced from two button presses to only one.

1. Select **Devices, Event List** to go to the Devices, Event List menu.
2. Select the **Insert** button so its indicator is illuminated.
3. Scroll the Clip Browser and select the first clip for the list. It will be added to the Event List in the right pane, and the **Insert** button legend will change to **Insert After**.
4. Continue to select clips in the desired order with the **Insert After** button on to build the rest of the Event List.
5. If you need to re-arrange the order of the clips in the Event List, use the list editing buttons (**Move Up**, **Move Down**, etc.). Remember to first select the clip in the Event List where you wish the re-arrangement to occur before you use these buttons.
6. When the Event List is complete, it can be used for your production without saving it. The list will only reside in RAM, however, and so will be lost if the GV Switcher system is reset.

To save the Event List for reuse in the future, select **Save List**, navigate to the destination folder (creating a new one if desired), enter a name for the list, and then select **Save**.

**Note** K-Frame Image Store channels do not support the Gang function.

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

## E-MEM Control of External Devices

### Introduction

E-MEM effects can be used to:

- Load, cue, play, and stop DDR clips, and
- Cue, play, and stop tapes in VTRs.

E-MEM Device Control is good for recalling the same clips repeatedly, and for integrating clips into specific switcher effects. Manual control is appropriate when different clips are used each time, and when clips are not used in a switcher effect (like rolling a news story and taking it directly to air.)

E-MEM Device Control operates independently from the manual controls on the Multi-Function or Device Control Module, but both mechanisms can be used together. For example, an E-MEM recall can make a VTR cue up, then the module can be used to roll that tape.

E-MEM External Device Control utilizes *events*. External device events are different from other parameters in the K-Frame E-MEM system. Rather than defining a value at a keyframe and smoothing the transition between keyframes with interpolation, a device event consists of instructions sent to the external device at the time cursor passes the keyframe during an effect run. This similar to GPI and PBus triggers.

Controlling an external device typically requires spacing the instructions over two or more keyframes. The space between keyframes allows the device to respond to the first set of instructions. For example, a DDR or VTR takes time to load and cue before it can play. The effect must be built so that a play event does not occur until the device is ready, or the command will be executed late or not at all.

The K-Frame system does not play a DDR or VTR in sync along with the timeline as is done with digital effects devices controlled by CPL. Instead, the K-Frame system issues a play command and then lets the device manage its own playback. This means that if the K-Frame effect is lengthened or shortened, the device's playback may not line up with the effect as intended. Device playback does not speed up or slow down if the duration of the effect changes.

## Configuration

K-Frame Device Control option software must be installed and configured to permit either manual or E-MEM control of DDRs and VTRs. Sources will also need to be configured as external devices in Eng Setup.

E-MEM control for external devices is by default assigned to the **Misc 16 EXT** Master E-MEM Module enable group button. This can be changed in the **User Setups, Suite Prefs, E-MEM Prefs** menu.

## Operation

E-MEM Device Control is accomplished by:

- Associating an external device with an E-MEM enable group button (factory default is **Misc 16 EXT**),
- Enabling the E-MEM button for that enable group and, if editing the effect, delegating that enable group for editing,



- To run E-MEM Device Control effects, ensure the device(s) are Enabled for E-MEM control, using the **Devices, Enables** menu. Devices do not need to be enabled in this menu when building an effect, however, and in fact it may be desirable to disable them at that time.
- Specifying what Device Control events will be added to a keyframe in the effect, using the **Devices, Timeline Events** menu,
- Adding the Device Control keyframe to the effect (**Insert Before/After, Modify KF** in the **Timeline Edit** menu, or **Learn** in the **Recall Run** menu),
- Clear events after adding the keyframe, to prevent accidentally adding additional machine control commands to other keyframes,
- Specifying and adding additional Device Control keyframes if multiple keyframes are desired, clearing all devices each time, and
- Recalling and running the effect.

When the effect register is recalled, the first keyframe can, for example, command the device to load and cue. When the effect runs, the device can be commanded to play when a later keyframe with a play event is encountered on the timeline.

The device may not play if it has not fully cued when the effect is run. It is up to the operator to build the effect to accommodate cue and load time. Also, running effects with external device events backwards will not cause the clip or tape to play backwards. The order of the commands will be reversed and if the clip or tape plays at all it will not be at the anticipated time or direction.

## Timecode Entry

Timecode is entered in hours, minutes, seconds, frames format, with optional • (dot) separators. Typing in partial values will enter the smaller value. For example, typing in **5** enters five frames (00:00:00:05). Typing in **5 •** enters five seconds (00:00:05:00). Typing in **5 • 4** enters five seconds and four frames (00:00:05:04). Typing in **5 • 4 • 3 • 2** enters five hours, four minutes, three seconds, and two frames (05:04:03:02).

You can enter timecode values without • (dot) separators. Simply enter the exact value. Leading zeros are ignored. For example, 00:02:00:11 can be entered by typing **2 0 0 1 1**, **0 2 0 0 1 1**, or **0 0 0 2 0 0 1 1**.

## Multiple Events on the Same Keyframe

More than one external device event can be specified to occur in the same keyframe. If more than one event is specified, they are sent to the device in Load, Cue, Play order. For example, you can specify only **Load** which will make the device load to the start of the clip, or you can specify **Load** and **Cue** which will load and cue the device to the entered timecode. Both **Play** and

**Stop** cannot be specified on the same keyframe, however. Turning one on automatically turns the other off.

## Rosstalk XPression Device Control

K-Frame systems provide control of up to four external XPression graphic devices and the ability to fire up to four GPI triggers, using Rosstalk. XPression controls can be recorded into macros that can be triggered from any K-Frame Control Panel or menu application.

### Configure an External Device for XPression Control

You can configure up to four XPression devices; GFX 1-GFX 4, allowing you to send commands from the Control Panel or menu to your external device. You can take IDs, fire up to four GPI sets, clear buffers, and override or fine tune the controls.

1. Select **Eng Setup, Ports & Devices, External Devices** in the GV application menu.



2. In the External Devices pane, scroll down until GFX 1-GFX 4 is displayed and select one.

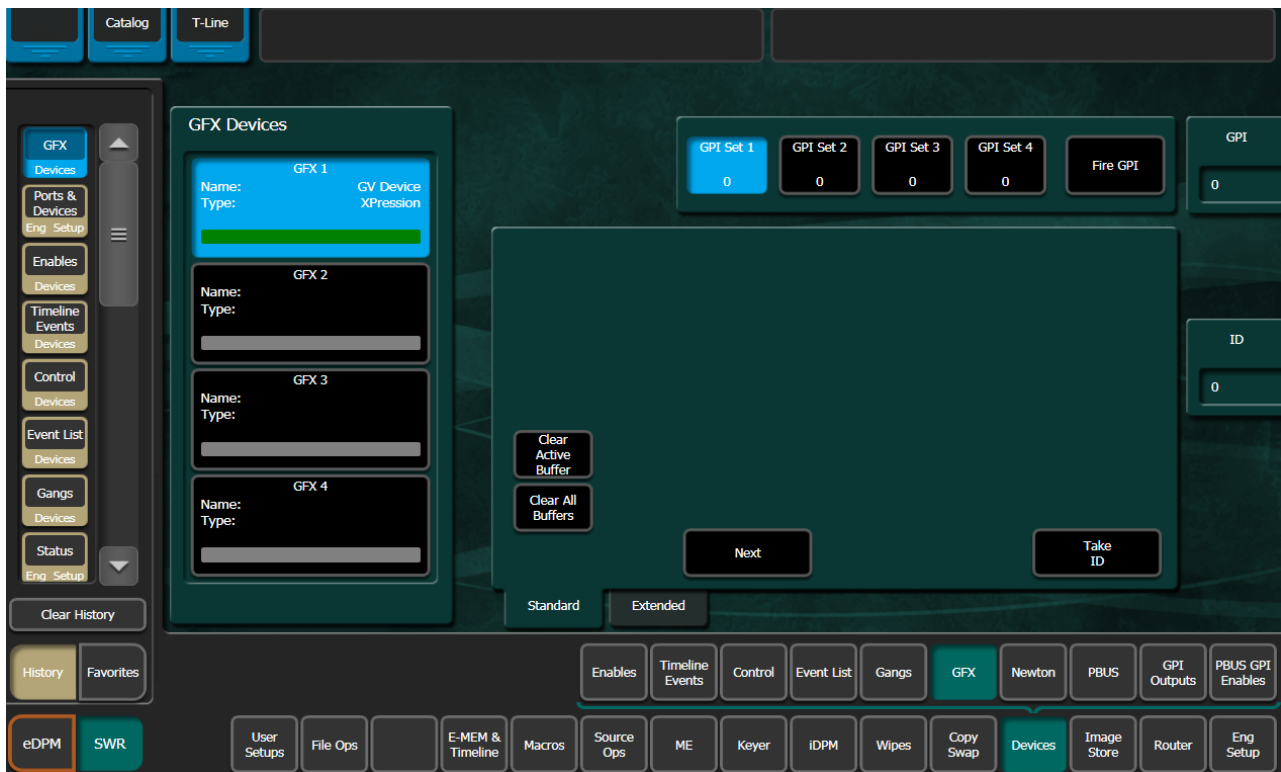
3. Select the **Device Name** data pad, enter a name using the pop-up keypad, and select **Enter**.
4. Select the IP Address data pad and enter the IP Address of an XPression device in the pop-up keypad and select **Enter**.

## Take XPression IDs

The Standard GFX workflow allows you to take IDs from an external XPression device then take the next IDs in the list. Functions are also provided to clear the active buffer and all buffers.

1. Select **Devices, GFX** in the menu.

Figure 94. GFX Standard Menu



2. Select an ID by either scrolling with the soft knob or selecting the ID data pad and entering an ID and selecting **Enter**.
3. Select **Take ID**.
4. Optionally, select **Next** to take the next ID in the list; repeat to take the next ID and so on.
5. To clear the buffers, either select the **Clear Active Buffer** or **Clear All Buffers**.

## Using Extended GFX XPression Controls

Setup XPression controls for an ID, a buffer, and a layer, and send those commands to your external device. Typically, the commands are embedded in the ID but the menu function buttons allow you to override or fine tune those controls and clear buffers.

1. Select **Devices, GFX, Extended** in the menu to access the GFX XPression controls.

Figure 95. Extended GFX XPression Control Buttons.



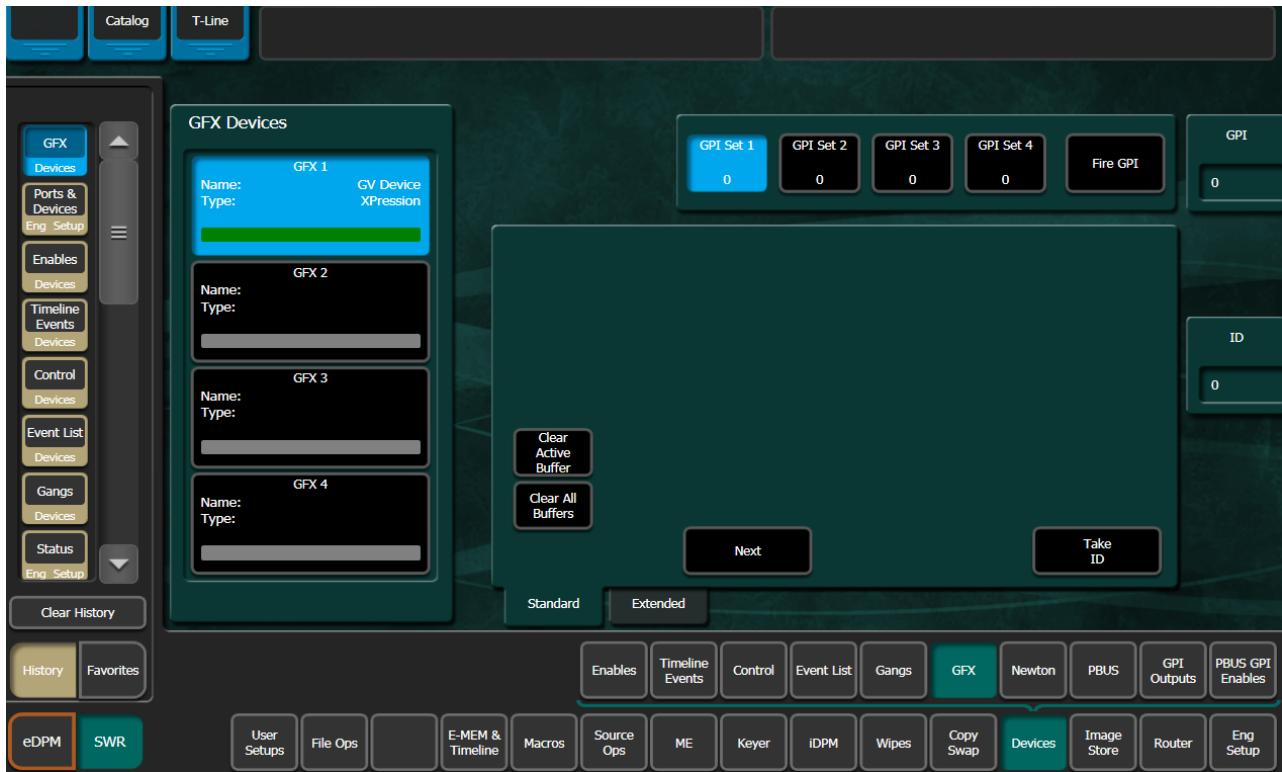
2. Select an **ID, Buffer, or Layer** by either scrolling with the soft knob or selecting the ID data pad and entering an ID and selecting **Enter**.
3. Use the function buttons in the Extended pane to set controls for IDs, Buffers and Layers

## Fire XPression GPI Sets

There are four XPression GPI Sets that can be fired from the GV switcher, GPI Set 1-GPI Set 4. There is macro support for firing the GPIs. Creating a macro to fire a GPI means the GPI ID you preset to one of the four GPI buttons will be fired when the macro is triggered; not GPI 1-GPI 4 presets but the GPI ID assigned to each.

1. Select **Devices, GFX** in the menu.

Figure 96. GPI Fire Menu Pane



2. Select a GPI number you have configured in the external device by either scrolling with the soft knob or selecting the GPI data pad and entering the GPI and selecting **Enter**. Repeat for each GPI Set preset.
3. Select one of the GPI presets, then select **Fire GPI**.

**Note** Only one GPI preset can be fired at a time.

You can also create a macro to select and fire the GPI preset ID, from the Control Panel or Macros menu.

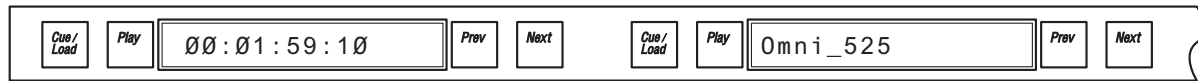
## Kayenne K-Frame Device Control from the Control Panel

The following provide device control operations from the Kayenne K-Frame system:

- System Bar,
- Local Aux Module,
- Multi-Function Module,
- Module Option, and
- The Menu Panel or menu on a PC.

## System Bar

Figure 97. System Bar Example



Device control from the System Bar is performed in the Device Control Groups (Two for a 1-ME Kayenne system and six for a 2-ME (2-ME Stripes) and larger), which consists of a 16 character Status Display (displays the current clip) and Play, Cue/Load, Next Clip, and Previous Clip buttons.

**Note** **Off Air Advance** and **Auto Start** buttons are accessed from the menu and the Multi-Function Module (**Devs, ADV/APLY**), not on the System Bar. Also, Rewind, Fast Forward, Stop, Jog +/Jog -, Mark In, and Gang Rolls are not supported on the System Bar (but are supported in the Device Control Module).

To associate a device with a Device Control Group, hold down a source select button that has a device attached, then press the PREV and NEXT buttons together (or you can press and hold down the PREV and NEXT buttons and then press a source button).

Group buttons:

- **Play**—Causes the associated device to play (pressing again causes device to pause).
- **Cue/Load**—Pressing after a PREV or NEXT button press causes a load and cue command to be sent to the device, subsequent presses causes a command to be sent to the device to 'cue' to its in-point.
- **Next Clip/Previous Clip**—Causes the previous or next clip name in the frame-maintained clip stack list (per device), to be brought into the Status Display window.

## Local Aux Module

### Ganging

The Gang Control function in the Local Aux Module allows a single point of control for multiple devices. The points of control are:

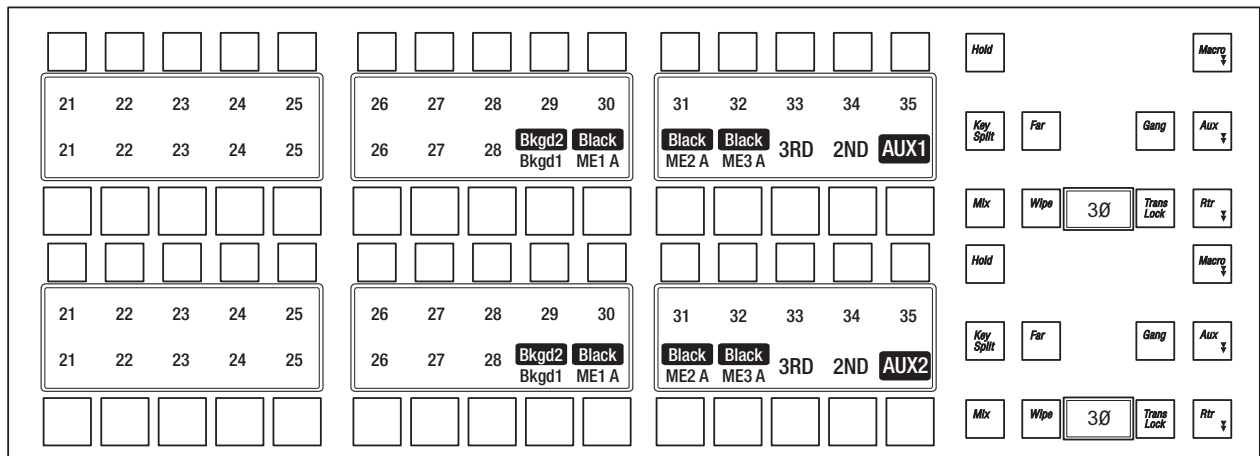
- The right-most Device Control Group on the System Bar, and
- The Device Control Module option.

**Note** An Aux bus link overrides a set delegate association in the System Bar.

Kayenne systems equipped and configured properly support device control of Profile DDRs and VTRs. The Gang function permits control of multiple external devices with the same set of panel controls. Devices can be ganged so they play together at the same time (original and backup tapes, for example).

**Note** The Kayenne Gang function does not synchronize multiple devices and there is a possibility devices may not respond to a Play or Stop command at precisely the same time. This may cause a slight offset in playback of multiple clips.

Figure 98. Local Aux Module



To set up a gang for control, perform the following:

1. Press one of the **Gang** buttons on the Local Aux Module (right). GANG is displayed in the top row however the button displays are blank. The bottom row display shows sources mapped to buttons on the Local Aux Module, in the Panel Prefs, Button Mapping menu. Buttons are colored white and are low tally.
2. Press the source select buttons of the devices to be ganged. The source select button for each device will change to green, high tally as they are pressed.

The gang is dynamic so toggling sources on and off adds/removes them from/to the gang.

3. Press the Gang button again to exit the Gang mode. The gang remains.

### System Bar

Gangs can be controlled using the right-most Device Control Group on the System Bar. Play, Cue/Load, and Previous and Next commands are all supported (see *System Bar* on page 212).

## Module

Panel Gangs (Local Aux Bus gangs) can also be controlled with the optional Device Control Module. Stop, Play, Rew, Fast Fwd, Forward Jog, Reverse Jog, Mark, etc. are operational in Gang mode (see *Device Control Module on page 220*). Panel Gangs and the gang on the 'F' button (of A-F) are the same when the **SDEL** button is selected. Gang device selections made in the Device Control Module affect gang selections in the Local Aux Bus Module and vice versa.

## Multi-Function Module

The Multi-Function Module supports Single and Multiple Device Control. In Single Device Control mode, you have full VTR control of an Event List right on the Control Panel. In Multiple Device Control mode, you can select and control up to eight devices at a time from the Control Panel, with Stop, Cue, and Play for each (including gangs).

### Single

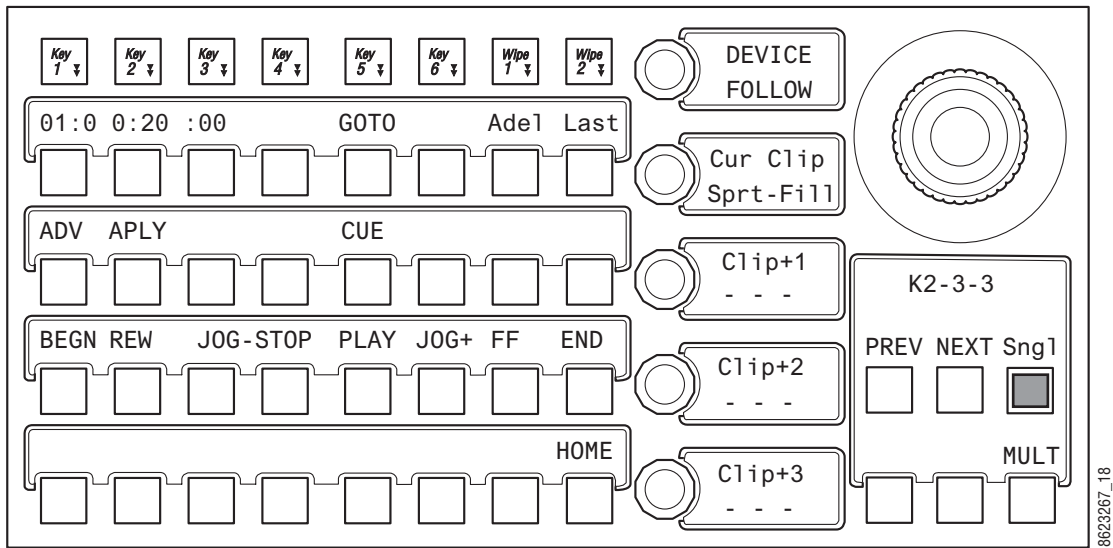
To place the Multi-Function Module in Single Device Control mode, press the **Devs** button from the HOME position, then press the **Sngl** button located below and right of the joystick on the Multi-Function Module.

### Follow Mode

When in Follow mode, the default, the Multi-Function Module tracks the right-most Device Control group on the System Bar (see *System Bar on page 212*). The current device is shown in the function button status display just below the Joystick, on the right side of the Multi-Function Module. 'Device Follow' is displayed in the LED to the right of the top soft knob.



Figure 99. Multi-Function Module, Single Device Control Mode, Follow Mode

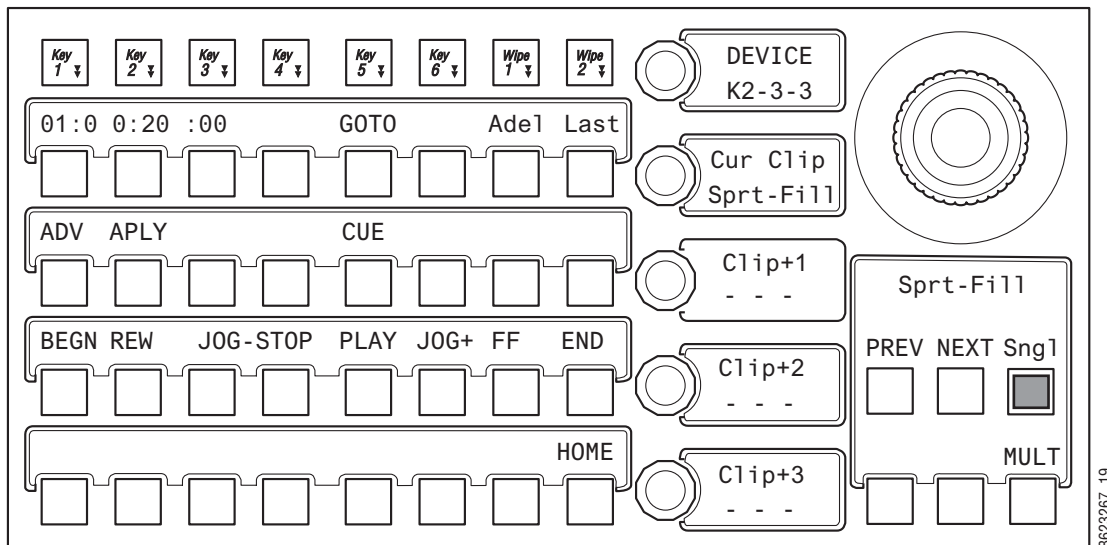


### Device Selection

Device Selection is performed by turning the top soft knob. Turning this knob in Device Control mode scrolls through the associated devices (seen in the status display). Turning the soft knob immediately delegates the Multi-Function Module to the newly selected device.

Pushing down the top soft knob returns the Multi-Function Module to the Follow mode.

Figure 100. Multi-Function Module, Single Device Control, Selection Mode



## Current Clip

Current clip selection is made by turning the soft knob, second from the top. The current clip in the Event List is shown in the status display LED just right of the soft knob. Pushing down the soft knob loads the selected clip.

## Event List Editing

Turning any of the *lower three* soft knobs in Single Device Control mode on the Multi-Function Module changes the clip name in the adjacent OLED and three buttons are added in the main function area; **INS**, **MOD**, and **DEL**.

**Note** After the **INS**, **MOD**, or **DEL** button is pushed, the editing buttons turn off.

**INS** button—Causes the new clip name from the clip list, in the Current Folder in the Clip Browser (see *E-MEM Control of External Devices*), to be inserted into the Event List. Clips can be inserted into the Event List in the 1st, 2nd, or 3rd position in the list using the bottom three soft knobs. All other clip names will be pushed down one.

**Note** Only one of the three bottom soft knobs are active at a time in Device Control mode.

To insert a clip with the **INS** button, perform the following:

1. Turn the soft knob (Clip +1, Clip +2, or Clip +3) and scroll through the current folder on the selected device and select a clip (editing buttons appear in the main function area).
2. Press the **INS** button on the Multi-Function Module. The new clip name will be added to the Event List for selection in the 'Current Clip' OLED, in the position selected in Step 1. Clips below the inserted clip are pushed down in the list.

**MOD** button—Causes the new clip name to replace the current clip name in the Event List. To modify a clip name with the **MOD** button, perform the following:

1. Turn the soft knob (Clip +1, Clip +2, or Clip +3) and scroll through the current folder on the selected device and select a clip (editing buttons appear in the main function area).
2. Press the **MOD** button on the Multi-Function Module. The new clip name will appear in the position of the old clip name in the Event List.

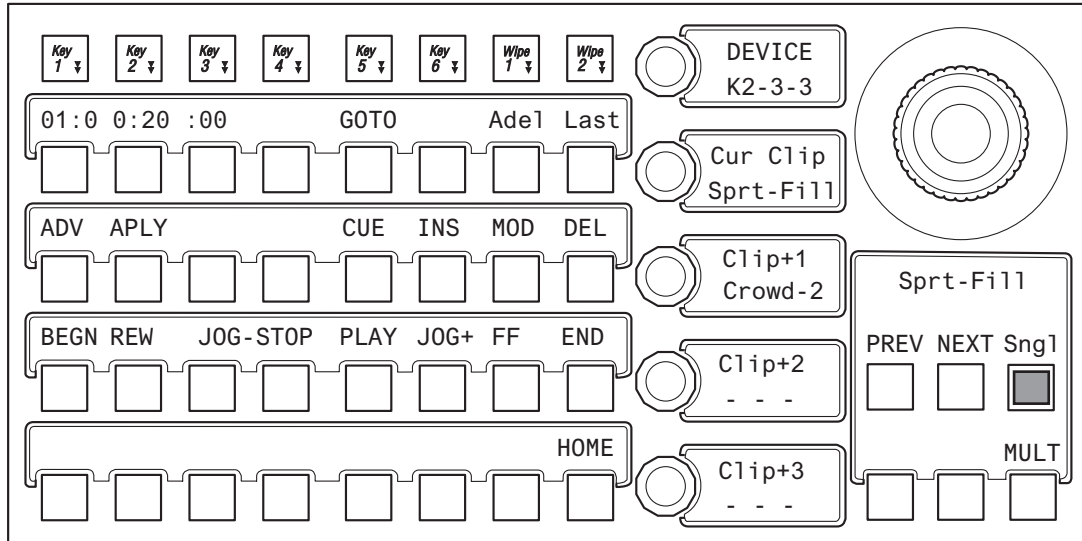
**DEL** button—Causes the current clip to be deleted from the Event List and all remaining clips to move up one. To delete a clip from the Event List, perform the following:

1. Turn the soft knob (Clip +1, Clip +2, or Clip +3) and scroll through the current folder on the selected device and select a clip (editing buttons appear in the main function area).

- Press the **DEL** button on the Multi-Function Module. The clip name will be deleted from the Event List and will no longer be available for selection in the 'Current Clip' OLED.

Pressing one of the three bottom soft knobs after changing the Event List returns it to the current clip name in that position of the list.

Figure 101. Multi-Function Module, Single Device Control, Clip Stack Editing



### Clip Run Control in Single Device Mode

The joystick provides the following clip control:

- Joystick left—Left jog,
- Joystick right—Right jog,
- Joystick up—Fast Forward,
- Joystick down—Rewind, and
- Button on top of the joystick—Mark In.

The motion control buttons in the main function area provide the following:

- **BEGN**—Places the clip at the beginning,
- **END**—Places the clip at the end,
- **REW**—Rewinds the clip,
- **JOG+ / JOG**—Jog forward, jog backward through the clip,
- **PLAY**—Play the clip from current position,
- **STOP**—Stop the clip,
- **FF**—Fast Forward through the clip,
- **ADV**—Off Air Advance, and
- **APLY**—Auto Play

The **PREV** and **NEXT** buttons performing the following:

**PREV**—Moves up through the Event List in the Current Clip and loads the selected clip,

**NEXT**—Moves down through the Event List and loads the selected clip.

## Multiple

To place the Multi-Function Module in Multiple Device Control mode, press the **Devs** button from the HOME position, then press the **MULT** button located below and right of the joystick on the Multi-Function Module (directly below the **Sngl** button).

Devices are configured using the Panel Prefs, Panel User Interactions menu. Eight external devices of the 32 possible can be controlled from the Multi-Function Module in the Multiple Device mode. Each device name is displayed above the assigned button (D1, D2, D3, etc.).

includes the **PLAY**, **CUE**, and **STOP** command buttons, each tally as follows:

- **PLAY** button high tallies *green* while playing and high tallies *red* when on air.
- **STOP** button high tallies when stopped, and the
- **Cue** button high tallies when the current timecode for the device matches Mark In.

### Creating a Gang

To create a gang in Multiple Device Control mode, toggle any of the configured device buttons (device name). Device buttons toggle between high tally and low tally. All devices in high tally are part of the gang. Toggling to low tally removes the device from the gang. A gang can be immediately

canceled by pressing the soft knob (Gang Cancel), second from the top in the Multi-Function Module.

Once a gang is created (more than one device is high tally), buttons **GCUE** (Gang Cue, causes a gang to cue) and **GPLAY** (Gang Play, causes a gang to play) appear below the joystick.

The first soft knob from the top controls the Auto Cancel function which has two states,

Pressing an individual PLAY, CUE, or STOP button causes only the selected device to respond to the command. This is beneficial for example if a director calls for a device to be individually controlled.

## **GOTO Mode**

Pressing the **GOTO TC** button on the Multi-Function Module provides delegation to the Timecode Entry mode, and delegates control over the Timecode display in the upper left of the Main function area.

Entering the first digit causes the display to be set to zero and the first number entered. Additional entries accumulate from right to left.

Plus (+) and minus (-) buttons are provided on the Multi-Function Module in GOTO mode to perform trim operations.

To enter the timecode:

1. Press the **GOTO** button.
2. Enter the timecode using the examples below.
3. Press the **ENTER** button. The Multi-Function Module returns to Device Control mode.

Examples of Timecode entries

- 22 — 00:00:00:22
- 2 — 00:00:00:02
- 102 — 00:00:01:02

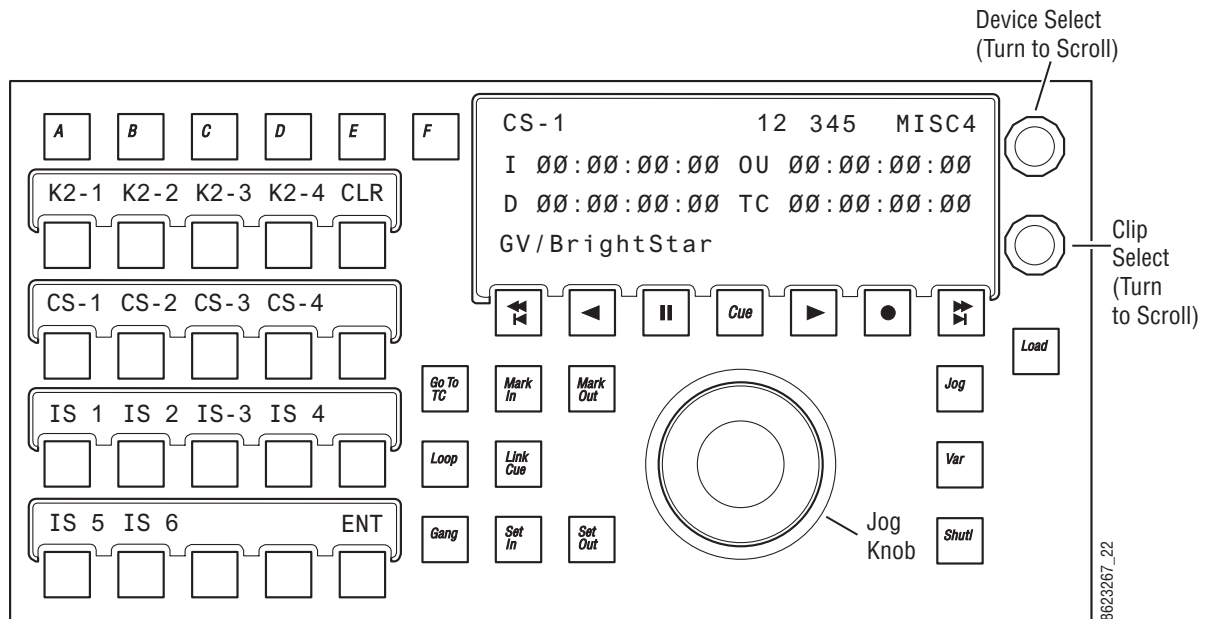
The **CLR** button on the Multi-Function Module empties the buffer and resets timecode display to the current timecode.

Pressing the **HOME** button returns the Multi-Function Module to the Device Control mode.

## Device Control Module

The Kayenne Device Control Module provides essential Device Control which can replace auxiliary devices such as DNF and Lance controllers, PDR Panels for Profile and EVS, and Hard controllers for EVS/Omega/FFW.

Figure 102. Device Selection, Device Control Module



Supported machine control functionality:

- Run Control:
  - Play,
  - Cue,
  - Stop/Pause,
  - Jog +/-,
  - FF, REW,
  - Next clip/Previous clip,
  - Set mark in/out:
    - Cue marks,
    - Loop marks,

- Cue library (Q-MEM with 1000 Q-MEM Registers)
  - Ability to recall large numbers of clips/marks
  - Create virtual clips as mark in/out point within another clip
  - Create assemblies of clips which span channels (for example Video and Key and driving video walls with 4 or 8 channels),
  - Ability to record a clip to a device, cue to mark-in, and add a play command.
  - Cue can be for more than one device
- Variable speed play,
- Multiple Device Control:
  - Swap between controlled devices,
- Channel ganging,
- Create recordings, and
- Loops:
  - Stop, and
  - Play.

The Device Control Module can control all configured devices with the following properties:

- Current Mark in/out,
- Current duration,
- Current clip name,
- Current loop flag,
- List of currently ganged devices.

## Device Selection

Device selection buttons A-F ([Figure 102](#)) can be configured to control devices in the Device Control Module.

1. Select a device by rotating the Device Select knob ([Figure 102](#)) to scroll through the devices.
2. Press the **LRN** button.
3. Press one of the device buttons (**A-F**) to assign the current device.

The **F** button only, can be made to track the selection on the right-most of the source control selections on the System Bar, by pressing the **SDEL** (Set Delegate Tracking) button on the Device Control Module. When the **SDEL** button is on, it high tallies blue and the F button low tallies blue.

## Gangs

When devices are ganged, motion control commands are applied to all the devices in the gang. Play, Stop, Cue to Mark-In, etc. are performed simultaneously for all devices in the gang. Loading clips, which is not motion control, is not included in a gang. To load more than one device at the same time, use a Q-MEM linked cue (see *Learning Additional Devices on page 224*).

### Ganging Devices Associated with Lettered Buttons

To gang devices associated with the **A - F** lettered buttons on the DCM, press and hold down the letter buttons and press the **Gang** button (the ganged buttons tally green). For example, hold down **A** and **B** buttons (or any combinations of **A - F** with devices associated) and press the **Gang** button on the DCM. The devices associated with **A** and **B** are ganged. Pressing the **CLR** button during device gang selection clears all devices from the gang.

### Ganging Additional Devices

Hold down a single lettered button (**A - F**) and press the **Gang** button (Gang Device Selection appears on the status display). A menu of devices is displayed that you can add (or remove) in association with the lettered button. You can page through and press the device buttons to make your selections. Once you've made your selections as part of the gang, press the **ENT** (or **Gang**) button to gang the devices.

The DCM supports multiple gangs, so there may be a gang associated with the device on the **A** button, and another gang on the device associated with the **B** button, and so on.

When the Gang button is high-tallied green, then there is an active gang associated with the selected letter button. To temporarily disable the gang, press the **Gang** button; it will low tally green, then make an adjustment. Pressing **Gang** again, will re-enable the gang. For example, this can be used where one device is video and the other key. By pressing the **Gang** button you can turn off the gang temporarily, jog the key channel to more precisely align it with the fill, and then re-enable the gang.

### Panel Gangs

The "Panel Gang" (Local Aux Bus gang) and the gang on the '**F**' button are the same when the **SDEL** button is selected. Gang selections made from the DCM in this way also affect gang selections made in the Local Aux Bus Module and vice versa.

## Q-MEM

Q-MEM can be used to assign a device to a letter button on the DCM ([Figure 103](#)), load a named clip on that device and cue to its mark-in point,



and optionally play or loop the clip. Multiple devices can also be loaded and cued using the “Link Cue” feature.

Each suite has 1000 cue memory registers (Q-MEMs).

Each cue has:

- Up to 38 devices with associated device state data (device state),
- Up to 6 device associations with Device Control buttons **A - F**,
- Selection of radio buttons **A - F** (or none) (device selection), and
- One play flag.

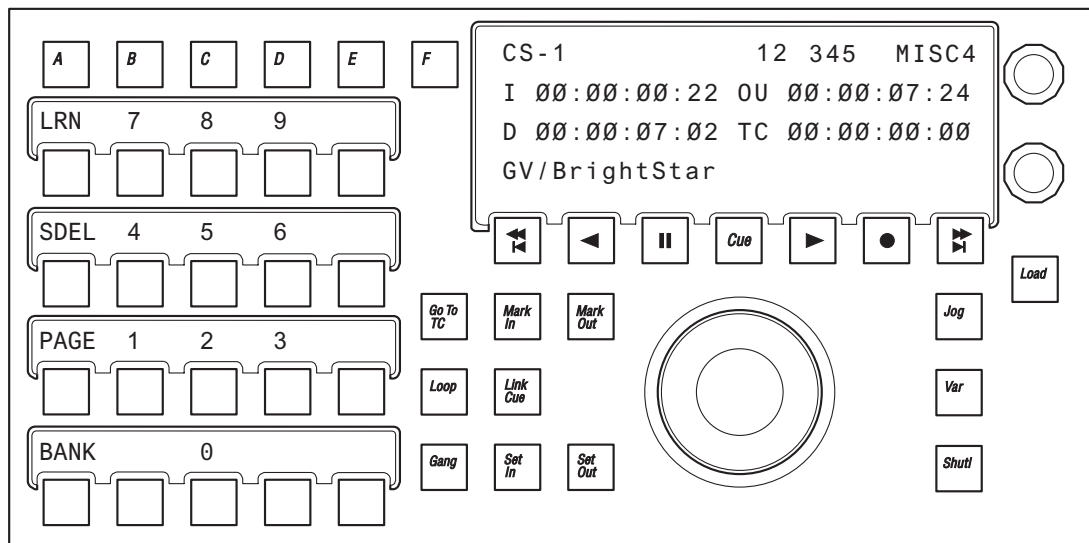
For each device, the following device state data is learned into the cue:

- Clip name,
- Mark-In point for clip,
- Mark-out point (may be empty),
- Loop flag,
- Gang flag, and
- A list of ganged devices.

Recalling a cue register can be used to:

- Associate devices with the lettered buttons only, so you can set up your DCM for manual use,
- Recall and cue devices without affecting the current letter button selections, and
- Both associate the devices with letter buttons and load, cue, and play them.

Figure 103. DCM—Q-MEMs



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## Learning a Q-MEM Register with a Single Device

To learn a simple cue with one device (see [Figure 103](#)):

1. Select a device by pressing a control button, **A - F**.
2. Select a clip on that device using the bottom soft knob and press the **Load** button to load the clip. You can then set the mark-in/mark-out points (**Mark In/Mark Out** buttons) and optionally turn on the **Loop** button (tallies blue).
3. Press the **LRN** button.
  - a. Optionally, press the **Play** button (flashes green) to add a play command (so when the cue register is recalled, the clip will load *and* play).
4. Press the desired Cue register number button (use the **Page** and **Bank** buttons for the higher numbered registers). The selected Cue register button high tallies red.

## Learning a Q-MEM Register with Multiple Devices

### Learning Devices with Letter Buttons

Lettered button (**A - F**) links can be learned as part of a Cue register for later recall:

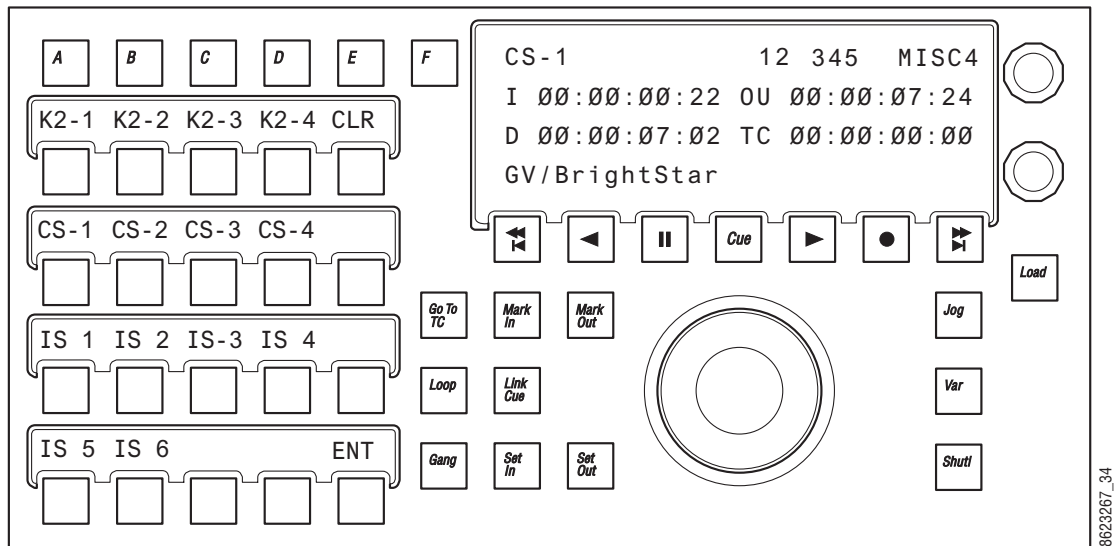
1. Press and hold down the letter buttons for the devices to be linked (for example A, B, and D).
2. Press the **Link Cue** button (high tallies blue).
3. Learn the Q-MEM register.
4. Press the **LRN** button.
  - a. Optionally, press the **Play** button (flashes green) to add a play command (so when the cue register is recalled, the clip will load *and* play).
5. Press the Cue Register button to recall the cue.

**Note** To see the link cue status, press the lettered button then the **Link Cue** button.

### Learning Additional Devices

You can link multiple devices in addition to the devices associated with the lettered buttons using the Cue Device Selection menu ([Figure 104](#)). Each clip will need to be setup with mark-in/out points etc. prior to creating the link.

Figure 104. DCM—Cue Links



Hold down a lettered button (**A - F**) and press the **Link Cue** button (high tallies blue), the Cue Device Selection menu is displayed (Figure 104). Press the device buttons to add (or remove) devices as part of the cue then press the **ENT** (or **Link Cue**) button. All device buttons added to the cue will tally blue.

Pressing the **CLR** button clears all devices from the cue.

**Note** Both loop cue status and link status are always learned into the cue; if the **Loop** button is high tally, then a loop is learned and if **Link Cue** button is high tally blue, then the multiple devices are linked into the cue.

When recalled, a clip will load and cue for each device linked into the Q-MEM register. (There is one Play command per register so if learned as part of a Cue register, all devices will play when the register is recalled.)

## Learning Only Device Associations into a Register

Cues can be used to associate devices to lettered buttons only, without learning clip and mark information. So on recall, the devices are assigned to the lettered buttons but nothing is done to the current status of the devices. The Cue Device Selection menu is used to configure these associations.

To associate a devices to lettered buttons only:

1. Hold down a lettered button, and press the **Link Cue** button. Both the letter button and the button for the device high tally.
2. Turn on any other letter buttons, but turn off the device buttons. If the letter button is on and the device button is off, then only the device association will be learned into the register.

3. Press **ENT** to end the device selection and then learn a cue.

Only the association of the device to the lettered button is learned.

## Learning Clips for Devices without Affecting Letter Button Associations

To learn a cue that recalls only device states for the clip, cue to mark, loop, and play but does not affect the association of the devices with the DCM:

1. Hold down a lettered button, and press the **Link Cue** button. The letter button and the button for the device are both high tally.
2. Add devices to be linked into the register, but turn off any lettered buttons associated with the device.

Without the letter buttons being learned, a recall of the register will control the specified devices but not affect what is currently happening on the DCM.

3. Press **ENT** to end the device selection and learn a cue.

## Cues and Gangs

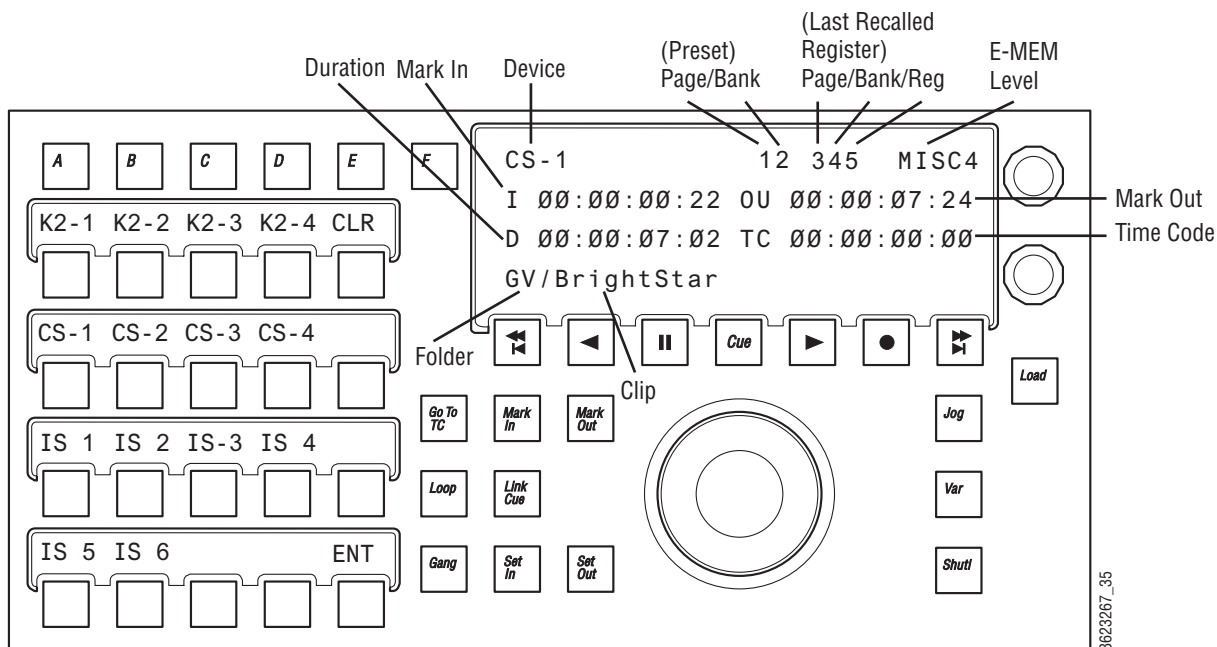
If a device which is learned into a cue is ganged to another device, then that gang association will be learned into the register too. So that when the register is recalled, the devices will be ganged.

## Status Display

For a selected device, the display will show ([Figure 105](#)):

- Device name,
- Preset or current Page/Bank,
- Last recalled page, bank, and register,
- E-MEM level name,
- Timecode,
- Mark-in/out timecode,
- Calculated duration between mark in and mark out, and
- Clip folder and clip name (folder only displayed if supported by the device, e.g. ClipStore supports folder display but K2 does not).

Figure 105. DCM—Cue Links



## Karrera K-Frame Device Control from the Control Panel

With Karrera K-Frame, external devices can be controlled from Device Control Groups (one for a 2-ME Karrera system and two for a 3-ME). The Device Control Group consists of a 16 character Status Display (displays the current clip) and Play, Cue/Load, Next Clip, and Previous Clip buttons.

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

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

Figure 106. GV Switcher Control Panel Device Control Group



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

For the other Device Control Group on a 3-ME, you can associate a device to the group by holding down a source select button that has a device attached, then press the PREV and NEXT buttons together (or you can

press and hold down the PREV and NEXT buttons and then press a source button).

Device Control Group buttons:

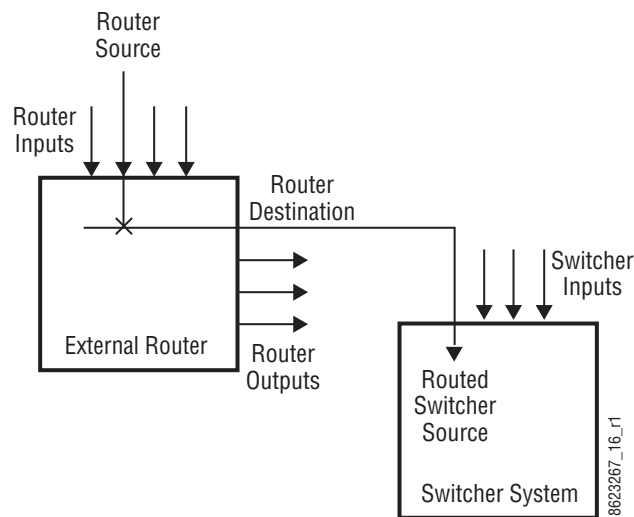
- **Play**—Causes the associated device to play (pressing again causes device to pause).
- **Cue/Load**—Pressing after a PREV or NEXT button press causes a load and cue command to be sent to the device, subsequent presses causes a command to be sent to the device to 'cue' to its in-point.
- **Next Clip/Previous Clip**—Causes the previous or next clip name in the frame-maintained clip stack list (per device), to be brought into the Status Display window.

# Router Interface Operation

## Introduction

The GV Switcher system can interface with an external routing system. A routing system connects a *router source* (router input) to a *router destination* (router output). Changing the router source sends a different signal to the destination (called a *take*). A router destination can in turn be connected to a GV Switcher input and be configured as a *routed GV Switcher source* (called *switcher source* in this discussion and in the GV Switcher menus). The router acts as a pre-selector for the switcher source, and so increases the number of inputs available to a button on a GV Switcher system bus.

Figure 107. Router Source, Router Destination, and Routed GV Switcher Source



Router signal switching is non-deterministic, as compared to source selections performed on a production switcher. For this reason, it is better to choose the desired router source in advance, then switch it on-air using switcher controls, rather than select a different router source while it is on-air.

An external router can be configured into *levels*, to allow the switching of multiple signals simultaneously. For example, video signals can be organized on one level, and key signals on another. By specifying both levels when giving a router take command, both the video and key signals of a source will be routed to their destinations.

**Note** GV Switcher system router take commands are only applied to all router levels. The external routing system's destinations must be configured with all router levels selected.

Router control panels can also *protect* router destinations from being changed by other control panels. A protected router destination cannot be changed by a different control panel, but may be changed by the panel that set the protection. Protections help prevent inappropriate router source changes. The GV Switcher system can be considered a type of router control panel, and so the GV Switcher system can protect router destinations. GV Switcher system router protect commands are applied to all router levels.

The names of router sources appear on the GV Switcher system source name displays. These names originate from the router system, and their text cannot be changed from the GV Switcher system. If a routed source has no connection to the router, an **X** appears in place of the router source name. If the router connection exists, but no source has yet been selected for that destination (which can occur during bootup), **No Src** appears.

## Features

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

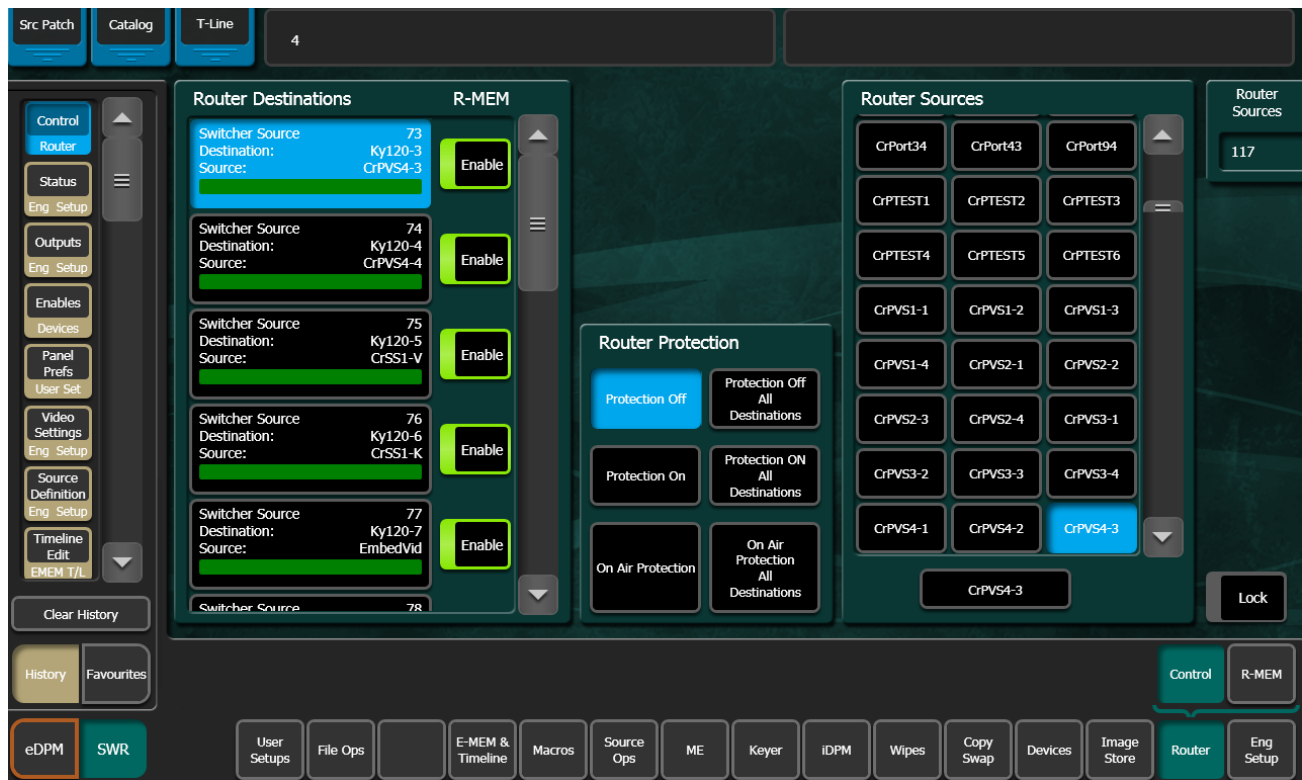
## Menu Panel Router Interface Operation

The Router Control menu provides a way to directly change router sources from the Menu Panel. The Router Select menu is reached by pressing the **R-MEM** Menu Panel button, then selecting the **Router Control** category selection button.

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



Figure 108. Router Control Menu



The Router Destination pane on the left is a scrolling list of switcher sources (only sources configured as routed GV Switcher sources appear). Each button displays the Switcher Source ID number, Destination, and Source. The currently selected switcher source on the list is colored light blue.

**Note** Refer to the K-Frame Installation & Service Manual about configuring the Router Ethernet connection.

The Router Sources pane on the right is a scrolling list of all the available router sources. Communication with an external routing system is required before router sources will appear on this list. The router source button of the currently selected switcher source is automatically selected.

### To Change the Router Source of a Switcher Source:

1. Select the desired switcher source button in the left pane. Its current router source will appear selected in the right pane.
2. Select a different router source button in the right pane, scrolling the menu if necessary. The source change will be immediately enacted.

### Router Source Keypad Selection

The Router Source data pad at the top of the right pane provides access to router sources by name. Selecting this data pad opens an alphanumeric

keypad, into which you can enter the name of the desired router source. The Router Source list will then scroll to and select that router source, changing that source's output signal. If an exact match is not found for the name entered, no change will occur.

## Protection

The Router Protection pane (middle) provides protection controls. These controls are used to send commands to the external router to protect or unprotect the router destination associated with the selected switcher source. The button for the current setting of the selected switcher source will be highlighted. The following protections are available:

- **Protection Off**— Source can be changed at any time by any control panel,
- **Protection Off All Destinations**— Same as Protection Off but for all destinations.
- **Protection On**— Source cannot be changed by another Control Panel, but may be changed from the GV Switcher system,
- **Protection On All Destinations**— Same as Protection On but for all destinations.
- **On Air Protection**— The source cannot be changed by another control panel when it is on-air, but may be changed manually from the GV Switcher system. The source will also not be changed by an R-MEM recall, and
- **On Air Protection All Destinations**— Same as On Air Protection but for all destinations.

External router system panels can place protections on router destinations. The first panel placing a protection controls that destination. The GV Switcher system will not be able to change router sources feeding router destinations protected from another panel, and vice versa.

## Router Indexing

Starting with K-Frame software version 9.0, the GV Switcher system uses indexing to manage router connections (instead of router names), therefore you can change router source and destination names without affecting router source control.

### Add Router Indexing to Shows Created with Earlier Versions

To add indexing to shows created on switcher systems with software earlier than 9.0, you will need to load the show then create a new show with router indexing enabled.

1. In the File Ops, Show Files menu, load a show file created using an earlier version of software.
  - a. Navigate to and select the show using the System Storage or Remote Storage tabs and navigation buttons in the Directory Search pane (left).
  - b. Select **Load Show** in the Show Create & Load menu pane.
2. In the Eng Setup, Router menu, select **Index** in the Type menu pane.
3. In the File Ops, Show Files menu, select **Create Show** in the Show Create & Load menu pane.
4. Name your show by selecting the Show Name data pad, entering the name in the pop-up keyboard, and selecting **Enter**.
5. Select your preferences in the Create Show pane (right), and select **Create**.

## Router Control of Aux Buses

The GV Switcher can be configured to allow Encore and Prelude control systems, including standalone Prelude Control Panels, to control Aux bus source selections.

All switcher Aux buses can be configured to appear on the Router Control System. Aux buses that are not enabled for router control are seen as being 'protected' by the switcher to the Router Control System. In other words, an Aux bus' current status (source selection) is displayed but it cannot be controlled by the Router Control System.

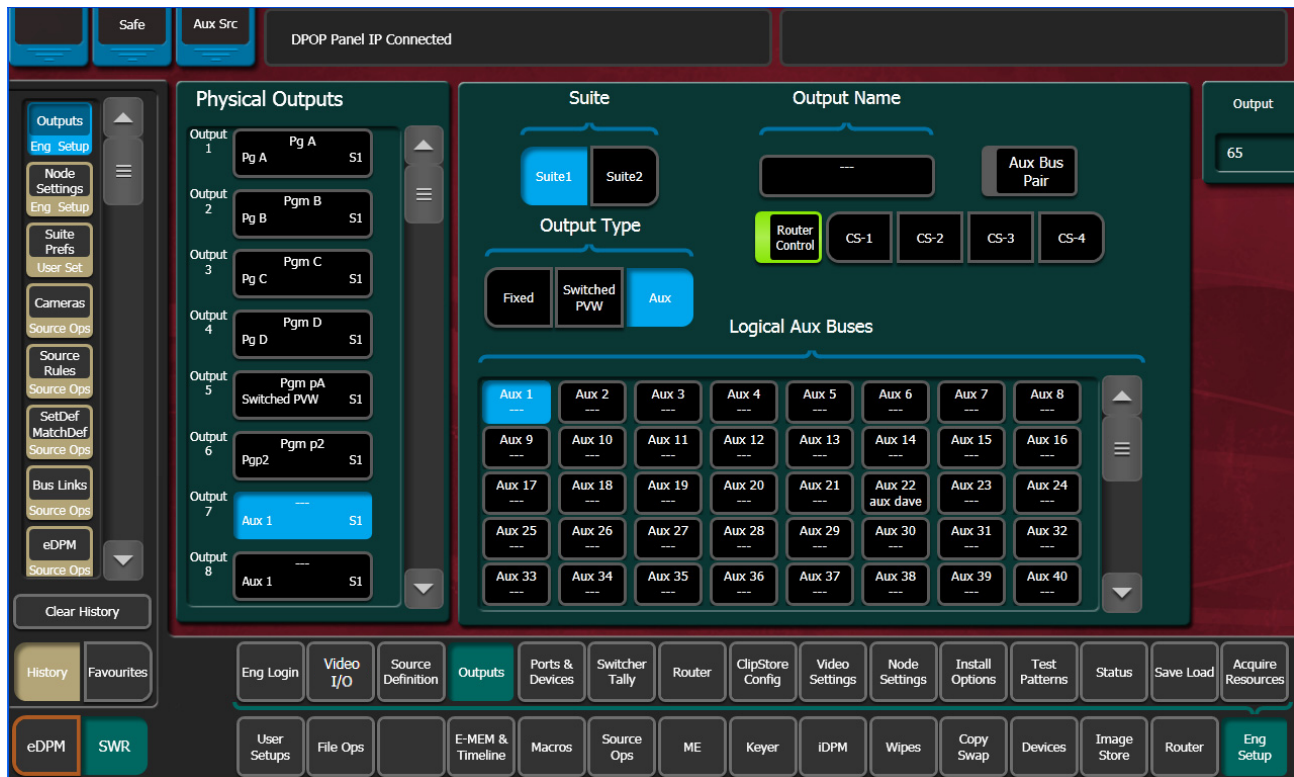
If an Aux bus is enabled for router control, then the source can be changed by a configured Router Control Panel.

**Note** Prelude Control Systems are limited to selecting the first 128 switcher sources.

## Controlling Aux Bus Source Selections from a Router

Aux buses are enabled for control in the Eng Setup, Outputs menu.

Figure 109. Eng Setup, Outputs Menu, Router Control of Aux Buses



Enable the Aux Buses for router control:

1. Select the Aux button in the Output Type.
2. Select a Aux 1-46 data pad in the Logical Aux Bus pane to designate it for router control.
3. Select the Router Control selector button (highlights green when selected).

Repeat Steps 1-3 for each Aux Bus you wish to control by router.

The router must have the switcher sources defined and the 46 Aux Buses defined as destinations, with four levels each (see the documentation that came with your router):

Level 1: Suite 1 Video,

Level 2: Suite 1 Key,

Level 3: Suite 2 Video, and

Level 4: Suite 2 Key.

Once configured, you can switch sources on Aux Buses from the external router.

**Note** A Prelude router can communicate directly with the GV Switcher switcher.

## R-MEM

### Introduction

R-MEM stands for router memory. With R-MEM you can use the GV Switcher system to store groups of external router source selections for use later. One or all switcher sources can be selected for control, and the router source selections for all the selected switcher sources can be recalled and enacted quickly.

R-MEM operation is similar to E-MEM, in that information is learned into a register for later recall. Each R-MEM register holds a router source name for one or more switcher sources. R-MEM allows selectively enabling router destinations for control, and has Auto Recall, both similar to E-MEMs selection of enable groups.

R-MEM can be assigned to an E-MEM enable group, if desired, to provide E-MEM control of R-MEM functions (see *E-MEM Control of R-MEM on page 238*).

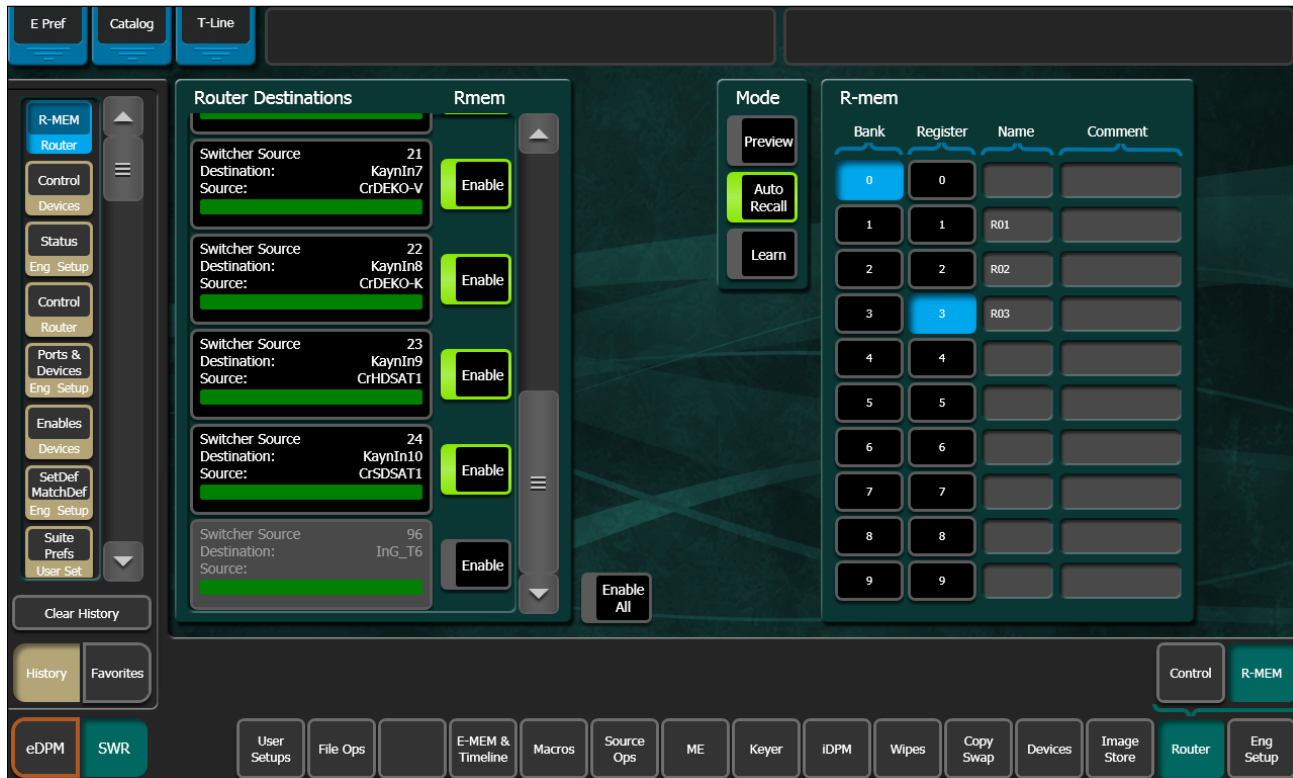
### Features

- 100 R-MEM registers.
- Select 1 or more switcher sources for R-MEM control.
- Instantaneous Learn and Recall.
- Save To and Load From Disk.
- Auto Recall.
- Preview of R-MEM register source and destination names.
- E-MEM control of R-MEM, if desired.

## R-MEM Menu Operation

R-MEM registers are learned, recalled, and previewed from the R-MEM menu. The R-MEM menu is accessed by pressing the **Router** Menu Panel button, then selecting the **R-MEM** category selection button.

Figure 110. R-MEM Menu



The R-MEM menu has a Router Destinations pane on the left showing the switcher sources, router sources and destinations, and protection status. Switcher sources configured as routed sources also appear in the left pane. There is a Mode pane in the center and an R-MEM pane on the right listing the R-MEM registers available (the full register number is displayed on each register button).

### R-MEM Auto Recall

The R-MEM **Auto Recall** mode acts similar to the E-MEM Auto Recall. An R-MEM Auto Recall automatically changes only the switcher sources that were enabled when the register was learned.

### Preview

When **Preview** mode is turned on, recalling a register will only display the R-MEM settings stored in that register. No switcher sources will change.

This allows you to see what switcher sources will be affected by a register recall, and what the router sources and destinations will be after the recall.

When **Preview** is turned off, the left pane returns to displaying the current status, including any previously set enables.

### To Learn an R-MEM Register:

1. Enable the switcher sources to be affected by R-MEM in the left pane. Selected switcher source buttons are green on the left. Only the selected sources will be saved to the R-MEM. You can use the **Enable All** button to select all or none of the switcher sources (toggle).
2. If you want the register to use Auto Recall, select the **Auto Recall** button so its indicator illuminates.
3. Select the **Learn** button in the Mode pane.
4. Select the numbered Bank and Register buttons in the right pane to save the information to the selected register. Select the bank button first if you are saving to a different bank. If the desired bank is already selected, you can select just the Register button.

### To Recall an R-MEM Register

1. Make sure the Preview mode button is not selected.
2. Turn the **Auto Recall** button on or off to control how the register is recalled.
3. Select the Bank and Register buttons for the desired register. Select the bank button first if you are recalling from a different bank, or just select the Register button if in the same bank.
  - a. If the **Auto Recall** button is on, the sources selected when the register was saved (with **Auto Recall** on) will be changed to the R-MEM values of that register. If **Auto Recall** was not on when the register was saved, the currently selected switcher sources will be changed.
  - b. If the **Auto Recall** button is off, the sources currently selected in the Switcher source pane will be updated with the R-MEM values of that register.

**Note** A switcher source that is currently on-air with an **On Air** protection status cannot be changed by an R-MEM recall. Either place the source off-air or select a different protection status to change the switcher source selection.

## E-MEM Control of R-MEM

### Introduction

R-MEM can be assigned to an E-MEM Enable group, to permit E-MEM control of R-MEM settings. R-MEM information is learned to the R-MEM level of an E-MEM register, allowing the selection of specified router sources when that E-MEM register is recalled. One R-MEM setting is supported per effect (R-MEM is not keyframeable).

Because R-MEM is a level of E-MEM, there is a one-to-one correspondence between E-MEM and R-MEM registers. For example, settings in R-MEM register 10 only apply to E-MEM register 10. This is similar to the relationship between an individual ME E-MEM and the Master E-MEM system. R-MEM information is added to an E-MEM register using the Learn operation or the Learn Mod operation.

### R-MEM Disk Storage

While R-MEM is organized operationally as a level of an E-MEM register, R-MEM data is saved to disk separately, as R-MEM registers. This allows added flexibility. For example, the same E-MEM effect can use different router source selections or enables, depending on which R-MEM register has been loaded from disk.

### R-MEM Enable Control and Auto Recall

R-MEM also provides an additional level of control. R-MEM has its own set of enables that control which sources (router destinations) are affected by a recall operation. This aspect of R-MEM is like the enable groups used for Master E-MEM. The **Auto Recall** button on the R-MEM menu controls R-MEM recalls similar to the control the **Auto Recall** button in the Control Panel Master E-MEM Module exerts over E-MEM recalls. These are separate functions affecting different control elements, however.

An example of using this is to control which router sources will be changed without having to learn a new E-MEM register for each variation. Suppose you learn an R-MEM specifying router sources for several switcher sources, create an E-MEM effect using those sources, and learn that E-MEM with the R-MEM Enable button selected. Recalling that E-MEM with the Master E-MEM **Auto Recall** button on, will also recall that R-MEM. If the R-MEM **Auto Recall** button is also on, the enabled switcher sources will select the specified router sources. If the R-MEM **Auto Recall** button is off, only the switcher sources enabled on the R-MEM menu will be affected by the recall. Disabling all the switcher sources on the menu makes the E-MEM recall use the currently selected router sources, with no changes.



## E-MEM Prefs Assignment

By default R-MEM is not assigned to any E-MEM Enable group button. You use the E-MEM Prefs menu (accessed in the User Setups, Suite Prefs, E-MEM Prefs menu), to make an assignment. Select the R-MEM data pad, then select the desired Enable button.

Once this assignment has been made, recalling an E-MEM register in the Master E-MEM Module will recall that same number R-MEM register. Learning an E-MEM register in the Master E-MEM Module will also learn the same R-MEM register.

**CAUTION** Make sure the R-MEM enable group you choose is only enabled when you actually need to use it during effect recalls. Confusing source selection button changes can occur otherwise. Using E-MEM Auto Recall can help control when groups are enabled.

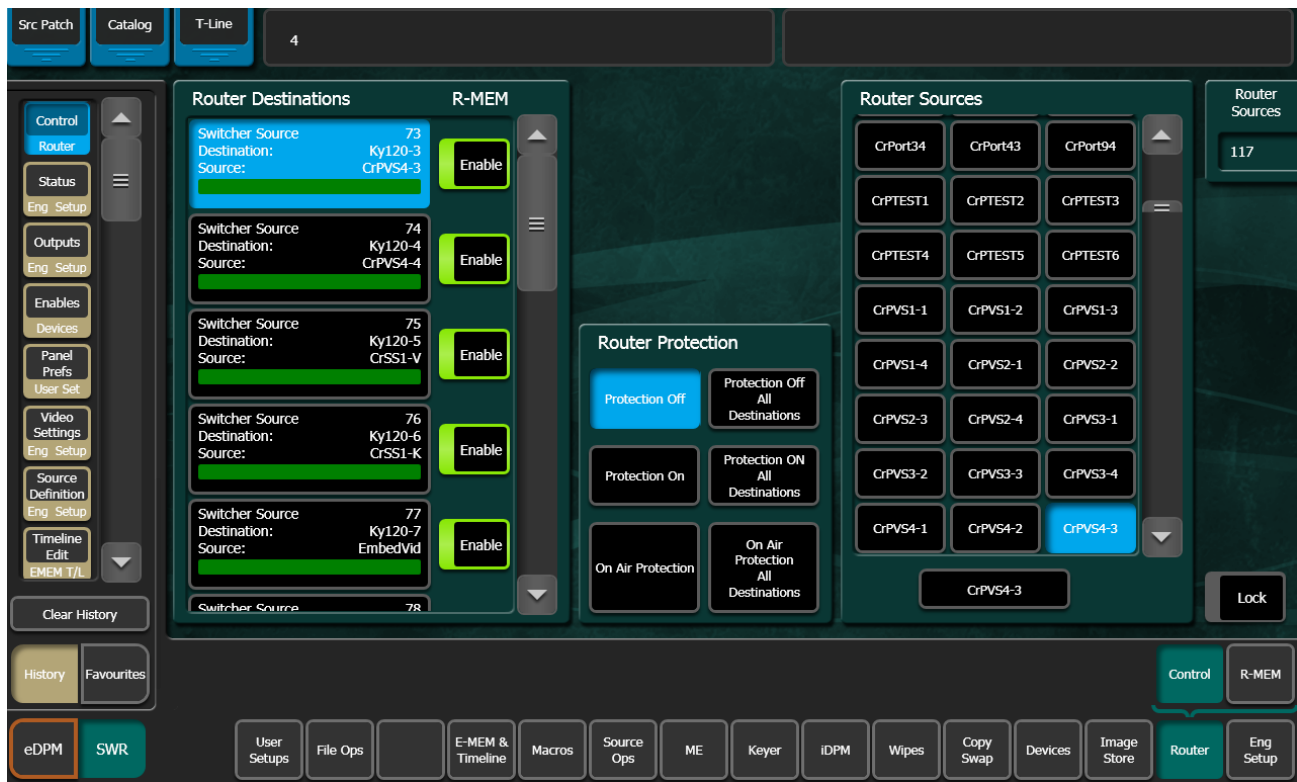
## Learning R-MEMs on the Control Panel

When R-MEM has been assigned to an E-MEM Enable button, learns can be performed from the Control Panel as well as the R-MEM menu.

**Note** The Learn operation you will use erases any existing information in all the enabled levels of the current E-MEM register.

1. On the Master E-MEM Module, select the Enable button to which R-MEM has been assigned. This enables R-MEM for the current effect register.
2. Setup the desired R-MEM state.
  - a. Go to the R-MEM Router Select menu (accessed via **Router, Control**) and select the router source to be used with each switcher source.
  - b. Go to the R-MEM menu (select the **R-MEM** category selection button) and enable the desired switcher sources. Select **Auto Recall** if you want the ability to recall R-MEM settings for only the selected switcher sources.

Figure 111. Control Menu



3. Press the **LRN** button in the Control Panel Master E-MEM Module, then press the Page, Bank, and Register keypad number of the desired register. This will save the current R-MEM setting in the menu to the header area of that E-MEM effect register and the first keyframe of the new effect will be created. The corresponding R-MEM register in the menu will also be updated.

## Changing R-MEM on an Existing E-MEM Register

1. On the Master E-MEM Module, recall the E-MEM register you wish to change.
2. On the Master E-MEM Module, select the Enable button to which R-MEM has been assigned.
3. Setup the desired R-MEM state.
  - a. Go to the R-MEM Router, Control menu (accessed via **Router, Control**) and select the router source to be used with each switcher source.
  - b. Go to the R-MEM menu (select the **R-MEM** category selection button) and enable the desired switcher sources. Select **Auto Recall** if you want the ability to recall R-MEM settings for only the selected switcher sources.

4. On the Master E-MEM Module, press **Learn**. The R-MEM setting in the menu will be updated to the header area of that E-MEM effect register. Keyframes existing in the effect will remain unchanged. The corresponding R-MEM register in the menu will also be updated.

## Loading R-MEM Registers

Like E-MEM registers, loading an R-MEM register from disk does not affect the current work buffer. If an effect is loaded in the work buffer and that register number containing different settings is loaded from disk, the register will need to be recalled before any changes in state occur.

## Empty R-MEM Keyframes

If the R-MEM enable button is on when keyframes on other levels are inserted into the effect, R-MEM keyframes containing effectively no data will also be added to the effect and appear on the Timeline menu. These keyframes are only system artifacts and do not influence the running of the effect.

# Camera Control with Ethernet Camera Tally

GV Switcher Camera Integration provides the ability to place cameras into a usable but not fully shaded setup/rehearsal mode. The GV Switcher can connect to up to 99 cameras via the Grass Valley LDK Connect Gateway. Cameras can be acquired by multiple suites.

**Note** For configuration information, see the *Installation & Service Manual* for your switcher model.

Switcher camera control is provided in the menu.

Camera control from the GV Switcher system makes camera source setup fast and easy by allowing you to:

- Turn color bars on/off to quickly identify which source is associated with a camera,
- Control a subset of camera settings:
  - Auto Iris enable/disable,
  - Auto Black level (trigger),
  - ND (Neutral Density) Filter settings, and
- Load a Scene File with a single button push or recall a Scene File with an E-MEM.

**Note** The Camera sub-level is assigned to an E-MEM level in the Menu Panel.

Ethernet Camera Tally allows you to:

- Tally camera associated sources using Tally Calcs and,
- Tally the Red, Yellow, or Green indicator on the camera from the switcher Menu Panel/Control Panel.

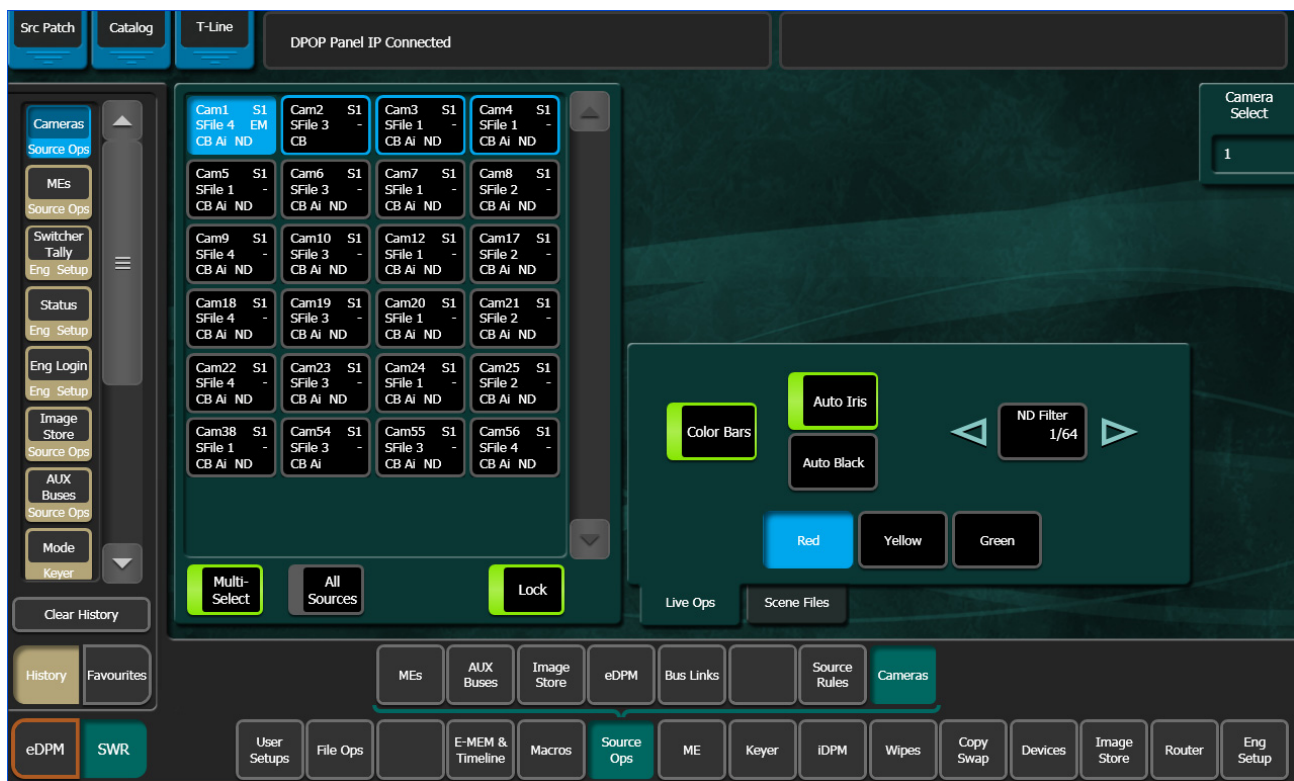
## Camera Operations

Camera control from the GV Switcher switcher provides remote control of a subset of camera functions.

### Source Ops

Camera user operations from the menu are performed in the Source Ops, Cameras, Live Ops menu tab.

Figure 112. Source Ops, Cameras, Live Ops Menu



### Live Ops

GV Switcher camera control provides the ability to place cameras into a usable but not fully shaded setup/rehearsal mode using the menu buttons in the Live Ops menu tab (Figure 112):

- **Camera Sources**—Select from 1-99 defined camera sources for control.

- **Color Bars**—Enable/disable color bars to verify the camera as the associated source.
- **Auto Iris**—Enable/disable camera's Auto Iris.
- **Auto Black**—Triggers a reset of camera's black level.
- **ND (Neutral Density) Filter**— Changes the neutral density filter wheel setting.

Use back and forward arrow buttons (Figure 112) to scroll through and enable 1/4, 1/16, 1/64 filter wheel settings, or CLR to clear the filter wheel setting.

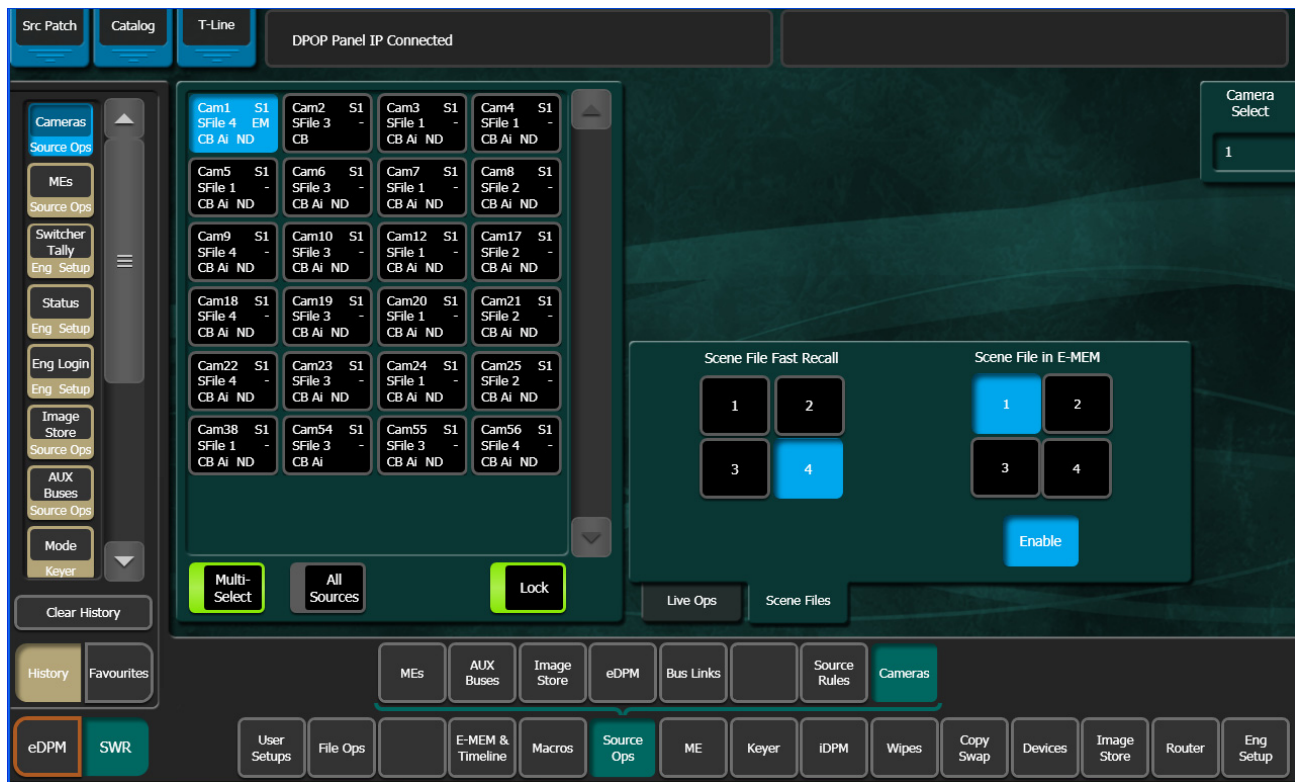
### Ethernet Camera Tally Operations

When installed and configured, the GV Switcher sends tally over Ethernet to cameras. This is described in the *Installation & Service Manual* for your switcher model. In addition, the **Red**, **Yellow**, and **Green** buttons in the Source Ops, Cameras menu (Figure 112) allow you to test the camera tally colors and/or send a call to the camera operator.

### Scene Files

Up to four Scene Files can be saved and quickly loaded to selected cameras with the **Fast Recall (1-4)** buttons or recalled as part of an E-MEM, using the **Scene File in E-MEM (1-4)** buttons, in the Source Ops, Cameras, Scene Files menu tab.

Figure 113. Source Ops, Cameras, Scene Files Menu



**Scene File Fast Recall**—Allows you to recall scene files 1, 2, 3, or 4 to all selected cameras in the Camera Source list. Simply select a camera source or sources and select a **Scene File Fast Recall (1-4)** button.

**Scene File in E-MEM**—The **Camera** level button in the User Setups, E-MEM Prefs menu can be used to assign camera sub-levels to levels (and are definable) and recalled as part of an E-MEM. E-MEMs can be used for example so the TD could recall and turn off a Star Filter on all cameras instead of it being an engineering task.

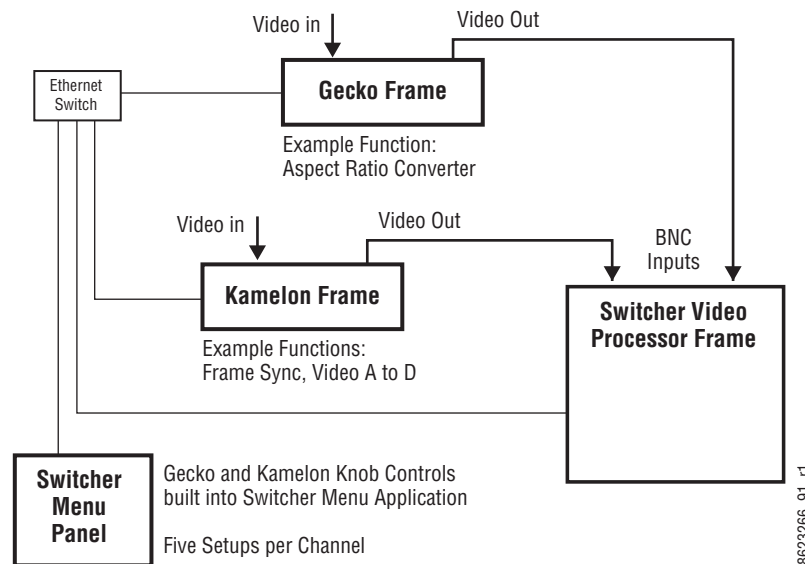
1. Select a camera source or sources in the Camera Sources list.
2. In the Scene Files menu, select the numbered **Scene File in E-MEM (1-4)** button for the scene file you wish to save as part of an E-MEM.
3. Select the **Enable** button (highlights blue when on). **EM** (for E-MEM) is displayed in the selected camera's button data.
4. Go to the Cameras E-MEM Prefs level by selecting **User Setups, Suite Prefs, E-MEM Prefs, Cameras**.
5. Select the level to which you wish to assign the Camera's sub-level.
6. Select **Done**.
7. Build an E-MEM recalling the level with the camera sub-level assigned. The enabled Scene File will be recalled for the selected cameras.

# Newton Modular Control

## Introduction

The Newton modular control system provides comprehensive and consolidated real-time control of Grass Valley modular products. Some Newton functionality has been incorporated into the GV Switcher menu application. This makes it possible to control Grass Valley Gecko and Kameleon frame modular products from a GV Switcher menu. The modular frames must reside on the same subnet as the GV Switcher system.

Figure 114. Newton Modular Control Diagram



## Installation on GV Switcher

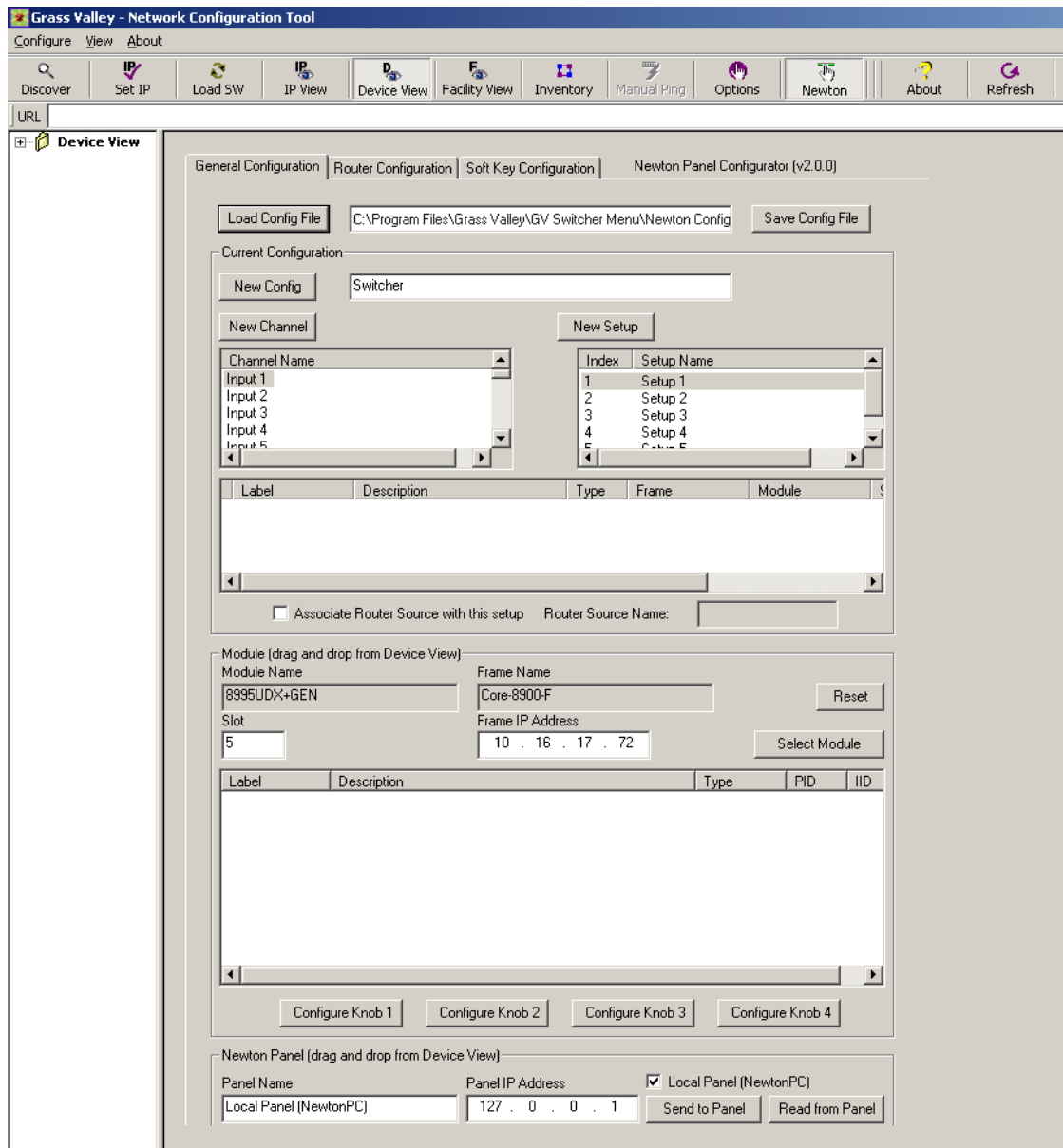
The GV Switcher's Newton interface is installed during the standard GV Switcher menu application installation procedure. The Newton menu ([Figure 116 on page 247](#)) is available on all GV Switcher systems. However, a Newton system must be available on the GV Switcher network, and configuration steps will be required before this menu becomes functional.

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

## Newton Controls Configuration

Newton functionality within GV Switcher can be configured using any PC on the GV Switcher network, provided the configuration tools are installed onto that PC. Select the **NetConfig** option in the GV Switcher Installer program to install these configuration tools. During this process, the Net-Config network configuration application and a Newton Configurator plug-in are installed. The tool is accessed by launching NetConfig and selecting the Newton tab on the top menu bar (Figure 115).

Figure 115. NetConfig Newton Configurator Plug-in



The Configurator tool is used to define the functionality of Newton controls by creating a Newton configuration file. The Newton configuration



establishes a one-to-one relationship of Newton channels to GV Switcher physical inputs (BNC connectors on the Video Processor Frame). Each GV Switcher input/Newton channel can have up to five different setups defined. A default Newton configuration file with 96 channels (inputs) is provided with five empty setups for each channel. Using the configurator, controllable parameters in modules which are in the video path for each switcher input can be assigned to GV Switcher Menu Panel knobs. The user is then able to control those modules directly from the GV Switcher system.

Refer to the separate *Newton Instruction Manual* and *NetConfig Instruction Manual* for specific information about how to configure the Newton controls. These manuals are available for download from the Grass Valley website.

## External Device Newton Menu Description

Once configured, module parameters can be adjusted on the GV Switcher Newton menu, which is accessed by selecting **Devices, Newton**.

Figure 116. External Device Newton Menu



Selection of a module parameter to control is mediated through the GV Switcher source selection mechanism. By selecting a source on the currently delegated Preview bus of the GV Switcher's Control Panel, the source's physical input, and that input's associated Newton channel controls are activated on the GV Switcher's Device menu.

## Delegation Pvw Bus

The Delegation Pvw Bus pane is used to select which Preview bus will be used to select the Newton channel to be controlled.

## Input Selection

When a video/key source is selected, you choose to control either the video input or the key input with the **Video** and **Key** buttons.

## Setup Selector

The Setup buttons are used to select the desired set of controls from the setups defined for that channel. The menu displays asterisks for setups that have no parameters assigned.

## Newton Channel Information

**Channel** – The number of the GV Switcher input BNC used to select the current Newton channel is displayed.

**Setup Name** – The currently selected setup (1-5) is displayed in this pane.

Additional information for the currently selected channel is displayed below.

If multiple modules are daisy chained together in a Newton channel, the information displayed will be for the module with a parameter assigned to the top knob.

## Newton Controls

On the right side of the menu the active control functions are identified. Direct knob control and datapad numeric entry are available. The menu displays asterisks for unconfigured controls. The status of the function for each control is also reported, with green indicating a connection exists and the data is valid, and red indicating no connection.

**Accelerate Knobs** – Selecting this button accelerates knob adjustments by a factor of 10, providing coarse and fine knob control.

Refer to the separate *Newton Instruction Manual* for specific information about Newton controls.

# Switching Basics

## Switching

A basic GV Switcher system may be equipped with a:

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

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

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

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

## Kayenne K-Frame Control Panel Overview

The 4-ME Kayenne Control Panel is designed for large scale live productions. Sources are selected in the Source Select Modules on the left side of

each Stripe. Delegated controls for various Hold, Row Delegation, and ME Bus selection are at the right of each Source Select Module.

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

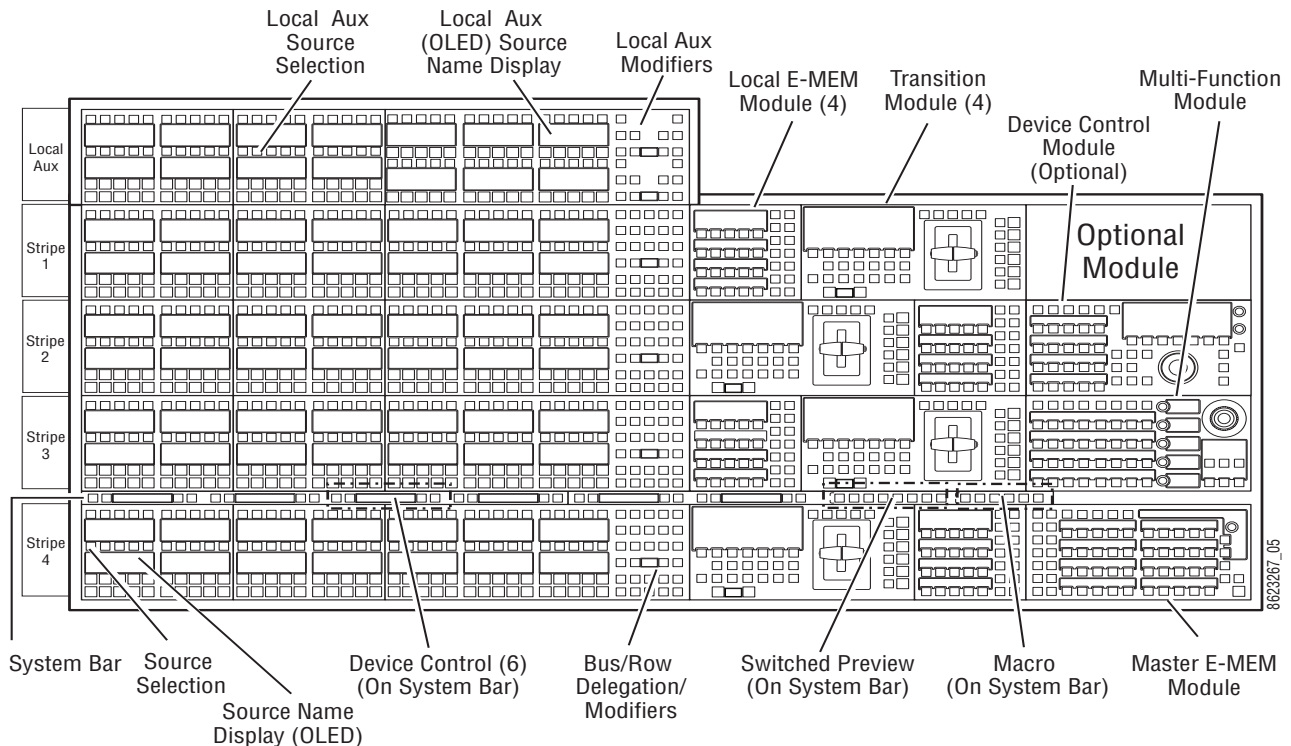
- KAYN-PNL-TRM - Transition Module
- KAYN-PNL-LEM - Local E-MEM Module
- KAYN-PNL-MEM - Master E-MEM Module
- KAYN-PNL-MFM - Multi-Function Module
- KAYN-PNL-SRC-35, 25, 15 - Source Select Module, available in 35, 25, and 15 button widths.

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

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

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

Figure 117. 4-ME Control Panel and Modules



Other Control Panel configurations are available for the Kayenne system, including 1-ME, 2ME, and 3-ME.

## Panel Saver Mode

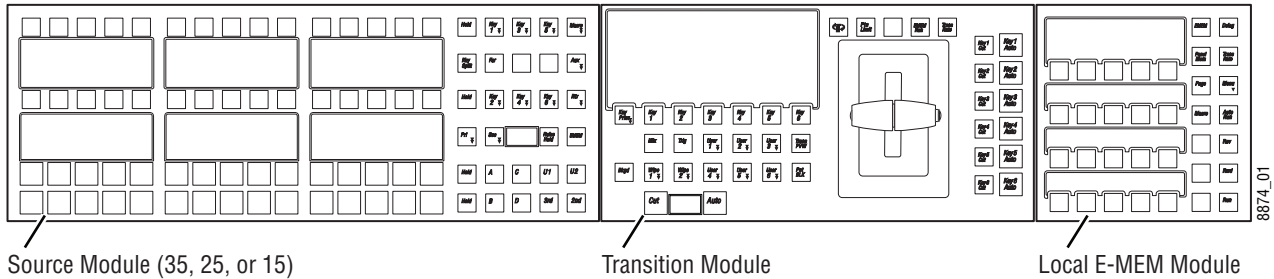
The Kayenne Control Panel will go into Panel Saver or “Sleep” mode, if no Control Panel buttons are pressed. The Control Panel goes into Panel Saver mode after 10 minutes of inactivity.

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

## Module Overview

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

Figure 118. Portion of Control Panel ME Stripe



## Transition Module

The Transition Module is organized into two control groups, the main transition controls, with status display and transition lever arm, and Keyer transition controls. For information about using transitions, see [Transitions on page 289](#).

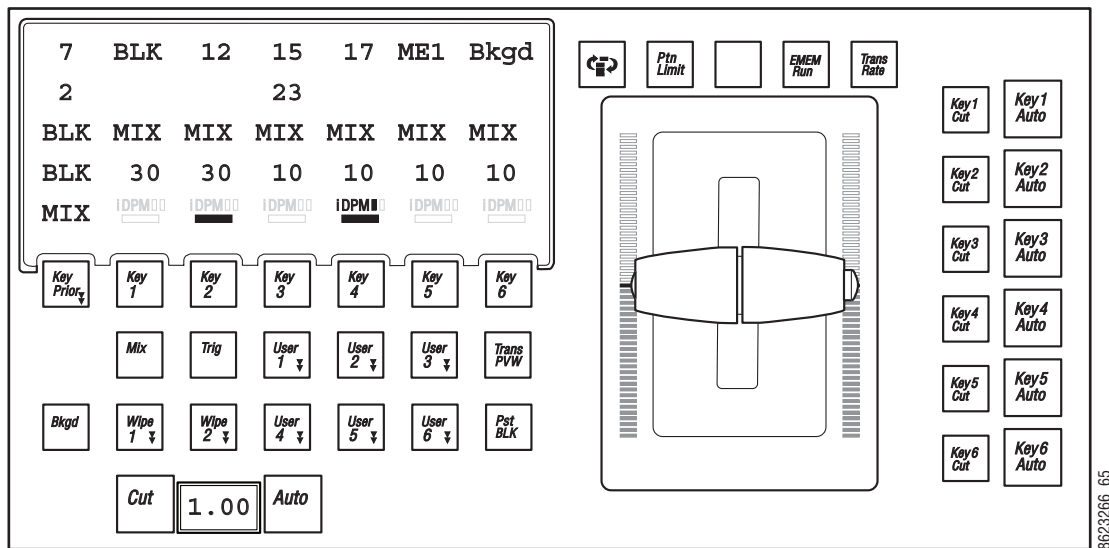
Main Transition controls:

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

Keyer transition controls:

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

Figure 119. Transition Module Overview



## Lever Arm and Bar Graphs

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

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

The Bar Graph shows the percentage of completion of the transition, per partition (Primary and Secondary). Manual transitions display bars, auto transitions are tracked with a single indicator, displaying from 0-100 percent showing the percentage complete of the current transition and the direction of movement required to complete the transition. The bar graph

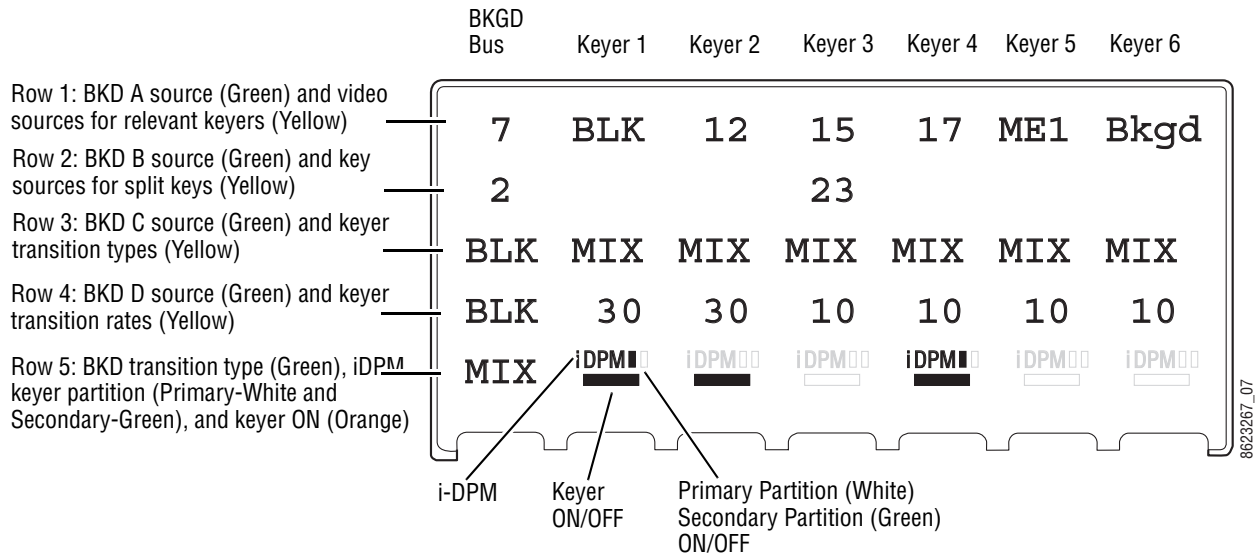
is not necessarily identical to the lever arm position. For example, when the **Auto** button is pressed, the bar graph will track the transition. For auto transitions, the bar graphs similarly track the percentage of completion of the transition (per partition in Split Mode).

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

## Transition Module Status Display

The Transition Module Status Display has seven columns with four character rows plus one row with both BKGD bus text (column 1) and two rows of status indicators for keyers 1-6 or 1-4 (S-series).

Figure 120. Transition Module Status Display Example—Six-Keyer System



Additionally, when the **Key Prior** button (Keyer Priority) is pressed on the Transition Module, Row 4 changes from displaying transition rates to Keyer Priority for Keyers 1, 2, 3, etc. and shows the differences between the current and next priority stacks.

## Function Buttons

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

Figure 121. Exchange ME Button Icon



**Exchange ME** (button icon, left)—Toggle button for fast exchange (temporary delegation) of an ME not delegated to a Stripe (see *Exchange ME on page 273* for more information).

**Pat Lim**—Inactive.

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

- SPOP (single button push) of the **EMEM Run** button delegates the lever arm to control the local E-MEM.
- DPOP (double button push) of the **EMEM Run** button delegates the lever arm to control the Master E-MEM timeline.
- Pressing the E-MEM Run button again, exits the mode.
- **Trans Rate**—Allows Auto and Key Mix 1-6 buttons having an associated transition rate to be altered, set, or queried. Once the Trans Rate button is selected, the associated buttons flash and the Local E-MEM Module changes to Trans Rate Mode for input. Pressing one of the flashing buttons indicates that its transition rate is to be set. While holding down this button any of the other flashing buttons can be pressed for multiple selection.

## Next Transition Buttons

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

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

## Cut and Auto Buttons

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

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

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

To multi-select next transition element buttons:

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

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



## Additional Buttons

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

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

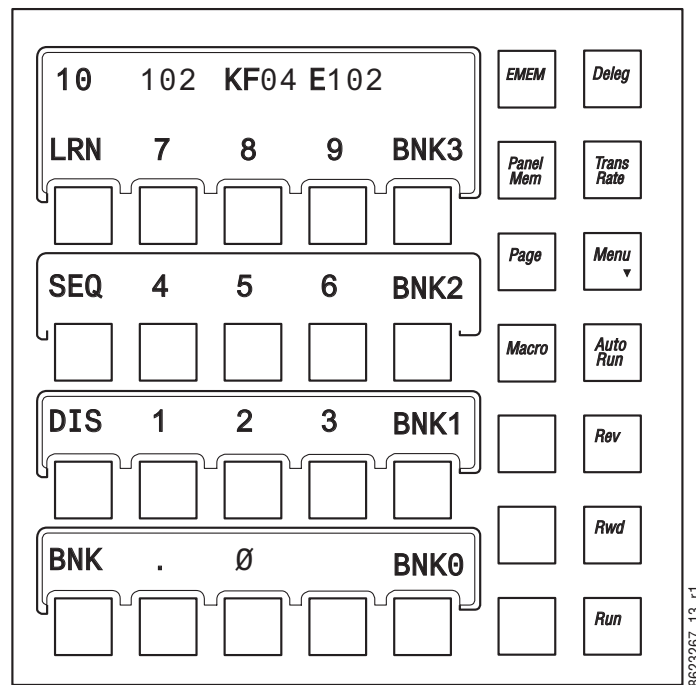
- **Trig** (Trigger)—Inactive
- **PST Black** (Preset Black)—Pressing the **PST Black** button, then pressing the **Cut** button, **Auto** button, or using the lever arm, will delegate the first transition using Mix or Wipe to black.

## Local E-MEM Module

The Local E-MEM Module is part of an ME Stripe and is organized into two sections, the mode area (left), with supporting buttons and status display, and two rows of function buttons (right) for mode selection and effects control ([Figure 122](#)). For more information about using E-MEMs, see *Basic E-MEM Operations on page 153*.

Bank buttons **BNK 0 - BNK 3** in the Local E-MEM Modules (right side of keypad) provide faster access to banks ([Figure 122](#)). A single press of the button delegates to the bank indicated, a DPOP of the button takes you to the bank indicated + 4, e.g. one press for Bank 0, DPOP for Bank 4. The highest bank available is Bank 7 (DPOP of **BNK 3** button). The buttons will be unlit for Banks 8 and 9. A DPOPed selection high tallies cyan (blue) color.

Figure 122. Local E-MEM Module Example

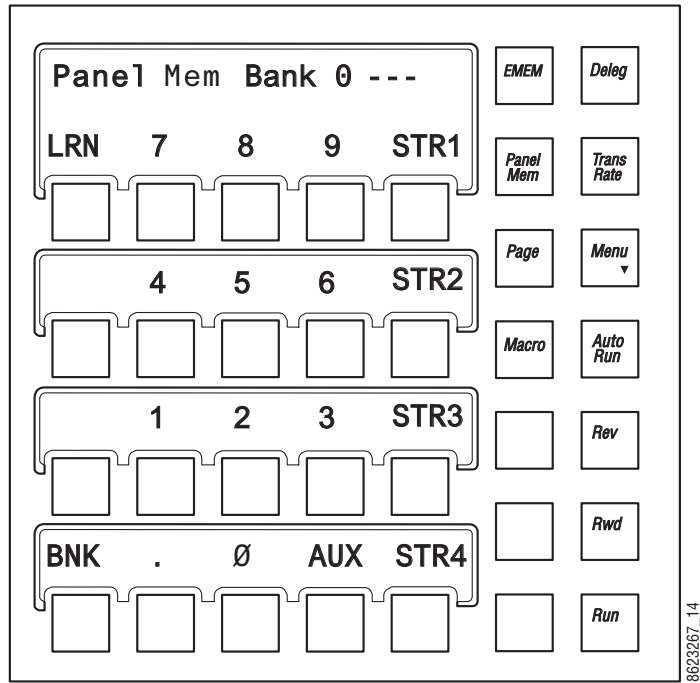


There are several modes available with the Local E-MEM module, accessed by pressing the following buttons:

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

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

Figure 123. Local E-MEM Module, Panel Memory Example

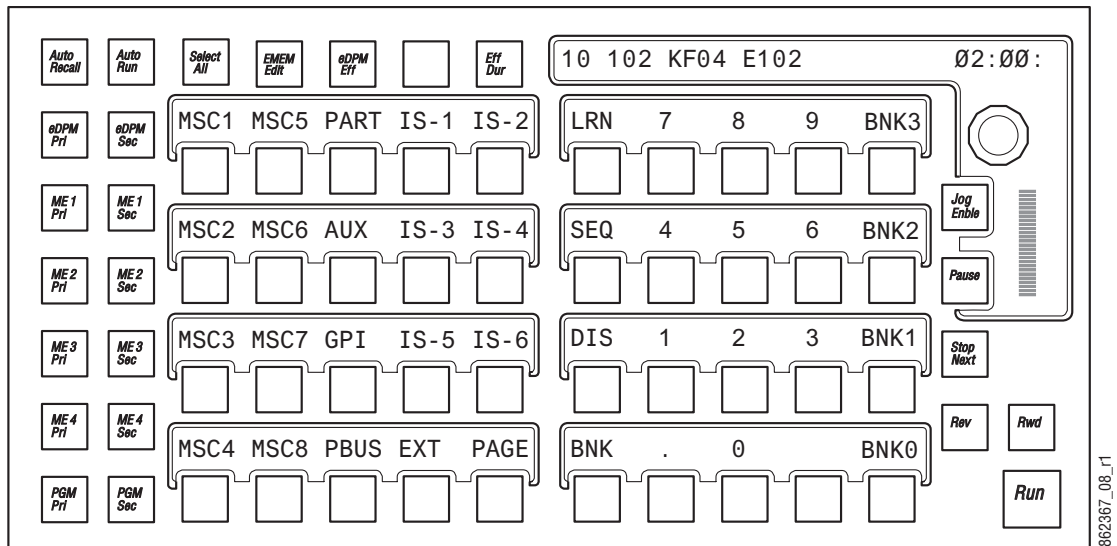


## Master E-MEM Module

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

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

Figure 124. Master E-MEM Module Example



The following describes the Master E-MEM Module organization (Figure 124):

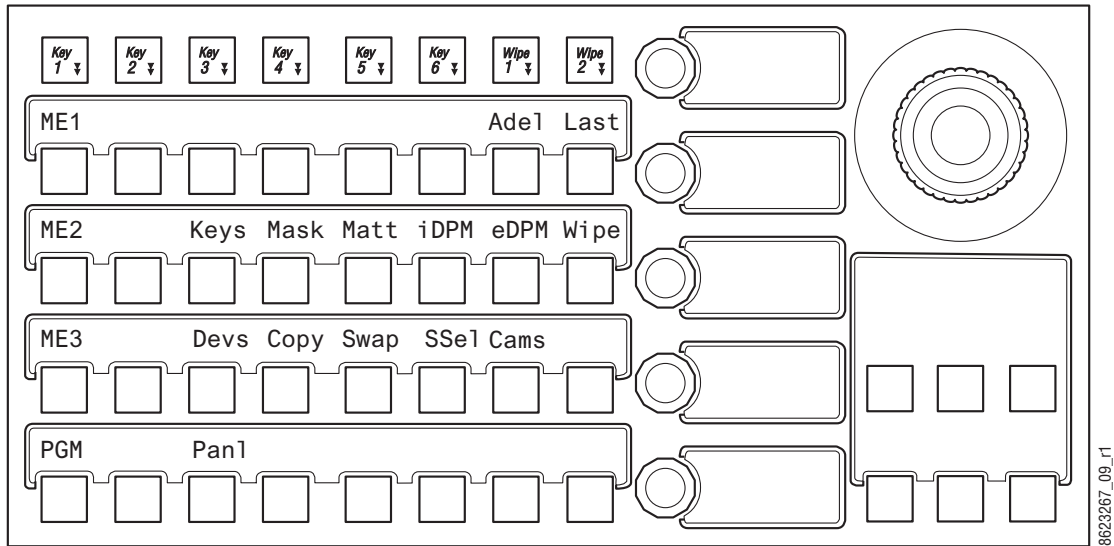
- Two rows of delegation buttons (left side),
- One row of Function and Mode buttons across the top (left),
- Jog Knob with LED (top right)—Rotating this knob clockwise advances through the effect. Rotating the knob counter-clockwise moves the effect position backwards. The degree of rotation advances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

## Multi-Function Module

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

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

Figure 125. Multi-Function Module Example



The following describes the Multi-Function Module organization:

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

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

- The other buttons in the main delegation area, when in the Home position, delegate to: Keys, Masks, Mattes, i-DPM, e-DPM Wipe, Device, Copy, Swap, Source Select, and Panel Preference. When pressed, the LEDs and buttons are delegated to those modes and modifiers,
- Knob row with LEDs (middle-right) provides adjustment and display of parameters for delegated functions,
- Joystick (top-right) performs multiple functions depending on the delegation, for example for keyers the joystick positions a delegated keyer (X,Y, and Z axis), but with device control the joystick performs jog control operations (Up, Down, Fast Forward, Rewind—center button performs Mark-In),

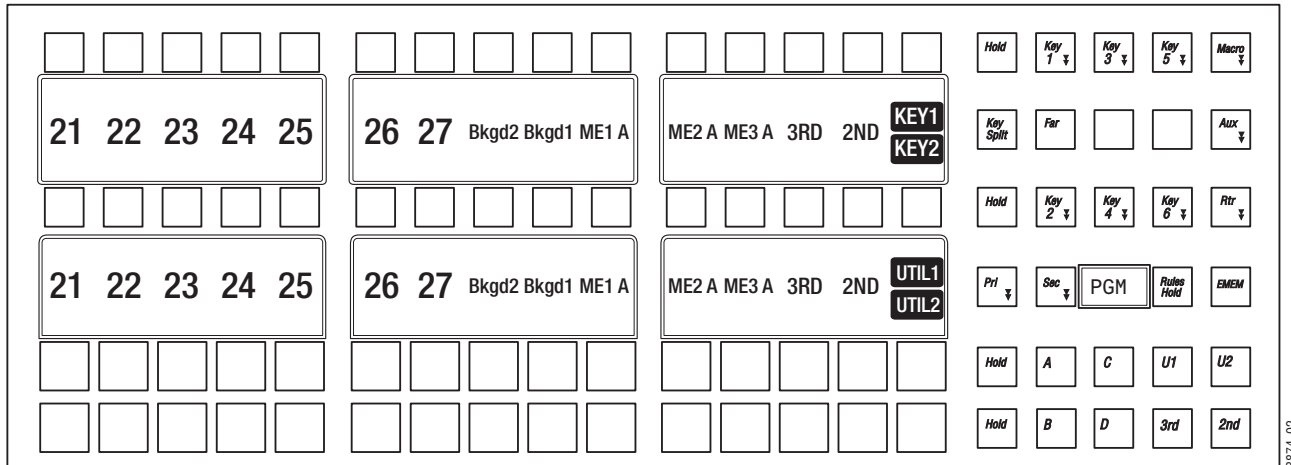
**Note** The joystick can be calibrated from the MFM: from Home, press **Panel**, **Cali** and follow the instructions displayed on the MFM.

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

## Source Select Module

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

Figure 126. Source Select Module Example



### Text Display Outlines

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

### Source Name Text Wraps

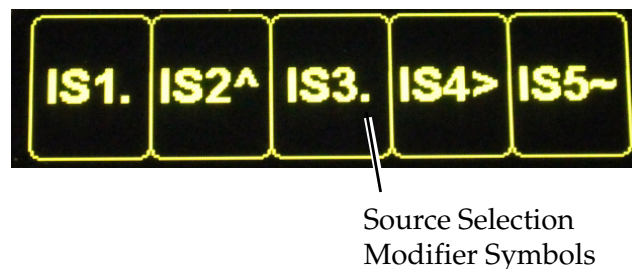
Inserting a space in the Source Name wraps the text to the second line. For example typing **CAM** then a space then the number **3** would wrap '3' to the next line of the OLED button display.

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

### Source Select Device Input Name Modifiers

The device input name modifier symbols provide device status on the Source Selection display.

Figure 127. Modifier Symbols





## Source Select Motion Control Symbols

Table 10. Motion Control Device Input Modifier Symbols

Symbol	Name	Description
>	Right bracket	Play
<	Left bracket	Reverse Play
.	Dot (period)	Stop (also indicates a loaded Image Store still or recording)
.	Dot (period)	Record
<<	Double left bracket	Rewind
>>	Double right bracket	Fast Forward

## Notification Symbols

Table 11. Device Input Modifier Notification Symbols

Symbol	Name	Description
~	Tilde	Device not acquired
?	Question mark	Device is not connected
!	Exclamation mark (or bang)	Device error
*	Asterisk	Router Source destination is not selected or is undefined
^	Caret	No Image Store movie or image (not used for external devices)

## Source Select Buttons and SND

The following describes the Source Select Module organization for source select buttons:

- Source Selection buttons (left)—Can be mapped and delegated to buses, macros, routers, etc. and there are no limits to mapping so the same function or source can be mapped numerous times, and saved in Panel Memory (Local E-MEM Module/File Ops, Panel Mem menu). Source selection buttons can be mapped as:
  - Switcher sources—Can be delegated to source selection for any ME bus, Aux bus/ Aux selection, Router control, Macros, or E-MEM recall,
  - Shift function—There are four shift levels 1st (unshifted), 2nd, 3rd, and 4th,
  - Row Delegation function—Mapped to the right-most source select button (default). The SND (Source Name Display) associated with the row delegation button indicates the name of the bus or function, e.g. K2, MACRO, Router, U2, etc.,
- SND LEDs—SNDs have two modes, 'Full' and 'Split'. If both adjacent

rows have identical text for a source, it is displayed in full, i.e. large text. If the two rows have different text, the SND is split into two rows of smaller text. SNDs show source names, macro names, router source and router destination names, Aux bus numbers, etc.

- **Shift buttons**—Shifts can be mapped anywhere on the Source Select Module (or nowhere) using the **User Prefs, Button Mapping** menu (default is 2nd and 3rd on the second and third source select buttons from the right).

## Function and Delegation Buttons

The following describes the function and delegation buttons:

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

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

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

- Note** To delegate one row, hold down the E-MEM button and press a bus delegation button or hold down the bus delegation row button and press the E-MEM button.
- **Pri** partition select button—Delegates all four rows of a Source Select Module to the primary partition (Rows 1 and 2 are delegated to the last delegation when **Pri** was used, Row 3 is delegated to the A bus and Row 4 is delegated to the B bus).
  - **Sec** partition select button—Delegates all four rows of a Source Select Module to the secondary partition (Rows 1 and 2 are delegated to the last delegation when **Sec** was used, Row 3 is delegated to the U1 bus and Row 4 is delegated to the U2 bus).
    - Pressing the **Pri** and **Sec** buttons together causes both buttons to high tally. Both partitions are controlled but only tallies for the Primary partition will be seen on the Source and Local E-MEM modules.
- Note** Pressing the **Pri** or **Sec** buttons delegates the Transition and Local E-MEM Modules in addition to the Source Select Module and modifies what wipe generators can be selected on the Matte and Wipe delegations of the Multi-Function Module.
- ME delegation indicator—Located between the **Sec** and **Rules Hold** buttons, displays the current delegation of the panel row to the logical ME (ME-1, ME-2, PGM, etc.).

## Split OLED Source Select Display States

Control Panel Source Select OLED displays split under the following conditions:

- Source Memory is turned on for the selected source.

**Note** Sources with Source Memory applied have a line through the source name on the OLED.

- The selected source is Asynchronous.

**Note** (OLED backgrounds flash a solid color for Asynchronous sources.)

- A bus row is shifted independently,
- Delegations—Macro, Router, E-MEM, etc., and
- Uncalibrated—The source video is processed, for example RGB Color Corrected, pixelated, etc. (the source name is underlined in the OLED).

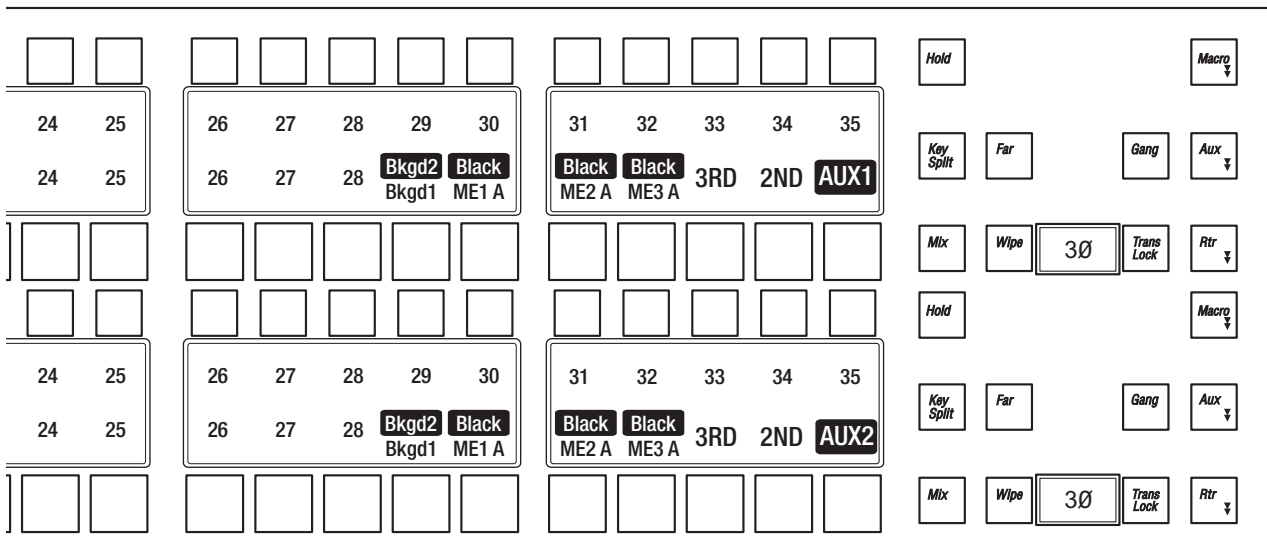
Figure 128. Split OLED Source Select Display



## Local Aux Module

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

Figure 129. Local Aux Module Example



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Included features:

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

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

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

- Status displays (OLEDs) are located between the button rows, both at the top and bottom of the module,
- There are two rows of small buttons and two rows of larger buttons, and
- Different function buttons on the right side of the module, as shown in [Table 12](#).

Table 12. Local Aux Panel Function Buttons

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

Table 12. Local Aux Panel Function Buttons

Function Button	Local Aux Module	Source Select Module
EMEM		X
A (Bus)		X
B (Bus)		X
C (Bus)		X
D (Bus)		X
U1 (Bus)		X
U2 (Bus)		X

The Local Aux Module provides the following functionality:

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

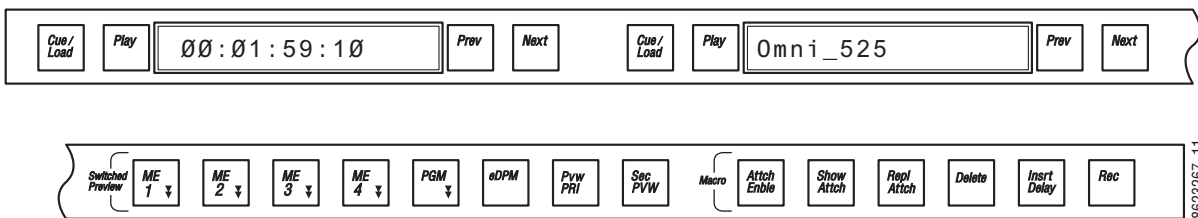
There are two identical sets of Aux Bus controls; upper and lower, both sets of controls operate identically. For each set of controls, pressing a button on the top row selects an Aux Bus destination and pressing a button on the bottom row selects a source for the selected top row Aux Bus.

## System Bar

The System Bar provides:

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

Figure 130. System Bar Example



### Switched Preview Button Group

The Switched Preview button group is the second button group from the right on the System Bar.

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

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

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

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

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

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

## Macro Editing Button Group

The Macro Editing buttons ([Figure 130](#)) work in conjunction with the source select rows delegated to macros:

**Attch Enble** button—Turns on/off macro attachments.

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

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

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

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

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

## Device Control Groups

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

Each Device Control group provides a:

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

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

**Display**—Displays the current clip.

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

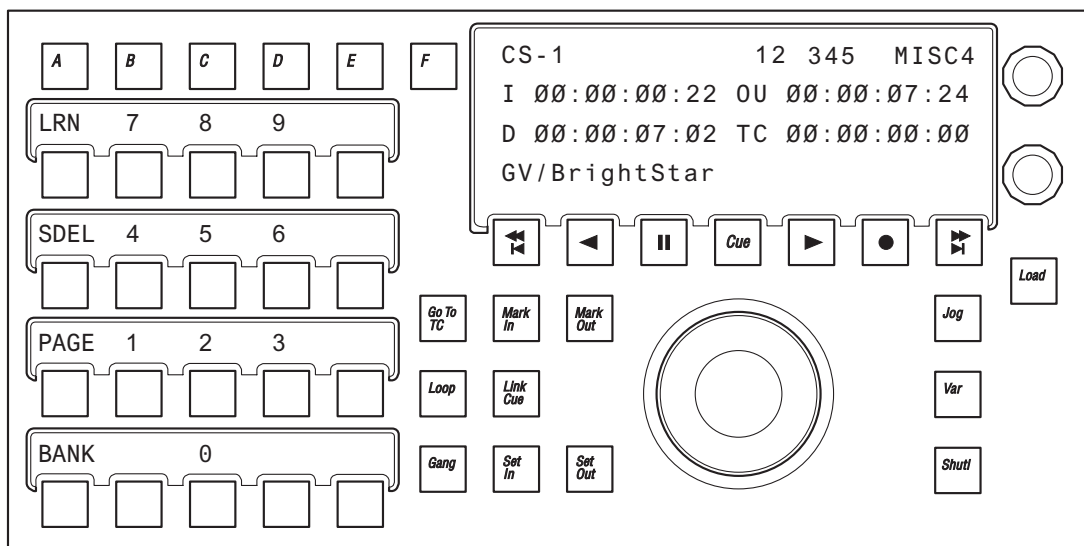
**Next** button—One button press steps backward through the current directory of clips.

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

## Device Control Module

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

Figure 131. Device Control Module Example



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The Device Control Module controls all configured devices including:

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

## Device Control Functionality

The Device Control Module supports the following functionality:

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

## Device Control Module Organization

The Device Control Module is organized as follows:

- Device Select button group (buttons A-F), located at the top-left of the Device Control Module, has six buttons labeled **A-F**. These buttons select devices for control by the Device Control Module and when selected, show status for that device in the Status Display (top-left).
- Status Display, located middle-right at the top, (right of the Device Select button group),
- Run Control button group (with Cue button), located middle-right (just below the status display),

- The two soft knobs (Knob 1 and Knob 2), at the far right of the Device Control Module (right of status display), are:
  - Knob 1, Device select knob (top)—turn to scroll through and delegate devices, and
  - Knob 2, Clip select knob (bottom)—turn to scroll through and select clips (parameters for both knobs are shown on the right in the status display.),
- Clip Editing button group, located in the middle of the Device Control Module, has eight clip control buttons:
  - **Go To TC**—Device jumps to keypad entered numeric time code data.
  - **Mark In**—Captures the current Time Code of the selected device and stores it as the 'Mark In' position.
  - **Mark Out**—Captures the current Time Code of the selected device and stores it as the 'Mark Out' position.
  - **Loop**—If Mark In/Mark Out points are set, causes the selected device to loop from the Mark Out point to the Mark In point, if points are not set, causes the device to loop from the end of a clip to the beginning.
  - **Link Cue**—Allows you to learn more than one device into a cue.
  - **Gang**—Works with Device select button group to 'Gang' devices.
  - **Set In**—Allows you to set a Mark In into a clip using numeric keypad entry.
  - **Set Out**—Allows you to set a Mark Out into a clip using numeric keypad entry.
- Jog knob—The Jog knob (middle-right) is associated with the Jog, Var, and Shuttle mode buttons (middle, right of Jog knob). The jog knob operates in the three modes (with button on) as follows:
  - **Jog**—Complete 90 degree rotation of the Jog knob represents one frame (forward or in reverse),
  - **Shuttle**—Rotating the Jog knob causes forward (or backward) play at a rate starting from unity speed to the maximum shuttle speed of the device. A complete 360 degree rotation of the Jog knob causes the device to be at its maximum shuttle speed, and
  - **Var**—Starting from a pause condition, the first 360 degree forward rotation of the Jog knob scales play speed from zero to 1.0, then the next 360 degree rotation scales between 1.0 and 3.0, the maximum.
- **Load**—Loads selected clip to delegated device.

## Kayenne K-Frame Delegation

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

### ME Delegation

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

### DELG Button

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

**Note** Only those MEs for which physical MEs have been assigned to the suite are displayed in Delegation mode on the Local E-MEM Module.

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

### Exchange ME

The **Exchange ME** button (see *Transition Module on page 251*) allows you to delegate MEs that are not assigned to a Stripe. For example on a 4.5-ME Kayenne system with four Stripes, the fifth ME can be 'exchanged' with a currently delegated ME on that Stripe by pressing the **Exchange ME** button. The function is global for all Stripes, i.e. if ME-4 is unassigned, pressing the **Exchange ME** button on the current PGM PST Stripe assigns ME-4 to that Stripe and PGM PST is available for exchange (delegation) on each Stripe's **Exchange ME** button.

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

The **Exchange ME** button displays the color of the unassigned ME. For the example above with PGM PST and ME-4, when PGM PST is red and ME-4 is purple, after ME-4 is exchanged with PGM PST the **Exchange ME** button

changes from purple to red (for each **Exchange ME** button on all Stripes in that suite).

## Automatic Delegation

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

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

## Multiple Keyer Delegations

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

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

## DPOP and SPOP Menu Delegation

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

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

Active DPOP and SPOP buttons and their menus are listed in [Table 13](#).

Table 13. DPOP and SPOP Buttons

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

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

## Menu Panel and Touch Screen Overview

The Menu Panel includes a touch screen display, five knobs for adjusting parameter values, and four USB ports (two on the right side edge of the panel and two on the back for keyboard and mouse (wired or wireless are supported)).

The GV Korona has a built-in multitouch screen with additional joystick control functionality.

### Touch Screen

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

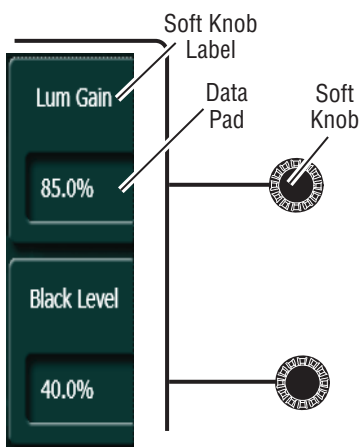
The Menu Panel touch screen allows direct interaction with menu controls displayed on the screen. The screen is designed to work with a finger or other soft object. The touch screen is sensitive to a single pressure location only, so only one touch surface control can be adjusted at a time.

### Menu Selection

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

### Soft Knobs

Figure 132. Soft Knob and Pad



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

## **Data Pads and Touch Buttons**

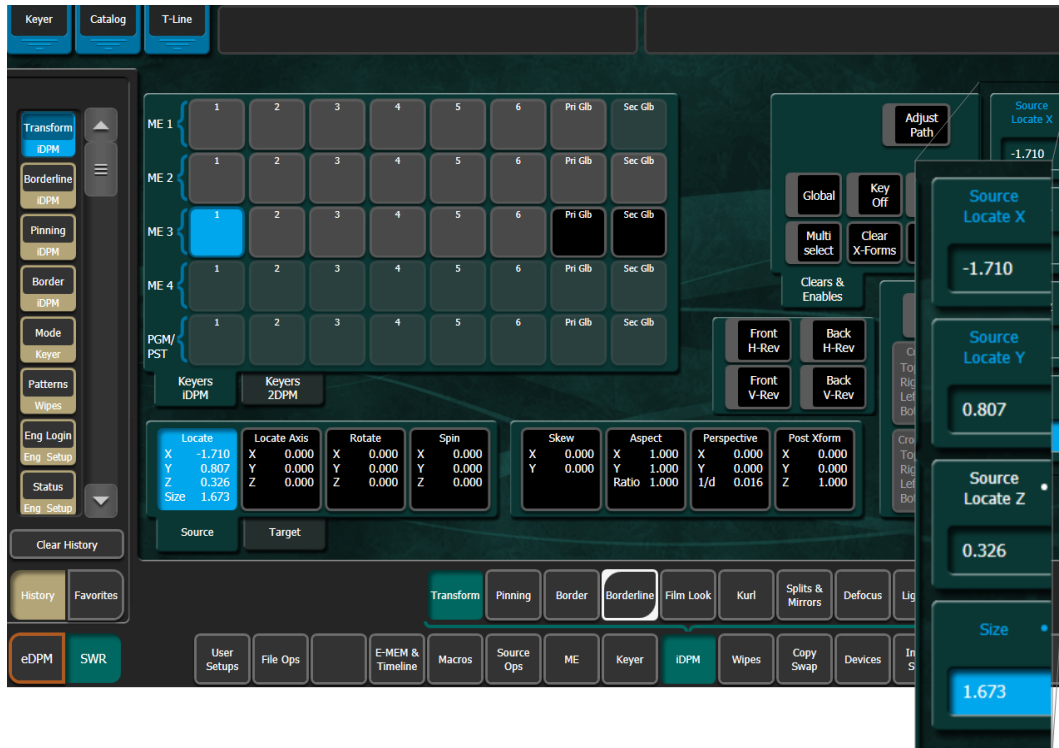
The GV Switcher system menus make extensive use of data pads. Data pads are active areas on the screen that display a summary of the status of an object, and when touched bring up additional controls and information for that object. For example if the data pad for ME-1, Keyer 1 in the Keyer Mode menu is selected, the selection causes the rest of the screen to display settings and controls for that keyer. A special pattern data pad also exists, which displays the shape of the current pattern (the square shape). Touching this data pad brings up a wipes palette, from which wipe pattern generator shapes are selected.

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

## GV Korona K-Frame Menu and Joystick Control

GV Korona Transform Engine Menus indicate joystick control of menu parameter values, with colored text and dots on the soft knob data pads.

Figure 133. Joystick and Z Axis Menu Indicators



- Blue text indicates the parameter is under joystick control and moving the joystick will change the values for that parameter.
  - White text with a white dot indicates the location values can be selected for control by the joystick (when selected, the white dot/text turns blue).
  - A blue dot (with blue text) indicates that the parameter is selected and moving the joystick will change the values.
1. To select a parameter for joystick control (white), select any data pad with a dot and press the soft knob for that data pad; text and dot turn blue.
  2. Move and turn the joystick to change the parameter values for all parameters with blue text.



## Menu Screen Organization and Components

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

Backgrounds vary for each menu type:

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

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

- Navigation and
- Content and Messaging

Figure 134. Macro Catalog Menu Example

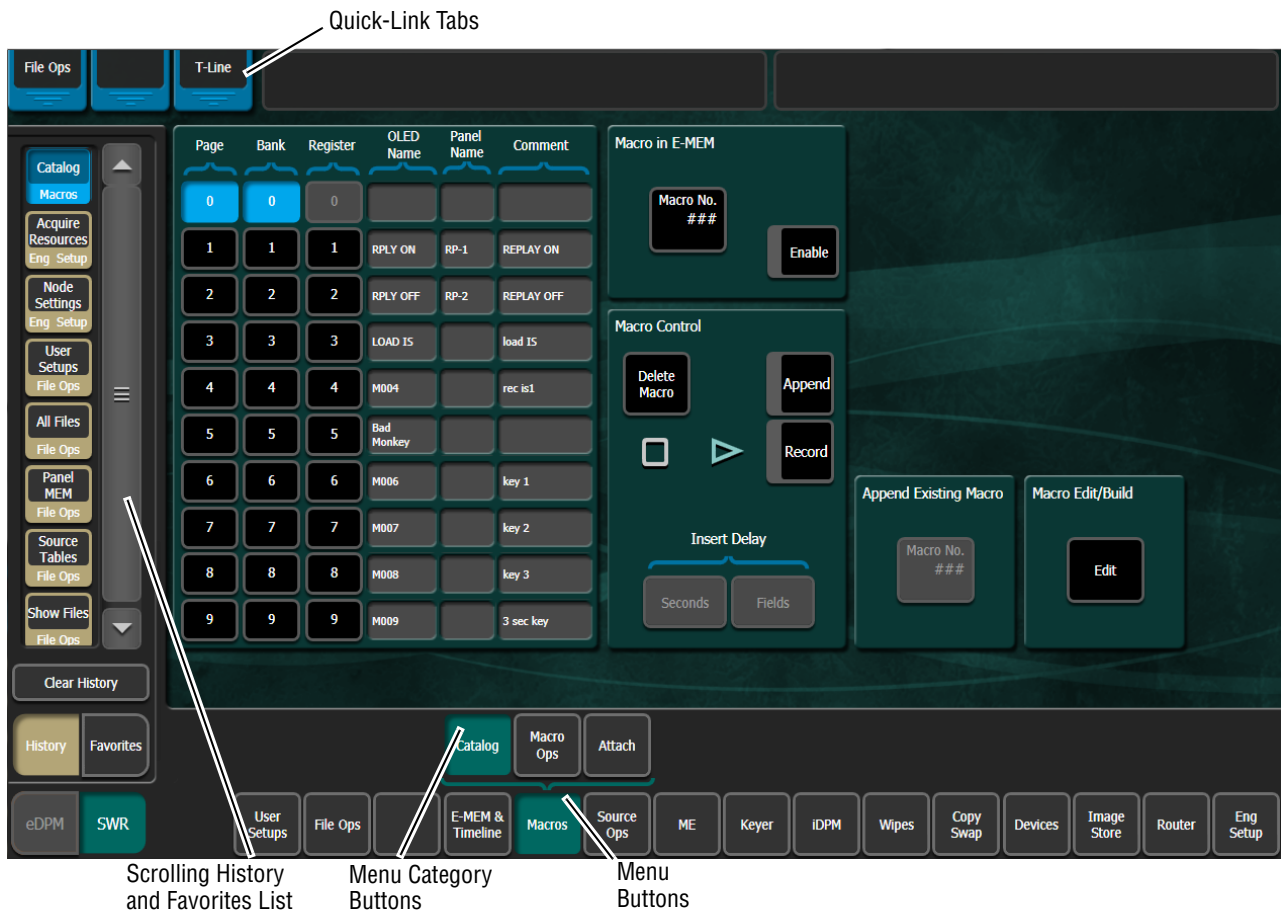
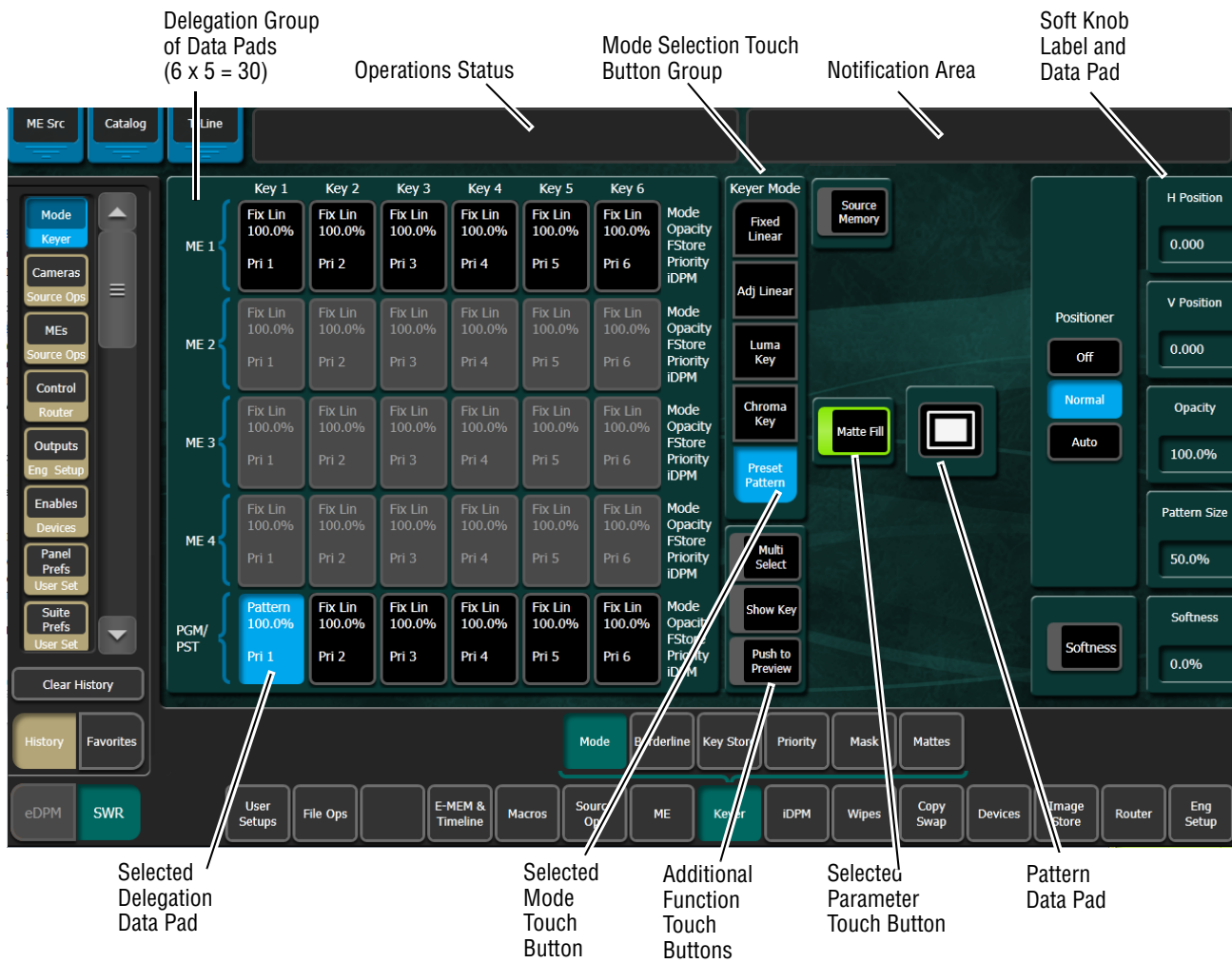
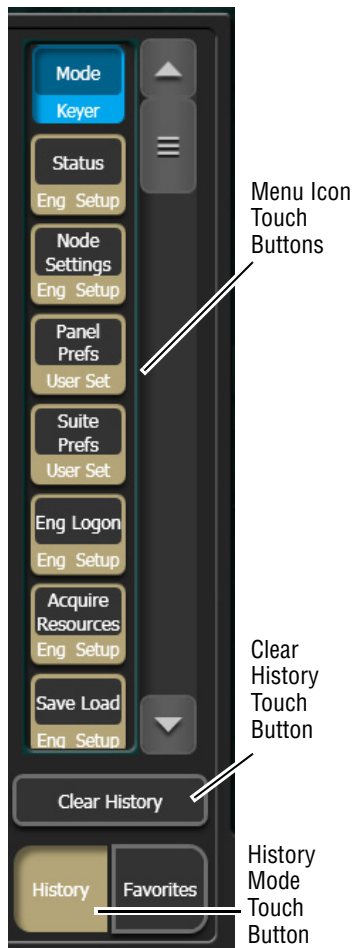


Figure 135. Keyer Mode Content Menu Example—Six Keyer System



## History Mode

Figure 136. History Mode Example



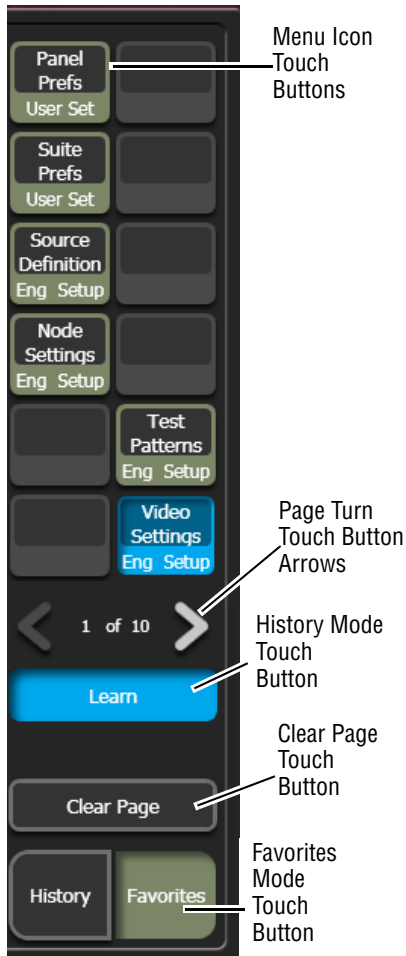
When the **History** mode touch button is selected, up to 45 previously visited menus can be quickly accessed by clicking on the representative menu Icon. The scrolling menu icon window can be cleared by selecting the **Clear History** touch button (left side of menu).

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

Use the scroll bar to see more History menu icon choices.

## Favorites Mode

Figure 137. Favorites Mode Example



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

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

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

To create a Favorites list, perform the following steps:

1. Choose a Favorites page (1-10), using the **Left** and **Right** menu arrow buttons.
2. Navigate to the menu to be added to the list.
3. Select a grayed out or existing menu icon from the two side-by-side rows of six you wish to create (a previously learned icon can be overwritten).
4. Touch the **Learn** button.

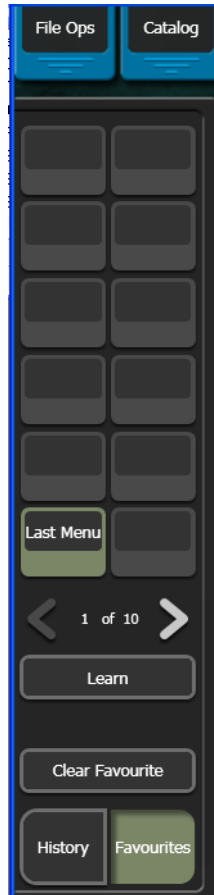
To clear a Favorites page, select the **Clear Page** button (bottom-left).

## Creating a Last Menu Assignment in Favorites Mode

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

1. Touch the **Favorites** button.

Figure 138. Favorites Last Menu Icon



2. Touch the **Learn** button.
3. Touch a favorite button on any page 1-10.

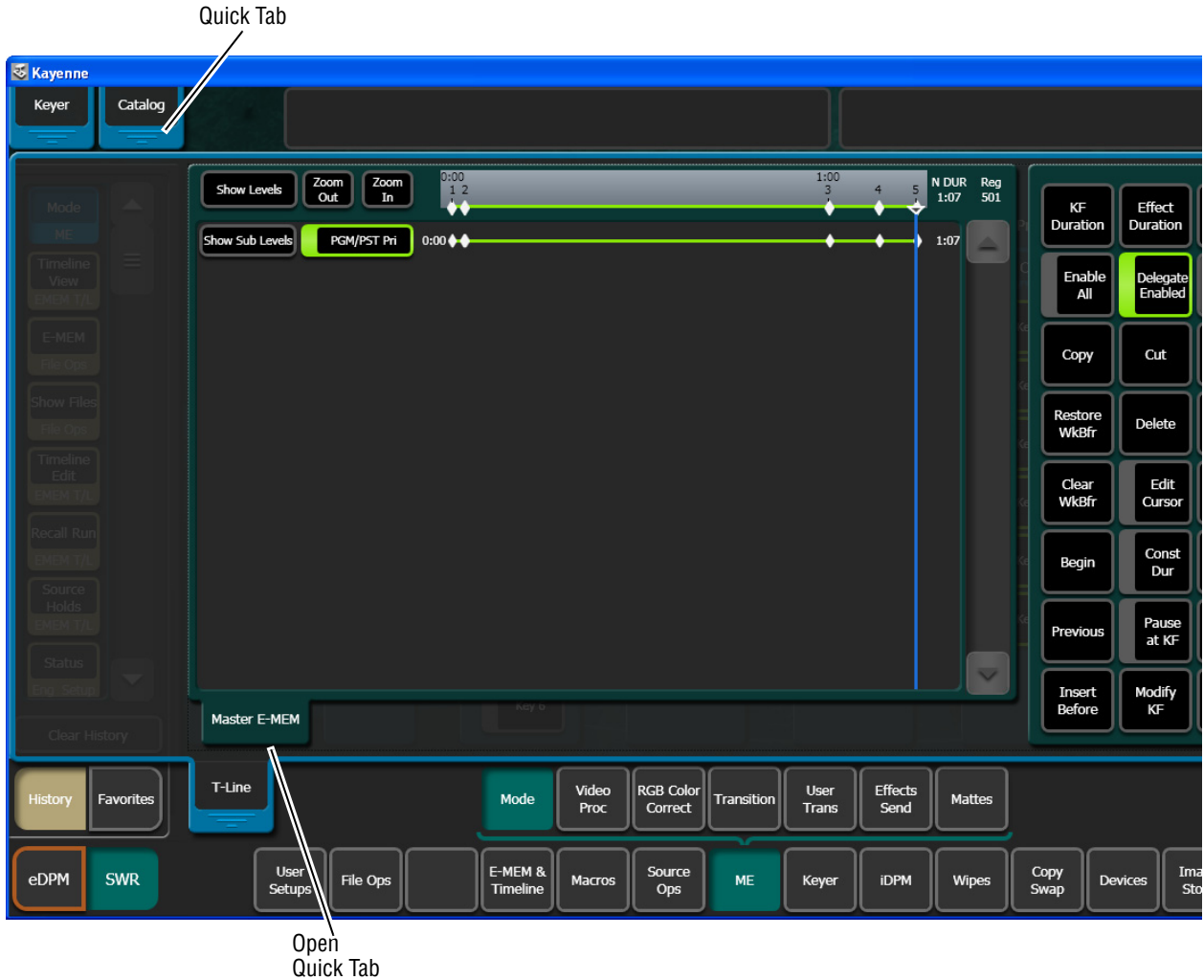
Result: The button changes to the Last Menu icon.

## Quick Tabs

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

Click on the tab, upper left of the menu, to open the Quick Tab, the tab moves to the bottom. Click in another menu, where the tab was, or on the tab a second time to close it.

Figure 139. Menu Quick Tabs Example



The top line is identical in all the GV Switcher system menus:

- The left portion of the top line has three **Quick Tabs**,
- The center portion of the top line displays operations status messages, and
- The right portion of the top line is an operator notification area, where messages generated by the GV Switcher system are displayed.

## Delegation Group

Additional levels of delegation are needed in some menus, like the Keyer menu for example because it must control all keyers. This highest level of delegation is located on the left side of the menu as a grid of data pads. Data pads display limited status for a particular object. Touching a data pad delegates that object, and the rest of the menu will then display information and controls for only that object. The data pad of the selected object is colored light blue.

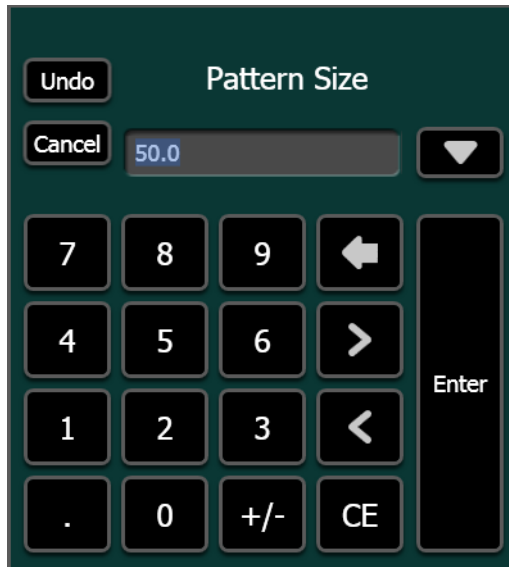
## Parameter Control Area

A Parameter Control area contains function selection buttons and soft knob pads for the selected operating mode. Function selection buttons either toggle on and off or are part of an interlocked group. The soft knob pads on the right allow individual parameter adjustments, as described earlier.

## Numeric Keypad

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

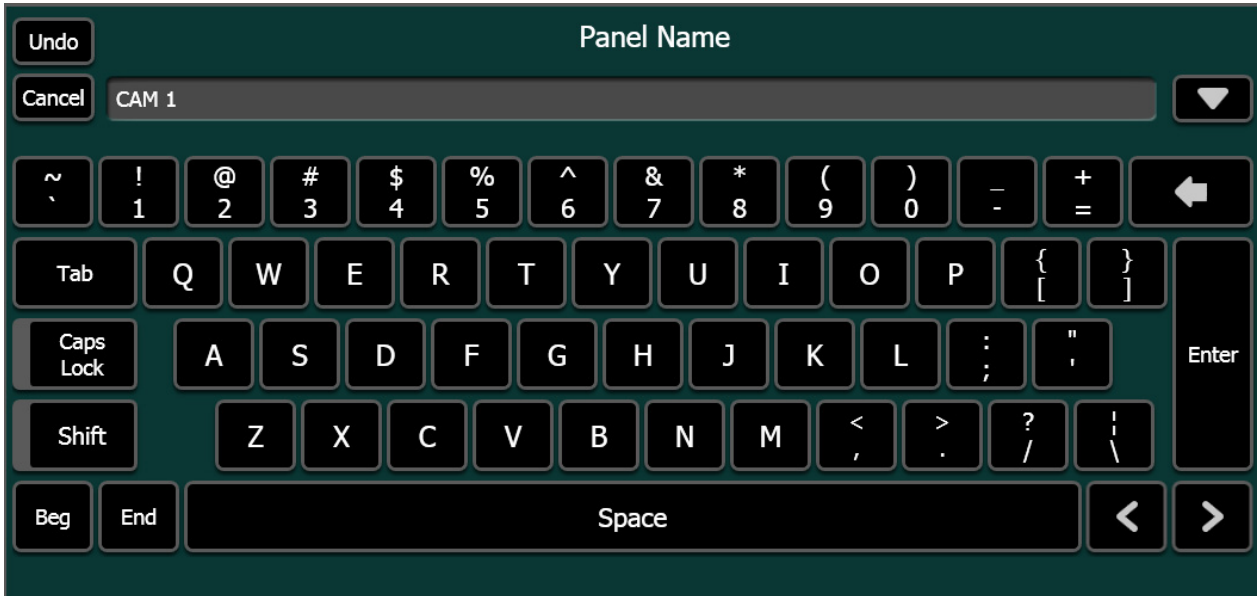
Figure 140. Numeric Keypad



## Alphanumeric Keypad

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

Figure 141. Alphanumeric keypad



## Scrolling Lists

Figure 142. Scrolling List



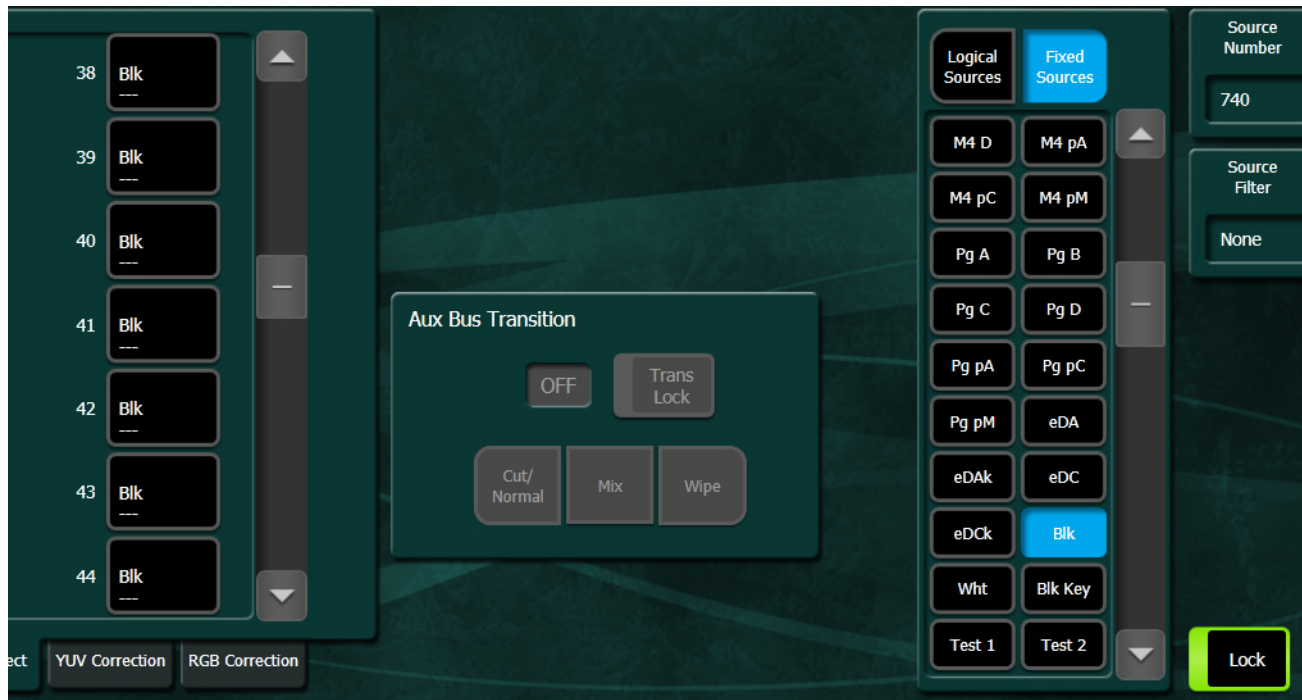
When multiple items are available for selection, scrolling lists are used. On most menus, touching the up and down triangle buttons scrolls the list up or down one item. When the top or bottom of the list is reached, that button goes gray. Touching the green area above or below the white handle scrolls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



Some menus have two scrolling lists, used to associate an item in one list to an item in the other list. Typically you choose an item on the left list, and the system automatically selects the item currently associated with it on the right list. You can then choose a different item from right list to change the association.

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

Figure 143. Paired Scroll Lists with Lock On



## Menu and Panel Interactions

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

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

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

selected on the Control Panel, the menu display will change its delegation to ME 3 Key 2. However, the reverse is not true. Changing delegations on the Menu Panel does not change Control Panel delegations.

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

# Transitions

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

- Cut
- Mix
- Wipe

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

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

## Wipes

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

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

### Other Wipe Pattern Generator Uses

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

### 4K Quadrant Mode Wipe Limitations and Supported Wipe Patterns

It is recommended that in 4K Quad Frame Operating Mode, wipe transitions should be previewed before taking them on-air. Wipes and supported

wipe patterns can be used in 4K but there are some limitations. For example, when moving some wipe patterns:

- Horizontally more than +/- 16,
- Vertically more than +/- 23), or,
- X or Y more than +/- 14

may result in on-screen artifacts or anomalies.

Modulation, Multiply, and Horizontal Split functions are *not* supported. Rotation can be used successfully with most of the wipe patterns but may cause issues with others so it is best to preview the pattern with Rotation before taking it on-air.

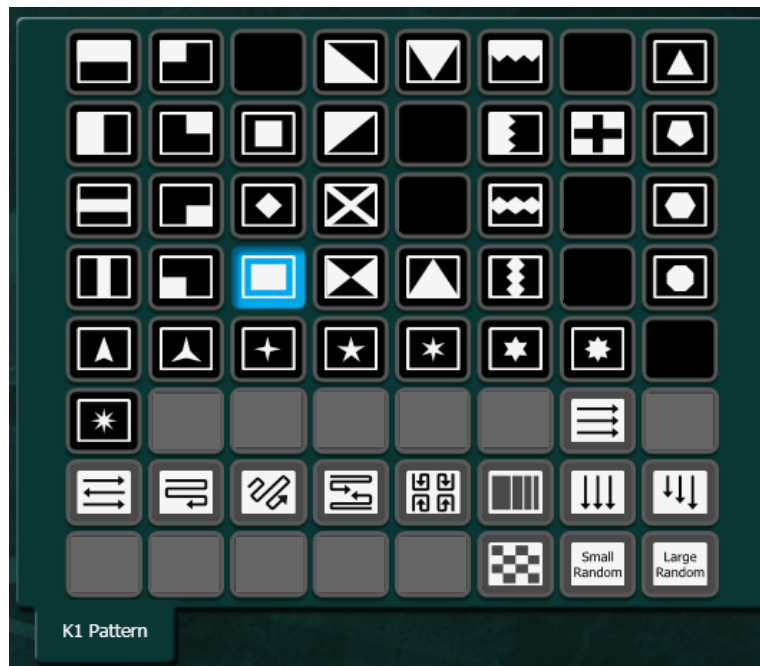
For any wipe pattern, position, rotation, and size for a preset pattern or transition percentage for a transition can interact and sometimes have an unexpected appearance. Therefore, it is important to preview the settings for a wipe before taking it on-air. If the preview of the wipe settings shows the desired behavior, the wipe will consistently perform as expected with those settings.

**Note** Horizontal and Vertical Modulation will work if the keyer is contained to one quadrant of video.

Most wipe patterns available in the HD modes are available in 4K mode.

**Note** Unsupported wipe pattern buttons are *not* grayed out in the GV switcher menu in 4K Mode as they are shown here.

Figure 144. Supported 4K Wipe Patterns



## **Manual Transitions**

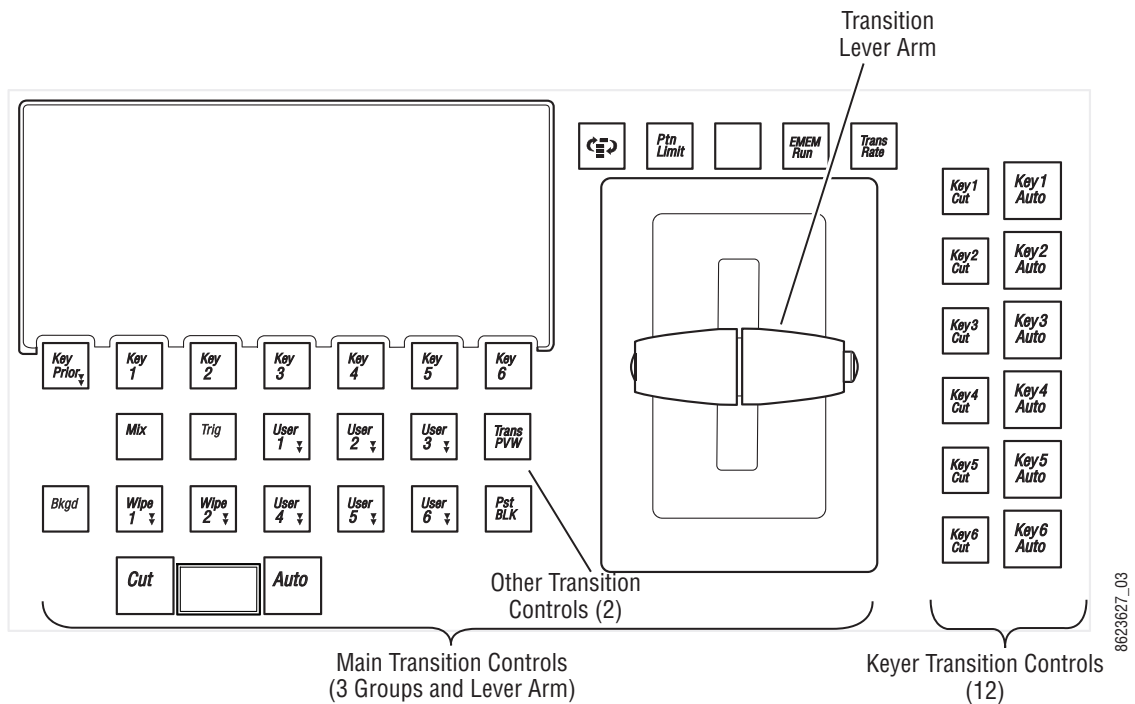
Manual transitions are preset with the next transition element buttons. Any elements that are active when a transition is performed will change state. Active keyers will transition from on-air to off-air or vice versa. Background transitions will occur between the A and B buses with a flip flop at the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

## **Kayenne K-Frame Transition Module**

### **Manual Transitions**

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

Figure 145. Transition Module



## To Perform a Lever Arm Transition

### Setup:

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

### Perform:

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

## To Perform an Auto Transition

### Setup:

1. Setup for an Auto Transition is the same as a lever arm transition (see [page 292](#)) with the following added step:
2. Specify the duration of the transition by turning on the **Trans Rate** button, selecting the flashing button of the desired element, and entering a value in <seconds> • <frames> • <field> format (*Time Value Entry on page 153*). Different durations can be specified by repeating this process for each element.

### Perform:

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

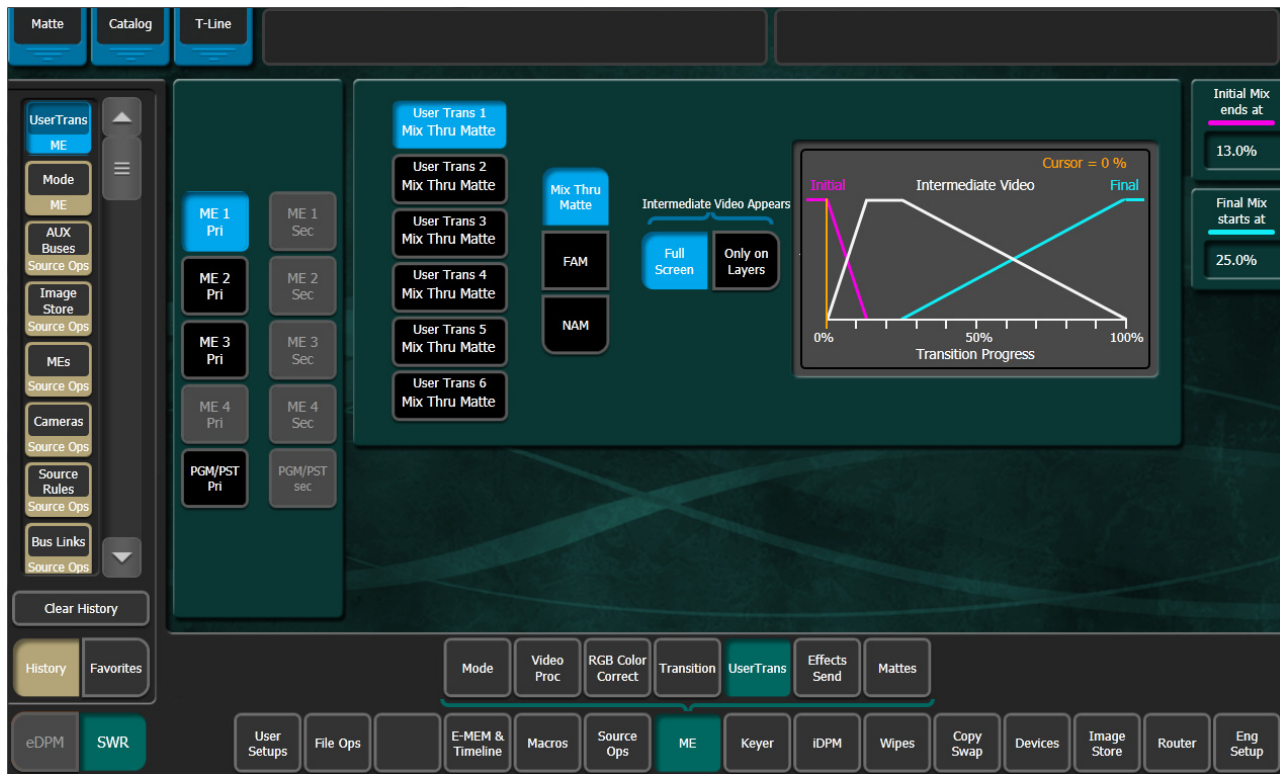
## Performing a Mix Through Video Transition

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

1. In the ME, Mattes menu, select the ME for the transition (left pane).
2. Select the Base Color data pad (right pane).
3. Set the Brightness to 100% and the Saturation to 0% with either the soft knobs or the popup keypad to create a white matte. The matte will appear in the Base Color box.
4. Go to the ME, User Trans menu and select the **User Trans Mix Through Matte** (1-6) button.
5. In the ME, User Trans menu, select the **Full Screen** button under 'Intermediate Video Appears' to create a full raster effect.

- Change the **Initial Mix Ends at** to a lower number to sharpen the slope of the mix from the initial to the intermediate video.

Figure 146. Camera Flash Mix Values



- On the Control Panel, select a video source on the corresponding ME A bus and a different video source on the B bus to transition to.
- Select the User Transition button you assigned earlier in the Transition Module. For a simple white flash between sources, select a **Bkgd** transition only (no key).
- Use the Transition Lever Arm to run the white flash transition. Alternatively you can set the Transition Rate in the Transition Module to a fast rate to enhance the flashing effect, then press the **Auto** button to perform the transition at the specified rate.

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

## NAM and FAM Mixed Transitions

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

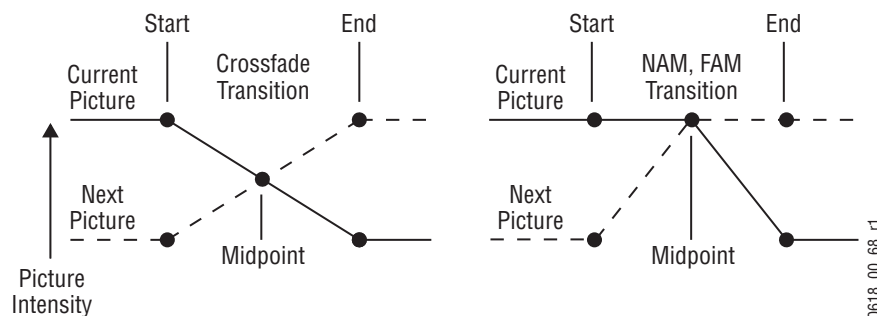


NAM transitions pass only the brightest regions of each picture to the output. During the first half of a NAM transition the original picture retains its original intensity while the next picture mixes to full intensity. Brighter areas in the new picture replace any corresponding darker areas of the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

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

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

Figure 147. Normal, NAM and FAM Mixes

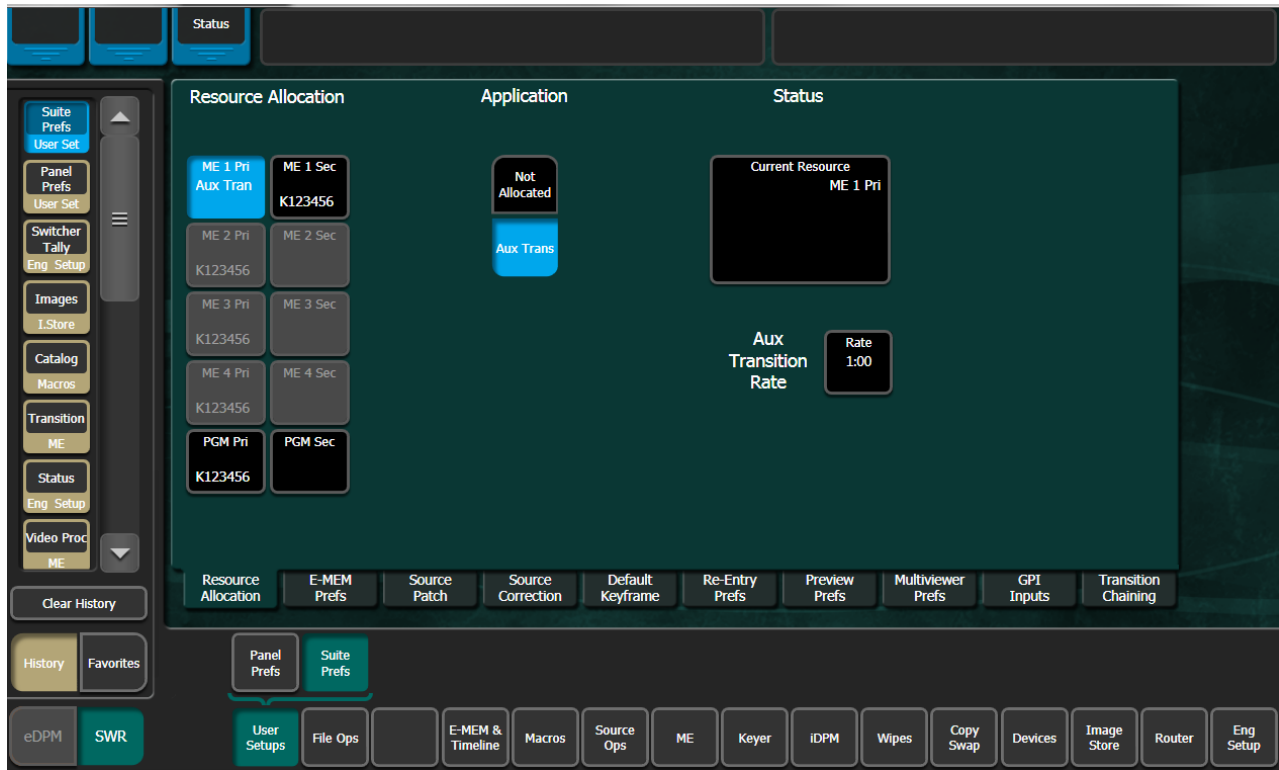


## Aux Bus Transitions

You can perform Aux bus transitions and mix or wipe between sources on an Aux bus. GV Switcher allows you to use one or more ME partitions to perform mixes or wipes on multiple aux busses (including “Controller MEs”).

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

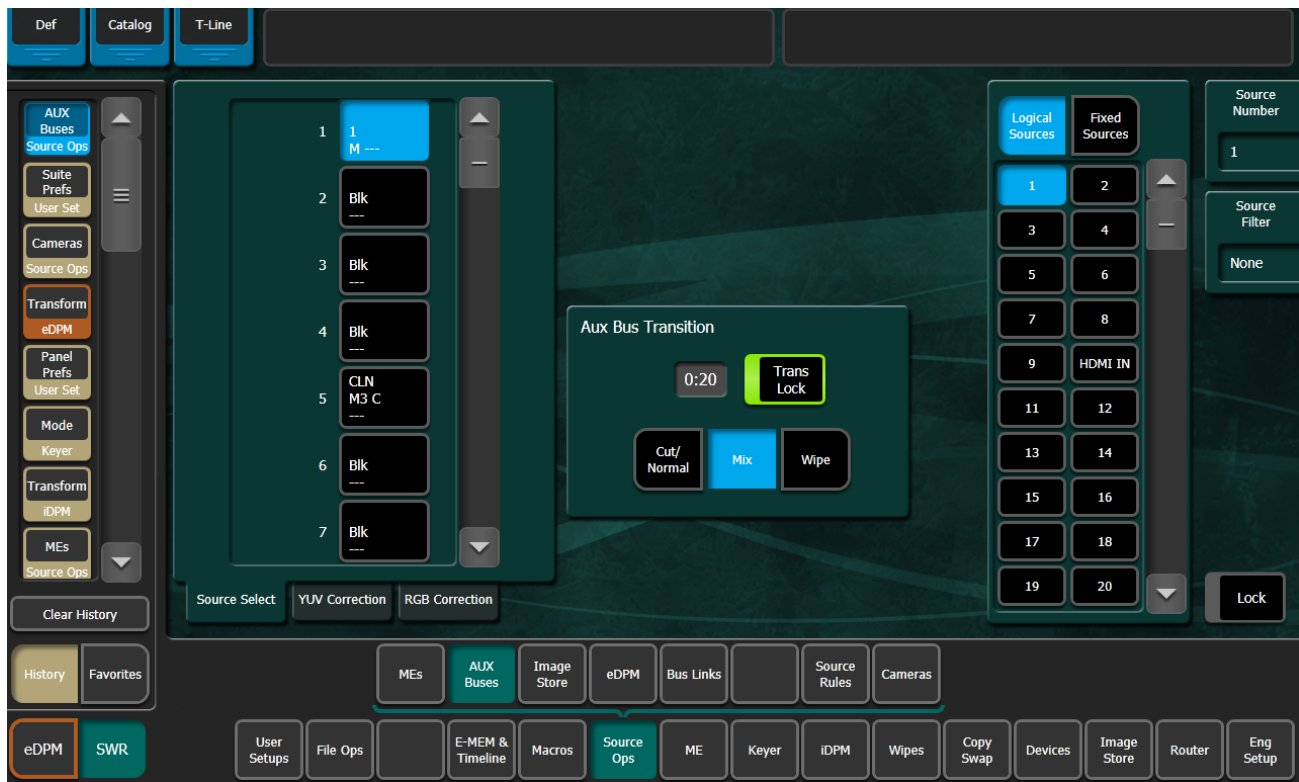
Figure 148. Resource Allocation Menu



## Trans Lock Button

The **Trans Lock** button in the Source Ops, Aux Buses menu allows you to lock the selected mix or wipe as the transition type for the selected aux bus (repeats when a source is taken on that aux bus). By turning on the **Trans Lock** button, the transition will continue to mix or wipe until it is deselected. With the **Trans Lock** button off, a mix or wipe will only transition once and then reset to a cut (cut is the default setting for an aux bus).

Figure 149. Trans Lock Button—Source Ops, Aux Buses Menu



## Setting Wipe Transition Parameters

1. Go to the Wipes menu in the GV Switcher menu or press the **Wipe** button in the Multi-Function Module and set the wipe parameters for the ME(s) you will use for the aux bus.
2. Select the wipe pattern to be used.

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

## Allocating Resources and Setting up the Transition

**Note** The DoubleTake option is required for Aux bus transitions.

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

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

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

Aux bus transitions can be recalled in a macro but are not E-MEMable, however the macro can be embedded in an E-MEM.

## Performing Aux Bus Transitions

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

The **Mix** and **Wipe** buttons on the Local Aux Module are now low tally.

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

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

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

# Advanced Operations

## Effect Editing with E-MEM & Timeline

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

### Insert a Keyframe

**CAUTION** K-Frame timeline effects with a pause inserted cannot be run in reverse.

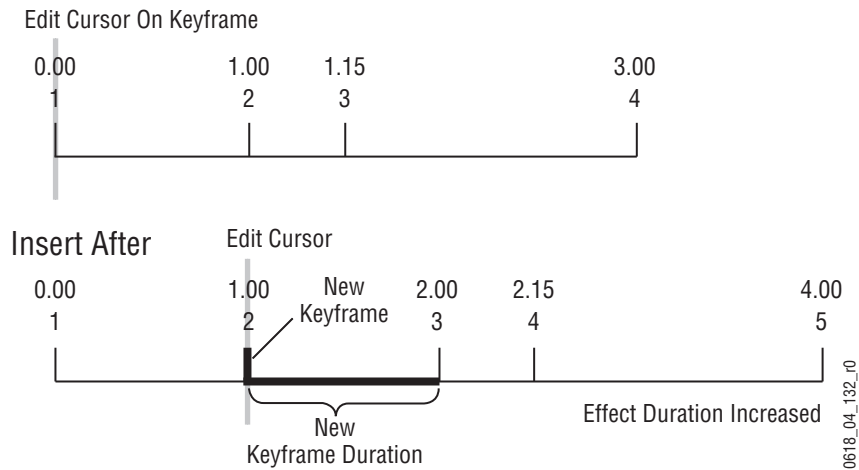
The Insert Before and Insert After operations are used to insert new keyframes onto the timeline of an effect. The result of the Insert operation varies depending on whether the edit cursor is on a keyframe or between keyframes (on the path).

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

### Insert on a Keyframe With Insert After

When the edit cursor is on a keyframe, pressing **Insert After** inserts a new keyframe after the current one. The insert occurs after the duration of the keyframe the cursor is on, at the next numbered Master Timeline keyframe location. This inserted keyframe's duration is, by default, the duration of the keyframe the cursor was positioned on before the insert, though this value can be changed by the operator (see [page 303](#)). The edit cursor also moves to the start of the new keyframe. This operation will increase the duration of the effect by the duration of the inserted keyframe.

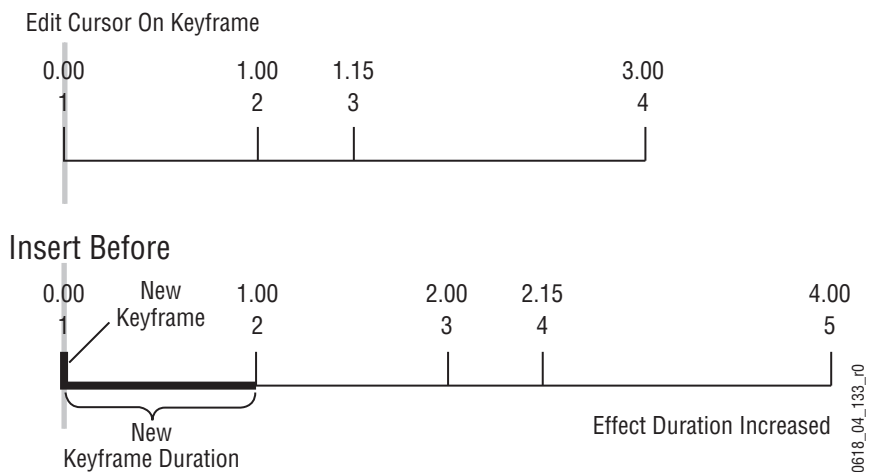
Figure 150. Insert After



## Insert on a Keyframe With Insert Before

When the edit cursor is on a keyframe, pressing **Insert Before** inserts a new keyframe at that time line location. The old keyframe, and all the keyframes that follow, are moved to the right the length of the new keyframe’s duration. This operation will increase the duration of the effect by the duration of the inserted keyframe, which by default is the duration of the keyframe the cursor was originally positioned on before the insert, though this can be changed (see [page 303](#)). Note that keyframes are renumbered after the insert. In the example, what was keyframe #1 becomes keyframe #2.

Figure 151. Insert Before



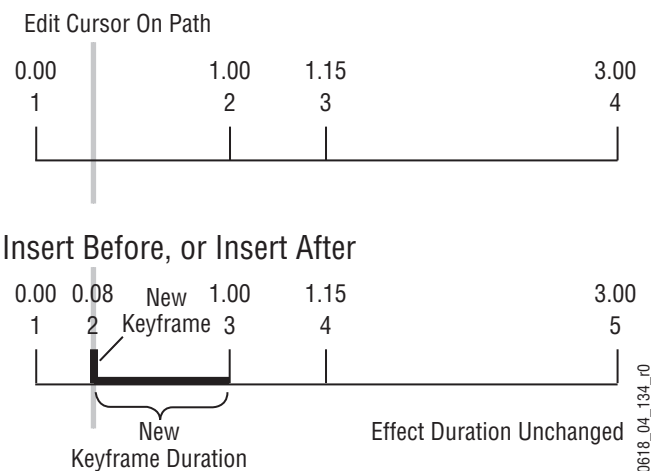
## Insert After or Insert Before on a Keyframe

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

## Insert on the Path

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

Figure 152. Insert on Path



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

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

## Building an Effect By Inserting a Keyframe on the Path

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

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

The effect will now exactly match the recorded material. Using E-MEM, you can run the effect and the recording simultaneously (see *E-MEM Control of External Devices* [on page 205](#)).

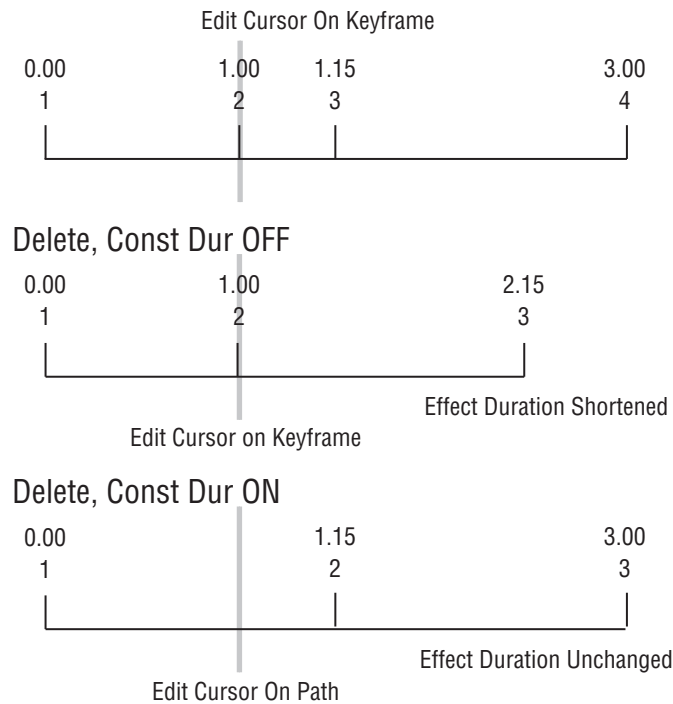
## Delete a Keyframe

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

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



Figure 153. Delete Keyframe



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

## Keyframe Durations

Pressing the **KF Duration** button in the E-MEM & Timeline menu assigns the keyframe duration value to the keypad. Once assigned, keyframe durations will be displayed on the Master E-MEM readout. When the cursor is moved from keyframe to keyframe, the value will change to reflect the duration of the keyframe where the cursor is located. When the cursor is moved between keyframes, the duration shown is the distance from the current time to the next numbered Master Timeline keyframe. The time value displayed is used by default when a new keyframe is inserted into an effect.

## Changing the Duration of a New Keyframe

The value for a new keyframe's duration may be set from the keypad.

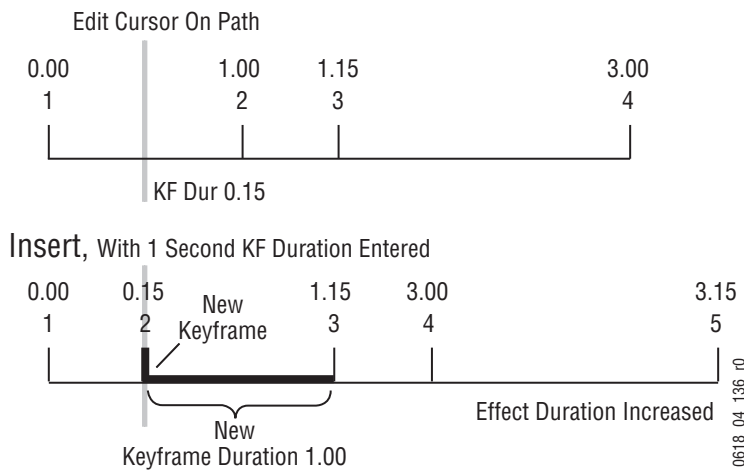
1. Move the edit cursor to the desired location in the effect, in this case on the path midway through a one second keyframe.

2. Press **KF Duration** button.
3. Type a **1.0** duration value on the keypad and press **Enter** to change the value displayed on the readout.

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

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

Figure 154. Insert KF with Duration Specified

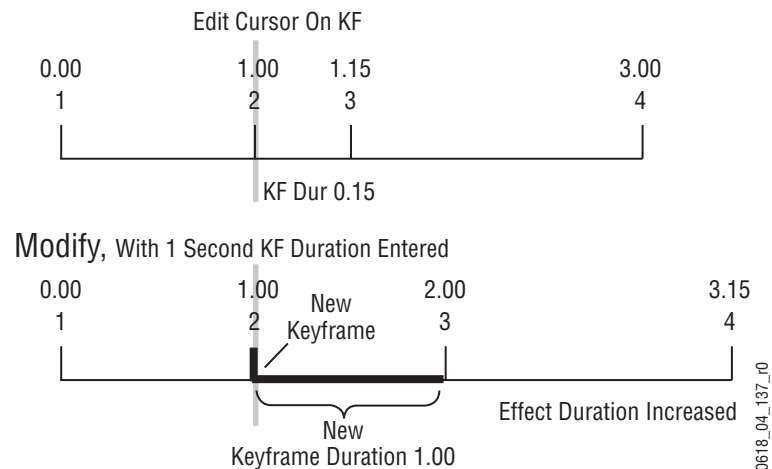


## Modifying an Existing Keyframe Duration

The duration of an existing keyframe can also be modified.

1. Move the cursor to the keyframe whose duration you wish to modify. You cannot modify a keyframe duration when the cursor is on the path. In this case, the keyframe duration is 15 frames.
2. Press the **KF Duration** button to display the keypad.
3. Type a **1.0** duration value on the keypad and press **Enter** to change the value displayed on the readout.
4. Press **Modify** to apply the new duration value to the keyframe.

Figure 155. Modifying an Existing KF Duration



## Restoring KF Duration Default to the Keypad

The keypad retains the last duration value entered until it is changed on the keypad, or until the edit cursor is moved to a new location with a different duration. You can reset the keypad to the factory default one second duration at any time

1. Press the **KF Duration** button to display the keypad.
2. Press •

## Effect Duration Editing

When an effect is first created it has a “natural duration”, which is the time indicated by the last keyframe. With the Effect Duration feature you can make the overall length of the effect longer or shorter with a single command. Each keyframe duration in the effect will be increased or decreased proportionately to match the new “forced duration”.

### Editing Effect Duration with the Control Panel

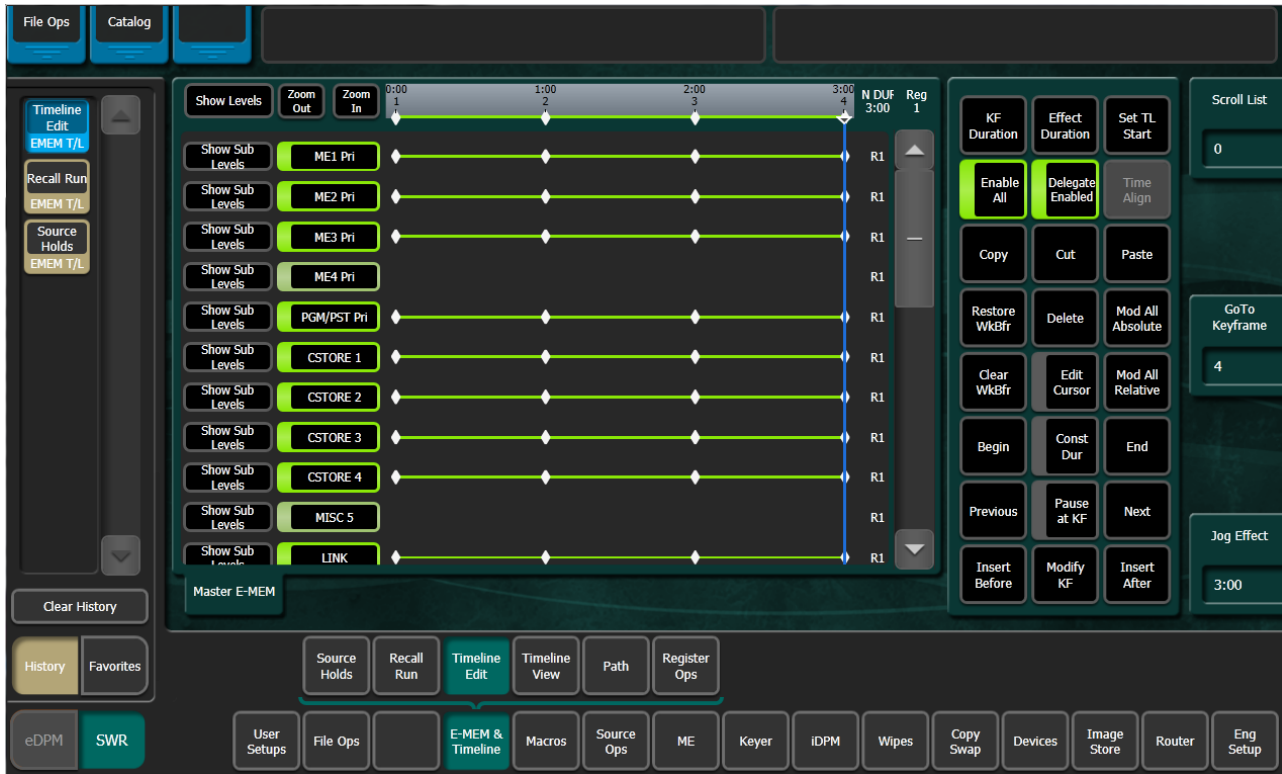
1. Select the effect whose duration you wish to change.
2. Select the **Ef Dur** button on the Master E-MEM Module.
3. Type a new duration in Seconds • Frames • Field format and select **Enter**. Entering a single value defaults to frames, and the third Field value is optional. Entering a **1** for the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

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

## Editing Effect Duration with the Menu Panel

1. Select the effect whose duration you wish to change.
2. Select **E-MEM & Timeline, Timeline Edit** on the Menu Panel.

Figure 156. Timeline Edit Menu



3. Select the **Effect Duration** button to open a keypad (located in pane, just right of the Timeline view). Type a new duration in Seconds • Frames • Fields format and select **Enter**.

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

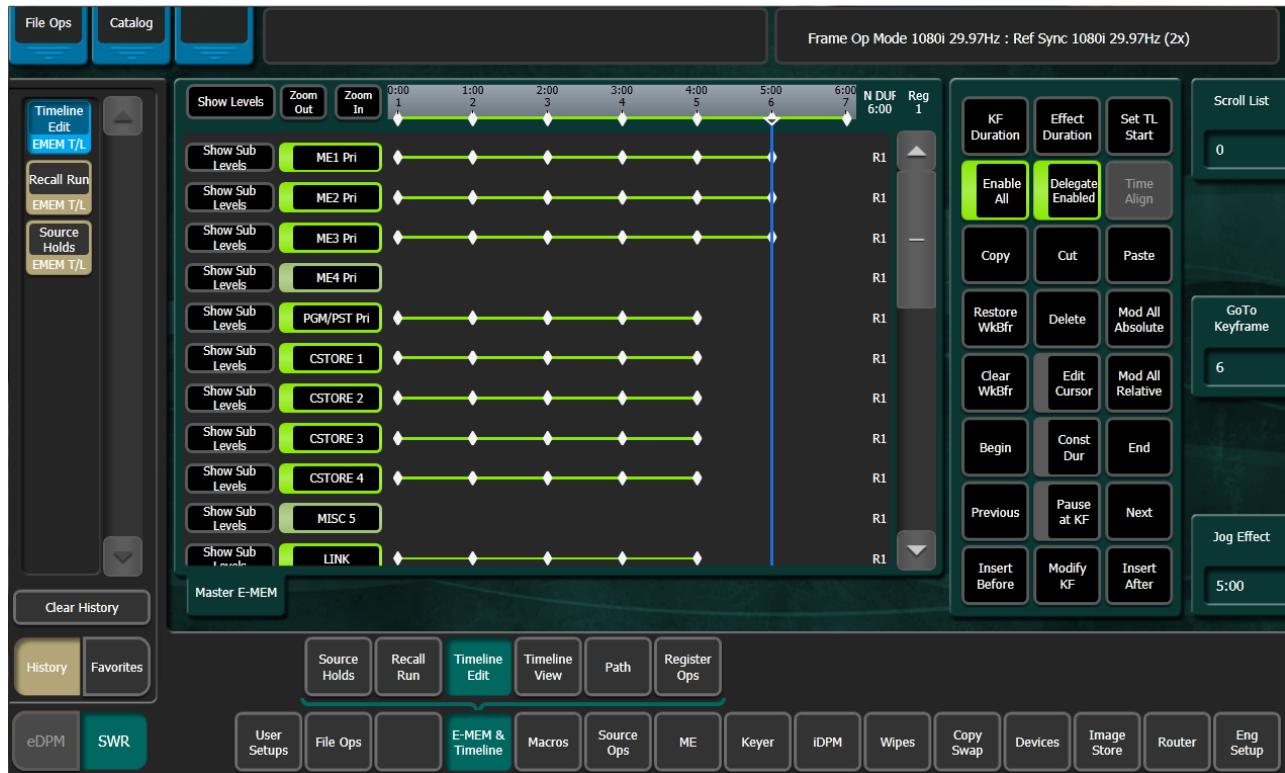
4. The new Forced Duration (F (Forced) DUR 8:00) of the event is showing at the right end of the white Duration box at the top of the Timeline View pane.

## Editing Effect Durations of Individual Levels

You can apply Forced Duration to individual levels by selecting only those levels for modification. In the example shown in [Figure 157](#) the first three

levels have been set to a Forced Duration of 5 seconds and the other levels remain at the Natural Duration of 4 seconds. The Natural and Forced Duration values are reported in the menu on the right-hand side of the screen. The Natural Duration values are indicated with the letter “N” to the right of the time display.

Figure 157. Timeline Edit Menu, Forced Duration of Individual Levels



## E-MEM Modify All Operations

The Modify All function can be used to modify selected values of all the keyframes in an effect that are on levels delegated for editing. Keyframes on levels not delegated for editing are unaffected.

Modify All operations only affect parameters that have been modified in the work buffer from the values of the current position of the time cursor. Typically this position is the current keyframe, but it could be the interpolated state on the path between keyframes. If the cursor is on the path, the Modify All function will also add a keyframe to the effect at that location. Modifications to the work buffer are made by pressing a button, turning a knob, or entering a value with the key pad.

Two different types of Modify All functions are available:

- *Modify All Relative* operations calculate a difference between the current value at the time cursor position and the current work buffer value for each changed parameter. This difference is applied to all the affected key frames in the effect. For example, a hue change of 30 degrees will shift different hues by that amount, and will not change them to the same hue. This function is performed by selecting the **Modify All Relative** button on the Timeline Edit menu.
- *Modify All Absolute* operations replace the current value of parameters of all affected keyframes in the effect with the current value of each changed parameter in the work buffer. For example, if a hue was changed 30 degrees to make it red, different hues on other keyframes will be changed to red, not shifted 30 degrees. Exact values, not differences, result. This function is performed by selecting the **Mod All Absolute** button on the Timeline Edit menu.

Mode changes are always absolute. Turning a function on turns it on for all affected keyframes, and does not toggle on functions off.

## Performing a Modify All Operation

1. Delegate for editing the levels in the effect you wish to be affected by the modifications.
2. Move the time cursor to the location in the effect you wish to use as a baseline for the operation.
3. Change the desired parameters by pressing a button, turning a knob, or entering a value with the key pad.
4. Perform the desired relative or absolute modify operation:
  - To make relative changes, access the Timeline Edit menu by selecting **E-MEM & Timeline, Timeline Edit**, then select the **Mod All Relative** button. The relative changes of the modified parameters will be applied to all the affected keyframes in the effect.
  - To make absolute changes, access the Timeline Edit menu by selecting **E-MEM & Timeline, Timeline Edit**, then select the **Mod All Absolute** button. The absolute values of the modified parameters in the work buffer will be applied to all the affected keyframes in the effect.

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

## E-MEM Learn Auto Recall

Each E-MEM register contains header information, along with keyframe data. Header information applies to the entire effect and is not keyframable. Register header information includes:

- E-MEM enable group button selections (for Auto Recall)
- Effect Dissolve state (on or off)
- Effect Dissolve rate (seconds, frames, field)

When an effect is edited in the standard manner (Insert Before/After, Modify Keyframe, Modify All), only keyframe data is affected. The header information does not change. In a standard Learn operation, all existing keyframe data is overwritten with a single keyframe, and new header information is saved.

### Update E-MEM Register Header Information

Learn Auto Recall can be used to update E-MEM register header information without changing keyframe data.

1. In the Master E-MEM Module of the Control Panel, select the state of the desired header information.
2. Press **LRN**, Auto Recall.

### Set the Enable Groups Associated with Auto Recall

Levels of the switcher can either be included or excluded from Auto Recall using the level buttons in the Master E-MEM Module of the Control Panel.

1. Press **Auto Recall** in the Master E-MEM Module so it is on.
2. Press to enable the level buttons in the Master E-MEM you wish to include with Auto Recall.
3. Press **LRN**, **Auto Recall**.

### Set the Effect Dissolve Rate for Auto Recall in an E-MEM Register

Set the dissolve rate to seconds, frames, or fields; for example entering 1.0 results in a one second dissolve rate where entering 10 results in a 10 frame dissolve rate, and entering .01 results in a one frame dissolve rate.

1. In the Master E-MEM Module of the Control Panel, press **LRN**, **DIS**, **RTE**.
2. Press the buttons under the keypad numbers to select seconds, frames, or fields for the dissolve rate and press **ENT**.

3. Press the button for the register you wish to apply the effect dissolve rate.

## Change Path Control Values in an Effect

Path control determines how interpolation is performed through keyframes. S-Linear, Linear, and Curve path types are supported, in addition to Path Hold. These path types provide fine control of the dynamics of the effect. See for background information.

1. Move to the location in the effect that you wish to change.
2. Go to the Path menu (**E-MEM & Timeline, Path**) and delegate the desired Level(s), Sublevel(s), and Group(s). In the following example, the keyer wipe of Keyer 1 of ME 1 has been selected for path control editing.

Figure 158. Interpolation Paths Menu



3. Choose the desired Path type (**S-Linear, Linear, or Curve**). If **Curve** is selected, you can use the soft knobs or data pads to change the values for **Tension, Continuity, and Bias**.
4. Add the new values to a keyframe in the effect with **Insert** or **Modify**, or **Learn**. You must change the keyframe, because current work buffer values are overwritten during the running of an effect.



5. Run the effect to see your changes.

## General Curve Tips

Although adjusting the Curve path type Tension, Continuity, and Bias controls can feel like a guessing game, here are some general tips to help you build desired effects in a timely manner:

- Tension in the minus direction (up to -1.0) creates bigger, looser curves.
- Continuity at +1.0 is the same as S-Linear motion.
- Continuity in the plus direction gives a bigger bounce, with +2.0 a good value.
- Bias in the plus direction makes the curve happen after the keyframe.
- Bias in the minus direction makes the curve happen before the keyframe.

## Cutting and Pasting Path Values

Being aware of how Curve values may change during editing can help you successfully fine tune the paths of edited effects.

- When keyframes are cut and pasted to and from the clipboard, the path type (Curve, Linear, S-Linear) is retained for each keyframe.
- When a block of Curve path keyframes are cut and pasted, the first and last keyframes in the block are given Tension = 1.0, Continuity = 0.0, and Bias = 0.0 values. This helps merge the path with neighboring path settings, since the Curve path requires three keyframes for proper calculation. Intermediate Curve path keyframes in the marked block retain their original values, since the neighboring keyframes required for the calculation exist.
- Cutting or copying a single keyframe with a Curve path type is handled the same as a first or last keyframe, and so this keyframe is given Tension = 1.0, Continuity = 0.0, and Bias = 0.0 values.
- If you paste a keyframe with a Curve path into the middle of an effect, reset Tension values to 0.0.

## Controlling Smooth Path Windup

Effects with a curved transform path may move back slightly in the opposite direction when the move begins or ends. This “windup” is a character-

istic of Curve path control, which is the factory default path type applied to new effect keyframes. Curve requires three keyframes for proper interpolation, so values for the previous (or next) keyframe affects the path through the next (or previous) keyframe.

There are several ways to change an effect so moves begin and end without any windup.

- Change the Path Type on the function keyframe to S-Linear.
- Set the Curve path Tension value on the function keyframe to 100.
- Set a Path Control menu Hold for the function on the previous keyframe.

## E-MEM Transitions

Transitions can be built into E-MEM registers. Recalling and running these E-MEMs will make the transitions occur as programmed. The lengths of transitions in effects is determined by keyframe duration, not the transition duration used for manual transitions. When you build effects with transitions, keep the E-MEM transition rules in mind, which are different from the rules used for manual transitions. The beginning and ending states of the buses and transition elements must be set properly.

Though background and keyer transitions are described here as separate procedures, effects can easily be built that include both background and key transitions in the same keyframe by selecting the appropriate next transition element buttons.

### E-MEM Transition Rules

Key Priority Transitions interpolate wipes and mixes as part of an E-MEM.

**Note** When creating a priority transition that will interpolate as part of an E-MEM, it will only transition correctly if the 'Next' Priority Stack on the initial keyframe is set to match the 'Current' Priority Stack of the subsequent keyframe.

- A background transition will occur only when the **Bkgd** next transition element is selected on the initial keyframe AND the source selected on the B bus of the initial keyframe matches the source selected on the A bus of the following keyframe.

- Note** The decision to perform a background transition is based on keyframe values, regardless of the state of Bus or Source Holds. If a Hold is active you will not be able to tell by looking at the currently selected sources whether a background transition will occur.
- A keyer transition will occur only when the keyer (for example **Keyer 1**) background transition element(s) for the keyers involved are selected on the initial keyframe AND a keyer changes its on/off state at the following keyframe.
  - If Effects Dissolve is on, when an effect is recalled transitions will occur between the previous switcher state and the first keyframe of the effect, following the rules above. If Effects Dissolve is off effect recalls will cut to the first keyframe of the effect.

## Building Background E-MEM Transitions

When building background transitions make sure the A and B background bus selections are consistent throughout the effect. Otherwise the background video may cut to different sources when keyframes are encountered. Plan ahead to the next transition when you create keyframes in an effect that has multiple background transitions.

1. Go to the keyframe in the effect where you wish the background transition to begin.

**Note** Adding new transition keyframes to the end of an effect is the easiest way to build effects containing background transitions, though using this method is not required.

2. Select the **Bkgd** next transition button.
3. Select the type of transition (**Mix**, **Wipe 1**, or **Wipe 2**).
4. Select the new source to transition to on the B bus.
5. Press **Modify** to change the keyframe to the values set above.
6. Perform the transition by moving the lever arm or pressing the **Auto Trans** button. This lets you preview how the transition will look (though the transition duration used may not match the keyframe duration specified).

**Note** Performing the transition is not required (pressing **Cut** accomplishes the same goal, which is to put the switcher into the next desired state). The transition type button selection and the keyframe duration determines how the transition will be performed when the effect runs.

7. If there will be another transition immediately following this one, select on the B bus the source that will transition to in the next keyframe. This prevents undesirable background cuts from occurring.
8. Press **Insert After** to add this keyframe to the effect.
9. Repeat the steps above for any additional background transitions.
10. Rewind and run the effect to check its operation. The transitions will occur as programmed.
11. After the effect runs properly, you can go back and modify keyframes with Source Holds where needed.

If unwanted background cuts occur, go to the keyframe where the cut occurs, identify the source selected on the A bus, go to the previous keyframe, select that same source on the B bus, and then press **Modify KF** to properly setup that source in that keyframe for that next transition.

## Building Keyer E-MEM Transitions

Individual keyers transition on or off (there is no keyer preset bus). To cross fade between keys, use two keyers and have one key transition in while the other transitions out. You can include any combination of keys in a single transition, using the transition rules to determine the exact behavior of the transitioning keys.

1. Go to the keyframe in the effect where you wish the key transition(s) to begin.
2. Select the **Key 1,2**, etc.next transition button(s) for the keyer element(s) involved. Selected keys that are on will transition off, and keys that are off will transition on.
3. Select the type of transition (**Mix**, **Wipe 1**, or **Wipe 2**).
4. Press **Modify** to change the keyframe to the values set above.
5. Change the on/off state of the keys you wish to transition.
6. If you are transitioning in a new key, select the source on that key bus. If you are transitioning out a key, do NOT change the source selected on the key bus for that keyer (this prevents an unwanted cut).
7. Press **Insert After** to add this keyframe to the effect.
8. Repeat the steps above for any additional keyer transitions.
9. Rewind and run the effect to check its operation. The transition(s) will occur as programmed.

## Changing the Length of an E-MEM Transition

In the menu, change the keyframe duration of the first keyframe involved in that transition.

1. Go to the first keyframe for that transition.
2. Press **KF Duration** and then enter a value in <seconds • <frames> • <fields> format on the keypad.
3. Press **Modify KF**.

## Preventing Elements from Transitioning in E-MEMs

To ensure a transition for an element does not occur, simply make sure the next transition button for that element is off in the keyframe by selecting another element's button.

To ensure no transition occurs at all at a keyframe (any changes will be cuts), you can select only the next transition button for a keyer and make sure its state does not change in the next keyframe. A change of state in a keyer is required for a transition to occur when the effect runs.

The transition rules have one subtle limitation. The next transition element buttons are an interlocked group. All these buttons cannot be turned off simultaneously (at least one element is always selected). This means you cannot use these buttons to prevent any transition from occurring when all the elements are in use. To work around this special case, add another keyframe to the effect to transition the keys with a one field transition (which is the same as a cut).

## Return to Normal Technique

A useful technique to use when building effects for use on-air is to first establish a normal switcher state for the particular show. This normal state could, for example, have only the **Bkgd** next transition element selected, a **Mix** transition type, all keyers off, and one second transition durations. This normal state permits immediate cuts or dissolves to and from any element, probably the most common requirements during a live show.

Running the effect departs from the normal state to do whatever is required. When the effect comes to the end of its run, the next to last keyframe controls the transition that occurs at the end of the effect. The last keyframe has no following keyframe and so does not transition, and that keyframe effectively has no duration. You can set the next transition elements in this last keyframe to the normal state without fear of causing unanticipated transitions. This return to normal technique permits completely controllable seamless shifts between your effect recalls and runs and your live switching.

When building effects for the show, take care that the beginning and ending of every effect works well with the normal state. You also may wish to apply a Source Hold to the first keyframe to ensure the last source selected remains unchanged going into the effect.

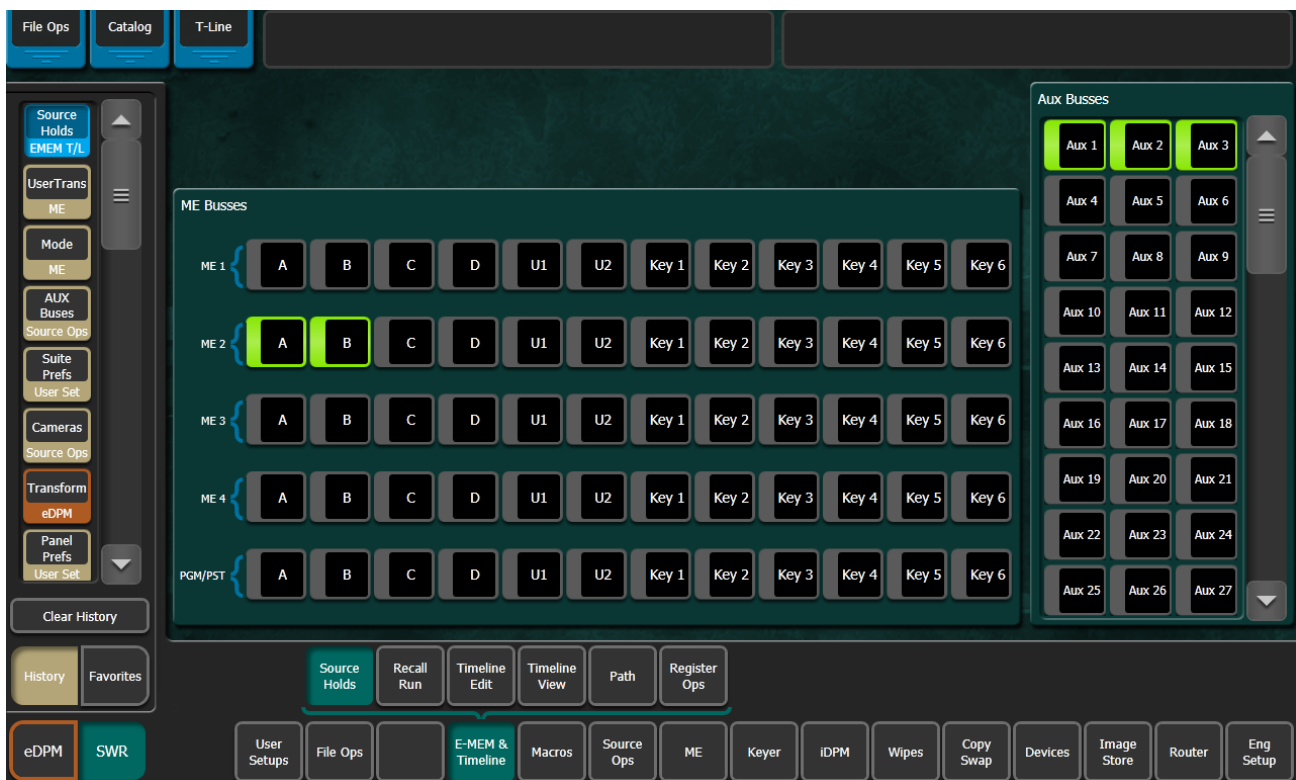
## Source Holds in Effects

During E-MEM recalls and effect runs sources can be programmed to change. Sometimes this is not desired, as an effect may be designed to run on the currently selected sources, not the particular sources used when the effect was built. Holds can be programmed into an effect with the Source Holds menu to prevent sources from changing when that effect is recalled. This form of hold is keyframeable, and so can be applied to specific portions of an effect.

### Setting a Source Hold in a New Effect

1. Go to the Source Holds menu (**E-MEM & Timeline, Source Holds**).
2. Select the buses you wish to hold by selecting their labeled buttons on the menu so their green indicators illuminate.

Figure 159. Source Holds Menu



3. Press **Lrn** on the GV Switcher Control Panel (Master or Local E-MEM Module), then press a bank and register number to create a new effect with a Source Hold in its one keyframe.

Source Hold, being a work buffer parameter, will be imposed on other keyframes as they are inserted, unless turned off in the Source Hold menu. You may want to start an effect with a Source Hold, so the existing sources will not change when the effect is recalled, then turn it off to enable source changes during the running of the remainder of the effect.

## Setting a Source Hold in an Existing Effect

1. In the E-MEM & Timeline, Timeline Edit menu, locate the cursor on a keyframe in the effect where you wish to add a Source Hold.
2. In the E-MEM & Timeline, Source Holds menu, select the buses you wish to hold by selecting their labeled buttons so their green indicators illuminate.
3. In the E-MEM & Timeline, Timeline Edit menu select **Modify KF** or **Insert Before/After** to add the Source Hold to the effect.

The Source Hold only applies to that keyframe, meaning the previously selected sources on the chosen buses will be held at that keyframe until the next keyframe lacking a Source Hold is encountered.

## Reusing Effects

E-MEM effects can be built and saved for use later. It is important to realize that the GV Switcher system operating environment affects how an effect will load and run. Just recalling a particular effect without considering the environment within which it runs does not guarantee that effect will look the same as when built. When the GV Switcher system environment for an effect is compatible, however, the look of the effect should be exactly the same every time.

One of the most important aspects of the GV Switcher environment to consider when reusing effects is Suite Preferences. In particular, the Source Patching and E-MEM Prefs must be compatible. Other Suite Prefs control the behavior of the switcher, but do not affect E-MEM compatibility.

Source patching is the mechanism to sort out facility specific differences in sources. Loading a Suite Prefs file with preexisting Source Patch settings will not necessarily allow an effect to run as designed. The sources must be patched to compensate for different physical source definitions in each facility. For example, the replay VTR may be engineering source 12 in one truck and engineering source 27 in another. If the effect was built to expect the replay VTR on Logical source 12, then logical source 12 must be patched

to source 27 in the other truck. Once all the re-patching is completed, effects saved from the first truck will call up the correct sources.

E-MEM Prefs control which E-MEM levels will control specific components of the switcher. For example, if Image Store Channel 2 is assigned to the IS A group in one facility and to Misc 7 in another, the effect may not include Channel 2 if Misc 7 is not included in the original effect. Mapping ME partition boundary and secondary partitions is also critical to effect recall and run since it determines which ME E-MEM panel (or Master E-MEM enable group) controls ME partitioning.

The simplest way to guarantee Suite Pref settings are compatible is to save them when the effects are built, and reload them when you want to run those effects at a later time, making only the necessary modifications (like those for Source Patching described above). One common method is to save all the effects along with the Suite Pref and User Pref files for a particular show together on a USB Memory Stick, and then reload them all the next time you work on that show. Note that User Prefs settings will not change how an effect runs, but will reproduce the control surface as it was when the effect was built so, for example, all the source buttons are arranged exactly where you want them.

Other GV Switcher environment variables to consider for successful reuse of effects are listed below.

- All the external devices required are available for use (Profile VDRs, GVEous, PBus devices, GPI outputs, etc.).
- Correct clips loaded on the Profile or other DDRs.
- Correct stills cached on the GV Switcher Image Store.
- If operating in Multi Suite mode, the suites should be setup for effect sharing by properly acquiring logical devices in each suite. Also sufficient resources need to be available in the suite. If resources are not acquired, those portions of the effect will be silently ignored. If resources are acquired after loading effects, the effects will need to be reloaded.
- If using a router interface, router sources and destinations need to be defined correctly and available, and any required R-MEMs loaded.

## E-MEM and Macro Interaction

Macros and E-MEMs can interact in two fundamentally different ways. An E-MEM can be programmed to execute one or more macros, or a macro can be created that recalls one or more E-MEMs. With care, operating both control mechanisms together can be extremely powerful. However, improper use can create infinite loops or other undesirable behavior. It is especially important that your GV Switcher system be loaded with the correct E-MEMs and Macros and is operating in the correct mode, or unpre-



dictable system behavior will result from the mismatched E-MEMs and macros.

## Macros in an E-MEM

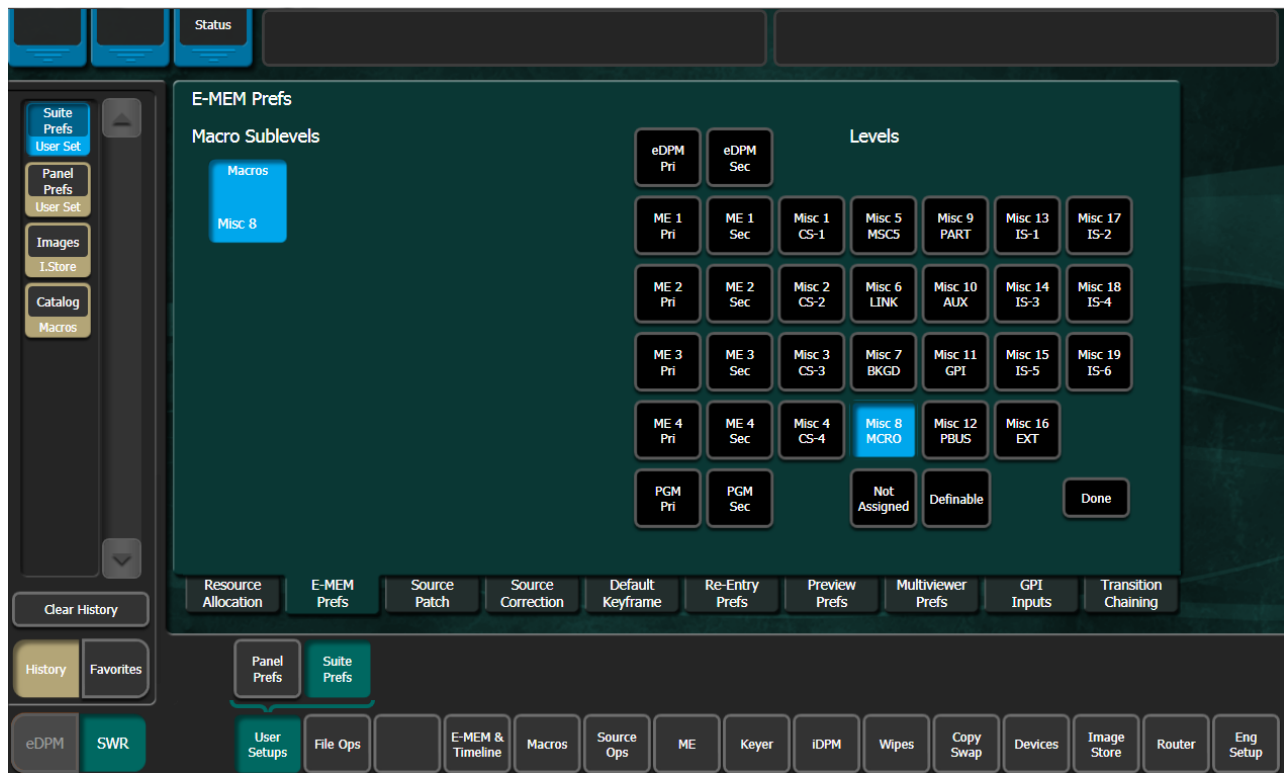
A macro can be added to an E-MEM keyframe and be executed when that E-MEM register is recalled and run. Only the macro register number (and its Enabled state) is saved to the E-MEM register, not the actual macro commands. If a macro is subsequently changed, any E-MEM specifying that macro register will run the modified macro. See *E-MEM Recalls in a Macro on page 176* for related information.

## E-MEM Prefs Macro Sub-level Assignment

A Macro sub-level can be assigned to any E-MEM level (default is **Misc 8 MCRO**).

This assignment is accomplished with the E-MEM Prefs menu, accessed via **Suite Prefs, E-MEM Prefs, Macros**.

Figure 160. E-MEM Prefs Menu, Macro Sublevel



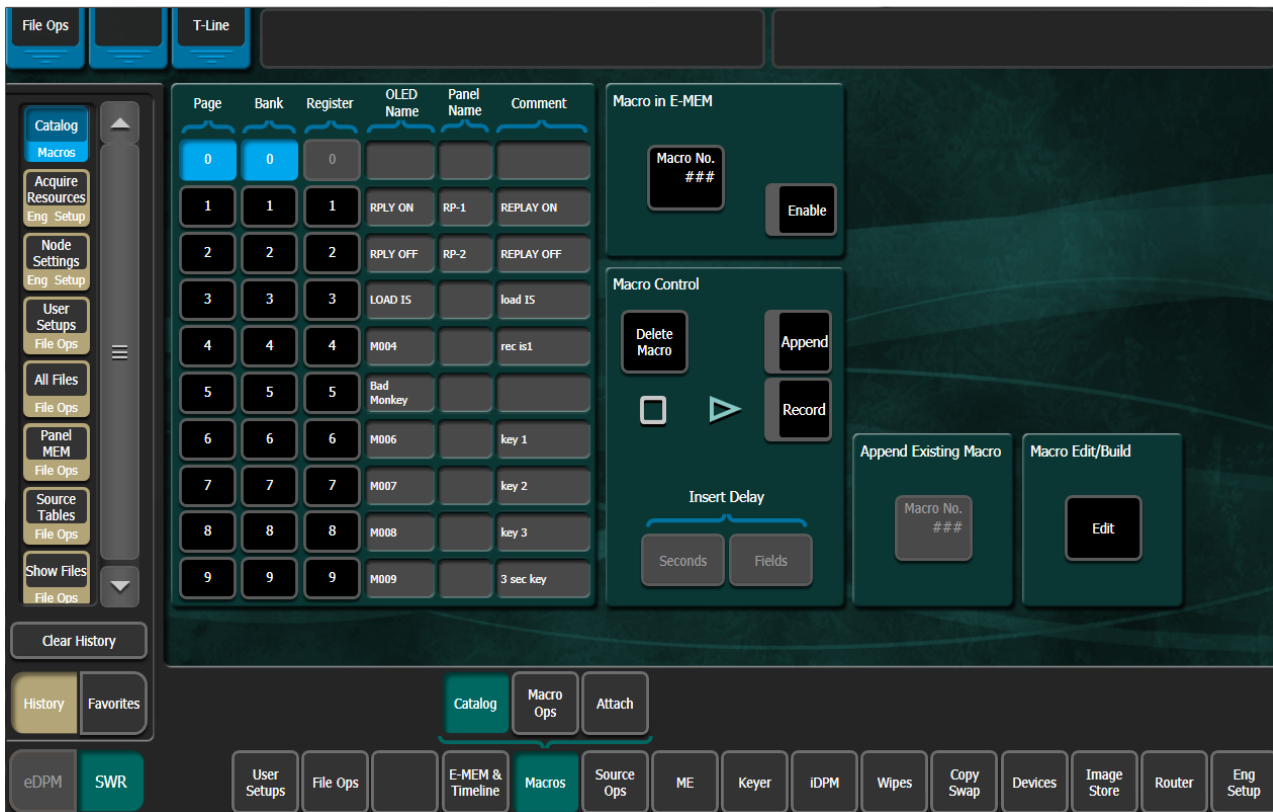
## Preventing Assigned Macros from Running

If you want to be able to prevent any assigned macro from running in an effect, make sure the Macro sub-level is assigned to a separate level, and then enable or disable that level to turn all the E-MEM macros on or off.

## Adding a Macro to an E-MEM

The Macro in E-MEM pane is used to add a macro register number and its Enabled state to an E-MEM effect. You can control a macro from this menu including: append, record, delete, or insert a delay (in seconds or frames) using the Macro Catalog buttons. The menu is accessed via **Macros, Catalog**.

Figure 161. Macros, Catalog Menu



1. Select the **Macro No.** data pad in the **Macro in E-MEM** pane to open the Macro selection menu.

Figure 162. Macro in E-MEM Selection Menu

Page	Bank	Register	OLED Name	Panel Name	Comment
0	0	0			
1	1	1	M001		
2	2	2			
3	3	3			
4	4	4			
5	5	5			
6	6	6			
7	7	7			
8	8	8			
9	9	9			

2. Select the desired macro in the menu, then select **Select** to confirm your choice or **Cancel**. The name of the selected macro appears in the data pad.
3. Select the **Enable** button to enable (select again to disable) that specific macro.
4. Navigate to the desired location in the current effect.
5. Insert or Modify a keyframe to associate that macro and its enabled state to that location in the effect.

## Partial Keyframing

Partial Keyframing is the ability to create and control independent sub-level timelines on a keyframe by keyframe basis in an effect. A partial keyframe is created when any sub-level is 'excluded', i.e. temporarily disabled for a level in a timeline, whether the keyframe is inserted or edited.

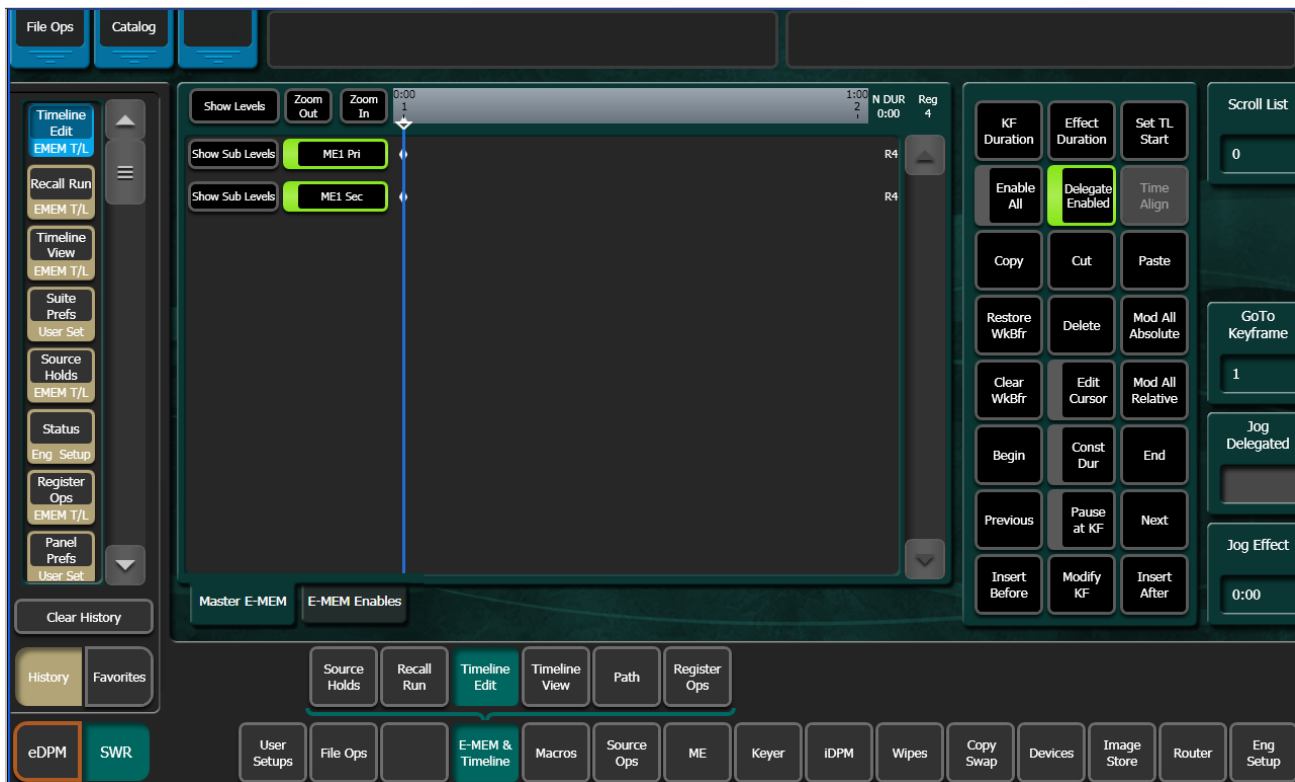
Partial Keyframing can include definable sub-levels as available resources using the Define E-MEM feature which is discussed later in this section.

**Note** Partial Keyframing is available in the Menu only.

## Excluding Sub-Levels in a Level

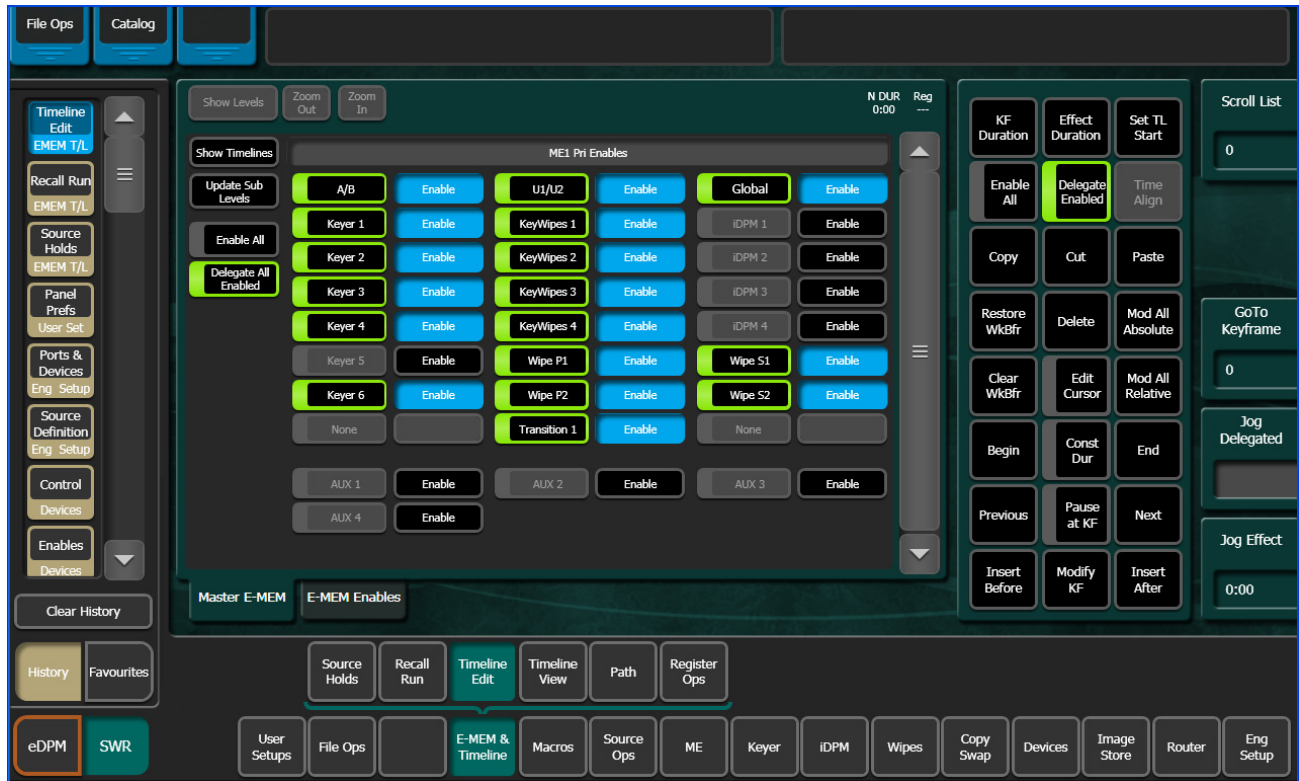
1. Go to the E-MEM & Timeline, Recall Run menu and select the buttons of the switcher levels you want to enable for defining sub-levels (or select the **Select All** toggle button. Alternatively, you can select the levels on the Master E-MEM Module.
2. Go to the E-MEM & Timeline, Timeline Edit menu and select the **Show Sub Levels** button to the left of the level you wish to edit. The Enables menu is displayed for that level.

Figure 163. Timeline & Edit Menu, Show Sub Levels



3. Select the Enable button of any sub-level to disable that sub-level from being included in the current E-MEM register.

Figure 164. Timeline & Edit, Enables (Define) Menu



4. Repeat Steps 1-4 for each level you wish to create Partial Keyframes for and include in an effect.
5. Learn the Partial Keyframe enabled effect to a KF register by pressing and holding down the **Lrn** button on the Local/Master E-MEM Module and selecting a register.

The delegate buttons (left of enable buttons) can be turned on/off to delegate/undelegate sub-levels when inserting or modifying keyframes.

## Rules and Options for Excluding Sub-levels

Once any sub-levels have been disabled, the **Lrn** button in the Local and Master E-MEM Module will be colored *Cyan* (light blue) to reflect a partial keyframe is present in the timeline of the effect; the default is white.

Pressing and holding the cyan **Lrn** button while pressing a register button forces any Partial Keyframes to be part of that E-MEM. If the cyan **Lrn** button is not held when a register button is pressed, any Partial Keyframes will not be part of that E-MEM register and they will no longer exist. The

register will learn a default state with all sub-levels enabled and any 'defined' sub-levels disabled.

## Define E-MEM

Sub-levels can be made definable on an effect-by-effect basis to be included in a level when an effect is recalled.

**Note** Define E-MEM is not keyframeable.

For a sub-level, there are three states possible:

- Not assigned—Not controlled by an E-MEM, for example if you want manual control of an Aux Bus and do not want it to be recalled by an E-MEM.
- Assigned to a E-MEM MISC Level—Under typical E-MEM control.
- Definable—Define which level will own a sub-level on an effect by effect basis.

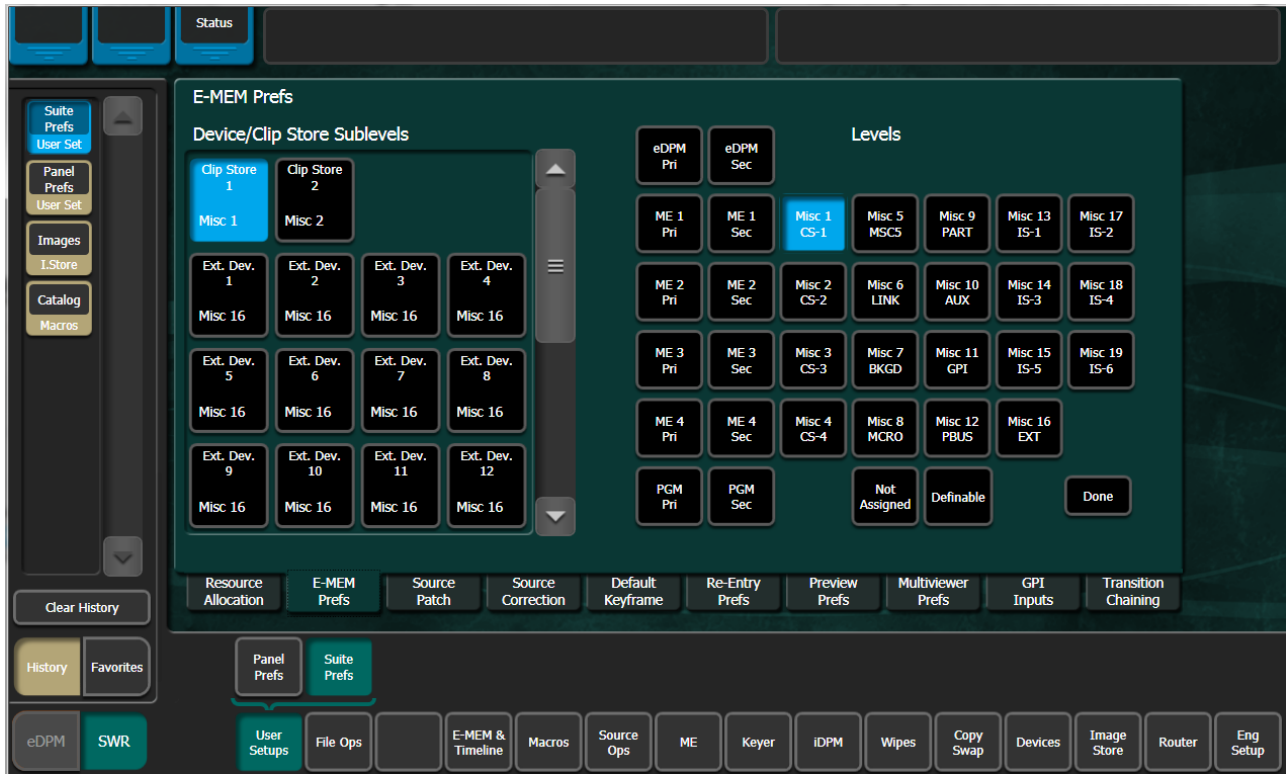
With GV Switcher, sub-levels which are set to be defined can be 'enabled' in any level.

The the sub-levels for the E-MEM Preference levels can be made as 'definable' in the User Setups, Suite Prefs, E-MEM Prefs, menu.

## Making E-MEM Sub-levels Definable to Other Levels

1. In the User Setups, Suites Prefs, E-MEM Prefs menu, select an E-MEM Level.
2. Select the sub-level you wish to make definable.
3. Select the **Definable** button, lower right in the menu.
4. Repeat steps 1 and 2 for each sub-level you wish to make definable.

Figure 165. E-MEM Prefs Sub-levels Menu, Define E-MEM



The sub-level is now definable and can be defined to a level. The definable sub-levels are not yet attached to a level.

**Note** Sub-levels can only be defined to one level at time, for example if Aux 1 and Aux 2 sub-levels are assigned to ME-2 Primary, they are not available to ME-1 Primary.

Enable definable sub-levels

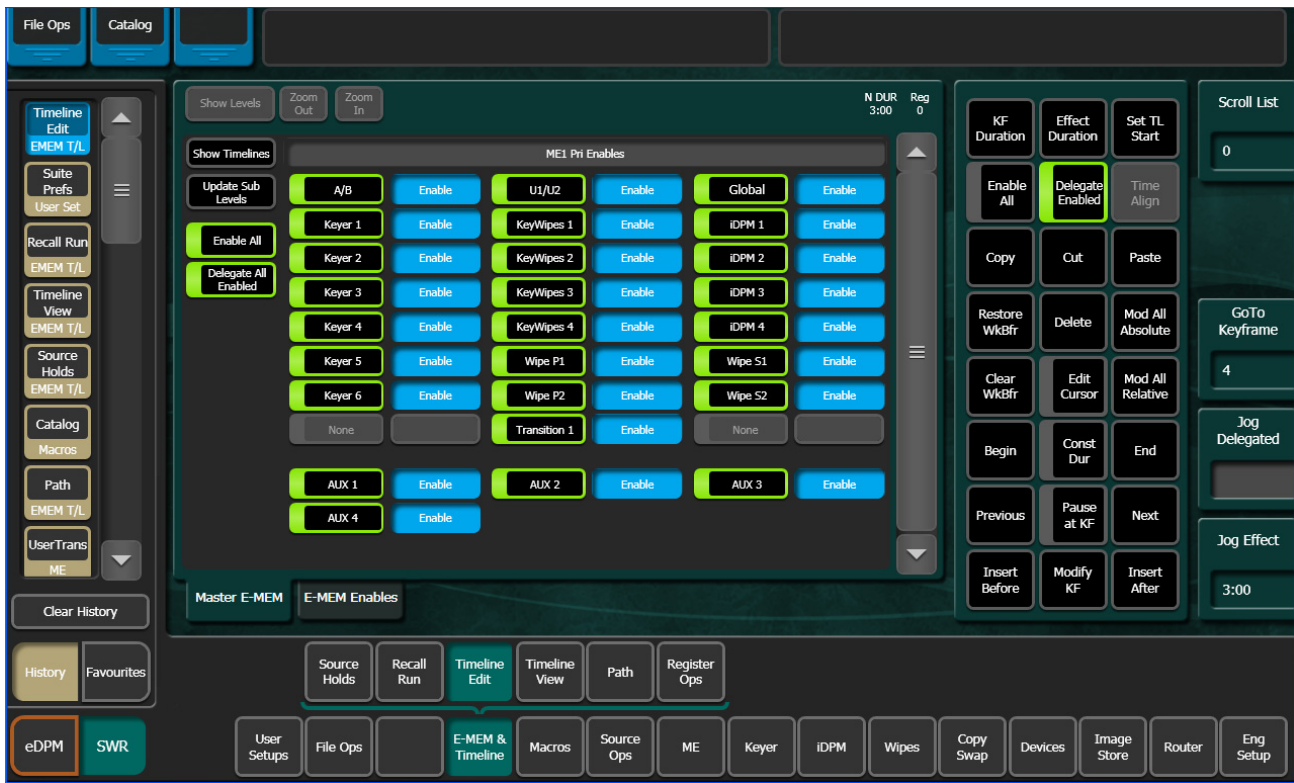
1. Go to the E-MEM & Timeline, Timeline Edit menu.
2. Select the **Show Timelines** button.
3. Select the **Show Sub Levels** button corresponding to the level you wish to define.
4. Select the **Enable** button corresponding with the sub-level you wish to enable.
5. Learn the effect:
  - a. For a new register, press and hold the cyan (light blue) **Lrn** button in the Local or Master E-MEM Module, and press a register button.
  - b. To edit an existing register, select the **Update Sub Levels** button.

Once the sub-level is defined to a level, an effect can be learned with this relationship. When that effect is recalled, the level/sub-level relationship will be reestablished.

**Note** The **Delegate All Enabled** button's default is 'On'. If you choose to toggle this button to off, you must select the **Delegate Enabled** button, top right of menu to delegate enabled choices. Otherwise, the enabled sub-levels will not be part of the inserted keyframes and therefore not part of the effect.

Defined sub-levels are appended below the assigned levels (if present). Aux 1, Aux 2, Aux 3, and Aux 4 have been appended.

Figure 166. E-MEM & Timeline Menu, Define E-MEM Sub-levels



## Moving Currently Defined Sub-levels

**CAUTION** Moving a defined sub-level to another level while On-Air will result in a loss of that resource.

Defined sub-levels can be taken by other levels. To prevent the accidental taking of sub-levels, the GV Switcher menu will display a defined and delegated sub-level with 'yellow' if the sub-level is assigned to another level. If you select the enable button for that sub-level, it will be redefined to the current level and undefined from the previous level. If you then select the **Update Sub Levels** button, the current E-MEM register will be modified.



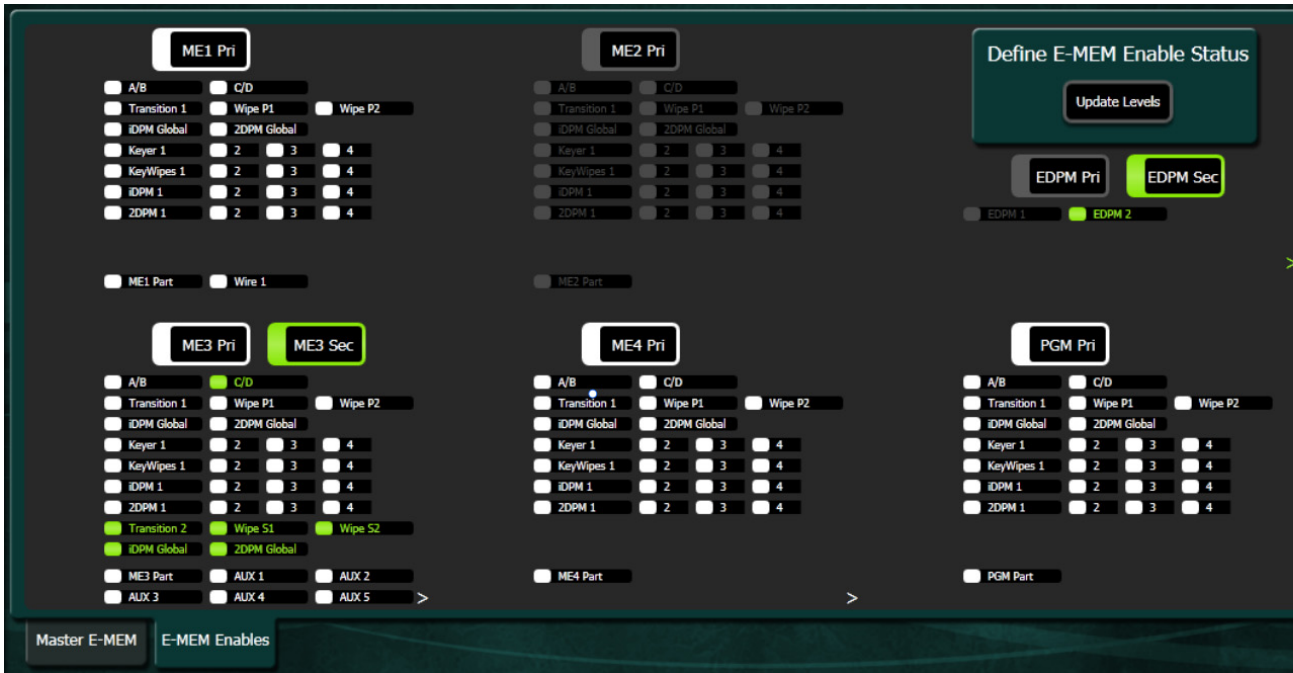
Figure 167. Timeline Edit Menu, Define E-MEM, Sub-level Conflict



## E-MEM Enables Tab

The E-MEM & Timeline, Timeline Edit, E-MEM Enables menu tab allows the operator to review and edit each ME level in an E-MEM register, for all MEs at once. Additionally, the operator can view the states of all ME sub-levels for an effect from one location. This is sometimes preferable to performing these tasks one ME at a time in the Master E-MEM tab.

Figure 168. E-MEM Enables Menu



**Note** The menu interface is designed for maximum data so mouse control is recommended, however levels and sub-levels can be controlled using select.

Secondary levels and their sub-levels are green when selected for easy identification.

## Assignable Sub-levels

Up to six assignable sub-levels including primary and secondary can be displayed for each ME. If more than six sub-levels are assigned, the > symbol will be displayed; white for primary and green for secondary, both to the immediate right of the sixth assigned sub-level. Use the Master E-MEM tab to view and change the states of non-visible sub-levels.

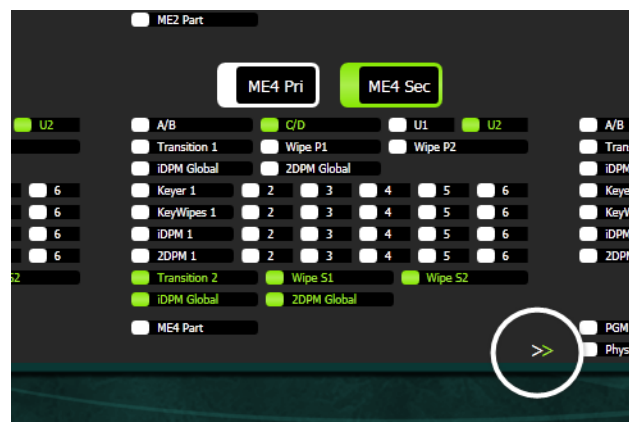
Figure 169. E-MEM Enables Menu—Assigned Sub-Levels



## Definable Sub-levels

Definable sub-levels are not displayed in the E-MEM Enables tab. If there are defined sub-levels enabled, the > symbol will be displayed; white for primary and green for secondary, both to the lower right of the ME to which it is assigned. Use the Master E-MEM tab to define sub-levels.

Figure 170. E-MEM Enables Menu—Definable Sub-Levels



## Effects Editing in the E-MEM Enables Tab

Effects can be edited in the E-MEM Enables tab for all MEs by enabling or disabling levels and sub-levels from the switcher state. An ME level (i.e. ME4 Pri) can be disabled (turned off), then one sub-level at a time can be enabled; the ME level is enabled (turned on) once one sub-level is enabled.

**Note** Disabling then re-enabling an ME in the E-MEM Enables tab resets all sub-levels to enabled for that ME.

Effects edited in the E-MEM Enables tab will run with the level and sub-level states as selected, however until the **Update Levels** button is selected, the effect's E-MEM register is not modified. A recall of the register will return the register to its saved state.

## Enabling E-MEM Levels from the E-MEM Enables Tab

ME levels for an E-MEM can be enabled/disabled from the E-MEM & Timeline, Timeline Edit, E-MEM Enables menu tab. Proxy eDPM control is also provided, however eDPM sub-levels are in the eDPM menus. Levels updated in either the Master E-MEM or E-MEM Enables tab are reflected in both.

Prerequisite: Read the Define E-MEM section in the User Manual for your switcher model.

1. Select an E-MEM register.
2. Select **E-MEM & Timeline, Timeline Edit, E-MEM Enables** in the menu.
3. Enable or disable E-MEM levels and sub-levels for the selected register.
4. Select **Update Levels** (top right of menu) to save the effect to the register; the effect can be run without updating the levels. However, when recalled, the effect will return to the saved state.

## Additive Keyers

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

Figure 171. Eng Setup, Source Definition Menu



However, there are instances when manual control is useful:

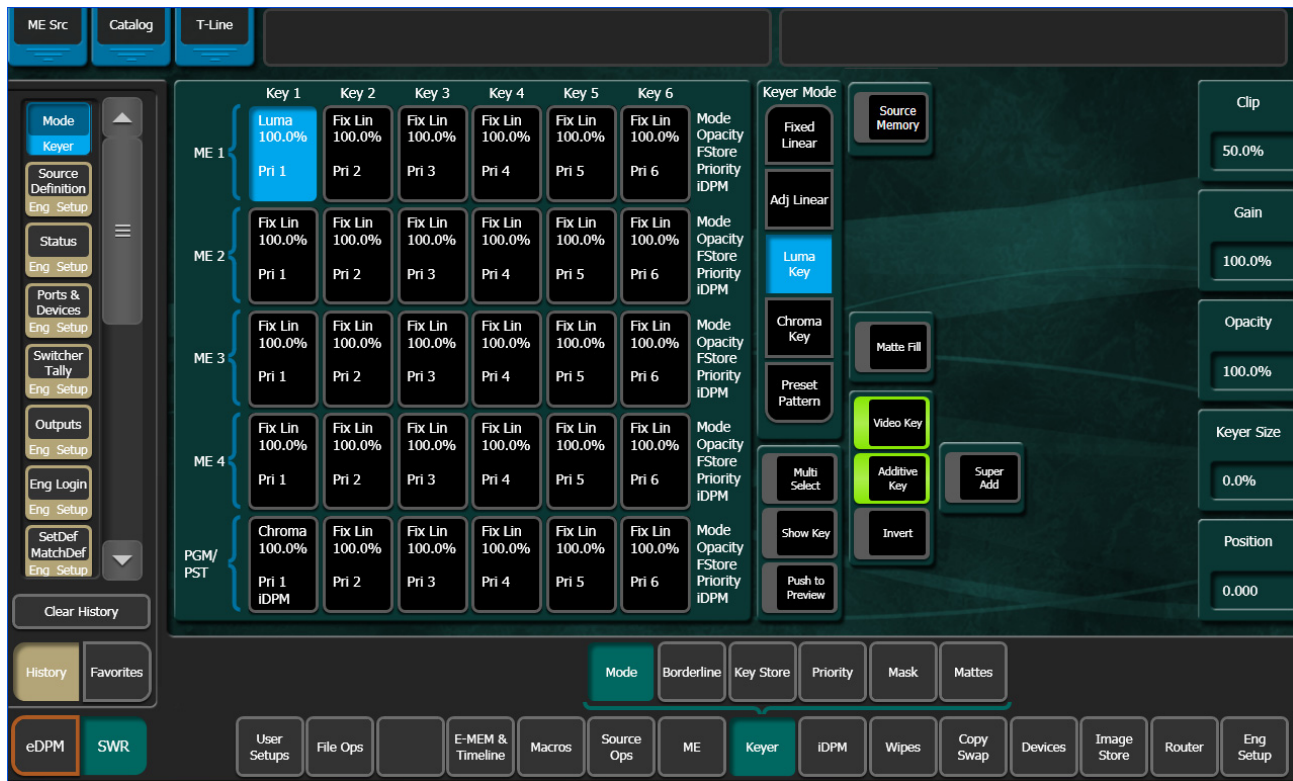
- A source's key is not properly defined and you wish to correct the shape by overriding the key type, or
- You wish to key an artistic effect by changing the video to the "incorrect" video shaping.

## Using Additive Keyer From the Menu

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

In the menu, the **Additive Key** button is located in the Keyer, Mode menu.

Figure 172. Additive Key—Six Keyer System



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

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

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

## Super Additive

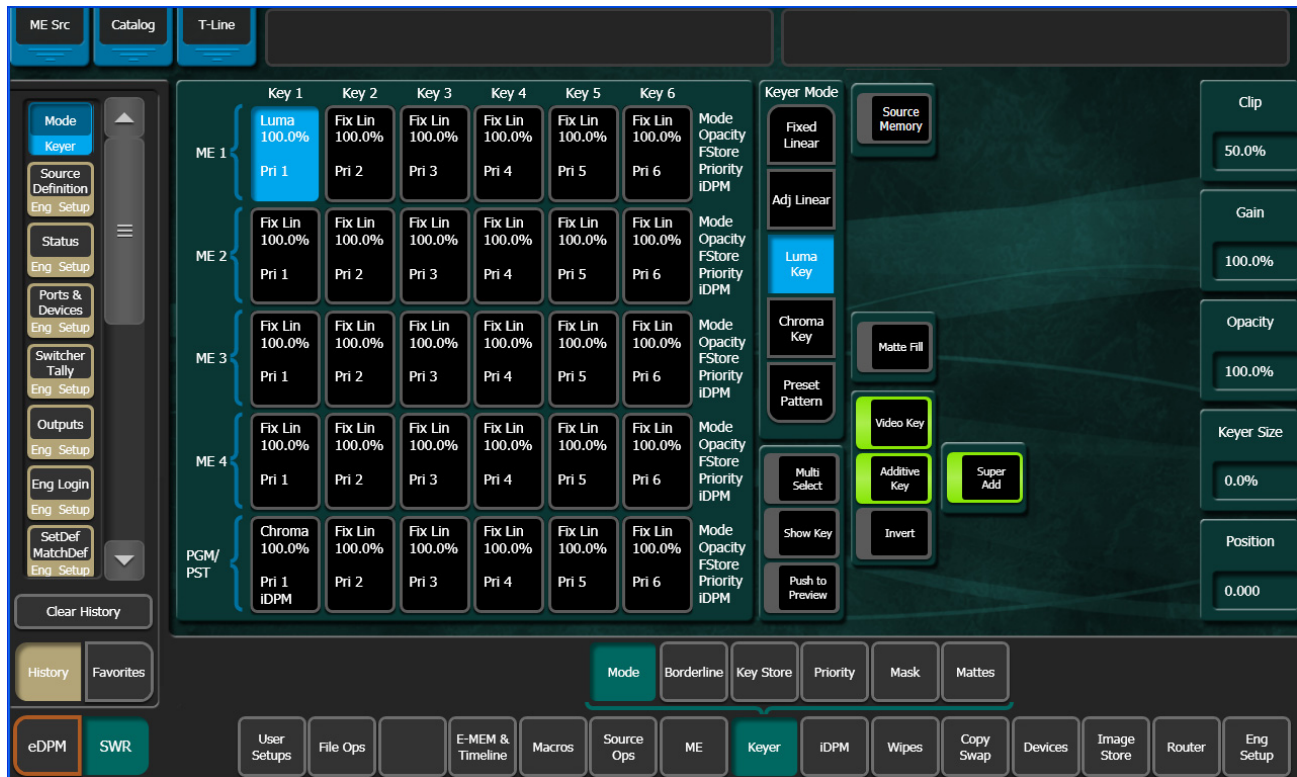
“Super Additive” mode replaces the key signal of the selected source with a full field of black, while in the additive key mode. The opacity of the fine and semi-transparent video is greatly increased based on its luminance. This is very much a “fashion-statement” kind of keying which has been very popular with entertainment shows. Additionally, Super Additive

mode is very useful for keying over credits and other text because it brightens and increases transparency.

When Additive Key mode is On, the **Super Add** button is displayed and defaults to Off. Select the **Super Add** button to turn it On/Off.

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

Figure 173. Additive Key/Super Add Button—Six Keyer System



## Using Additive Keyer From the Control Panel

In the Multi-Function Module of the Control Panel, the Add button is provided in the Keyer (Keys) menu (press Keys, Add). For Super Add, DPOP the Add button (Add button changes from high tally white to high tally orange).



# Macro Editor

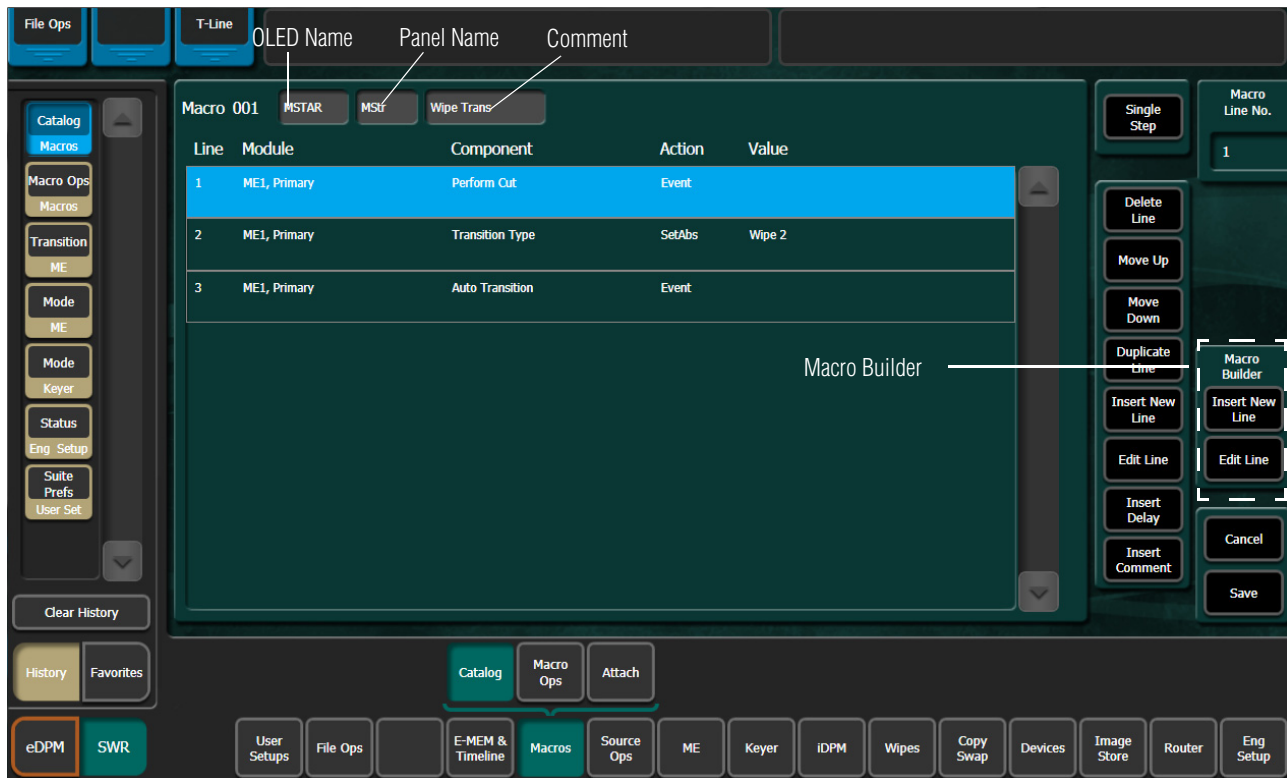
The Macro Builder was added to the Macro Editor in version 7.0 to simplify the common tasks associated with building and editing new common macros. The existing Macro Editor functions remain and are used for editing existing complex macros or building new complex macro lines but the Macro Builder features are quite easy to use and have a simple, intuitive interface.

The Macro Editor Edit/Build menu includes the Macro Builder pane containing the Insert New Line and Edit Line functionality for common and complex macros and other editing features:

- The Macro OLED Name can be edited,
- The Macro Panel Name can be edited, and
- Comments can be edited.

Simply select the field and edit with the pop-up keyboard.

Figure 174. Macro Editor Menu

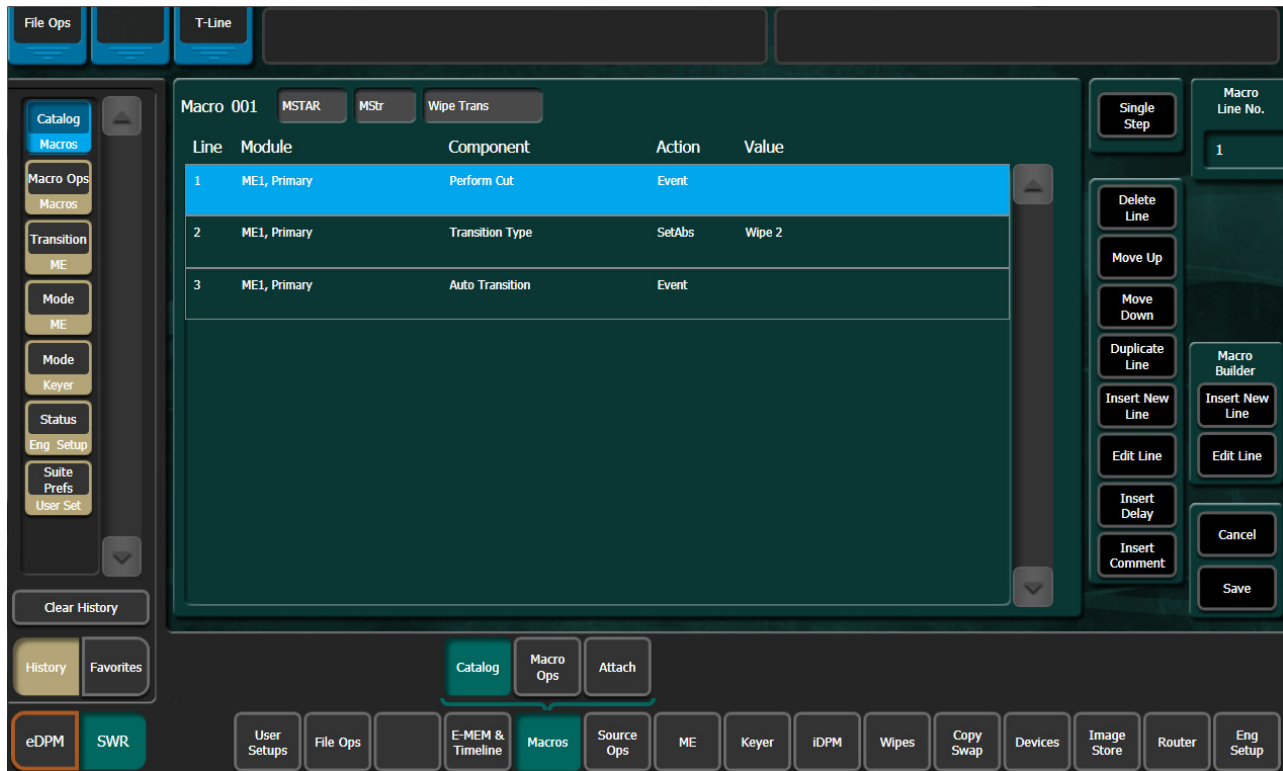




## Macro Editor Columns and Rows

Selecting **Macros, Catalog** then the **Edit** button in the Macro Edit/Build pane (lower right) opens the Macro Edit/Build menu.

Figure 175. Macro Edit/Build Menu



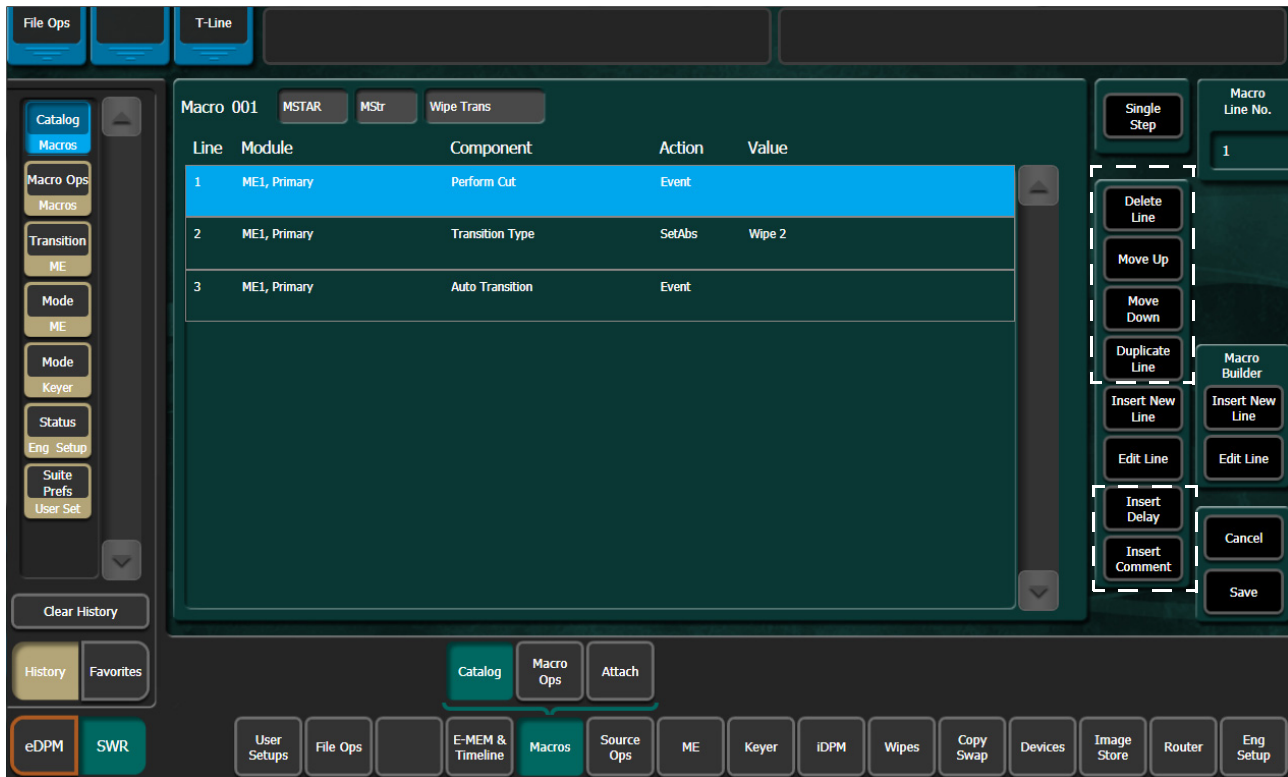
A macro line is made up of the following columns:

- **Line**—Order of execution in the macro
- **Module**—Switcher area affected
- **Component**—Switcher component involved
- **Action**—Type of action: SetAbs (set value) or Event (trigger)
- **Value**—Component value set by the macro

## Macro Line Editing

The Macro Editor line editing buttons in the Macro Build/Edit menu can be used to edit and organize macro lines for Macro Builder supported macros and complex macros (including macros built in earlier versions of software).

Figure 176. Macro Line Edit Menu



Using the Macro Edit buttons, you can edit or reorganize the macro lines:

**Delete Line**—Deletes the selected line

**Move Up/Down**—Moves the selected line up/down

**Duplicate Line**—Duplicates the selected line

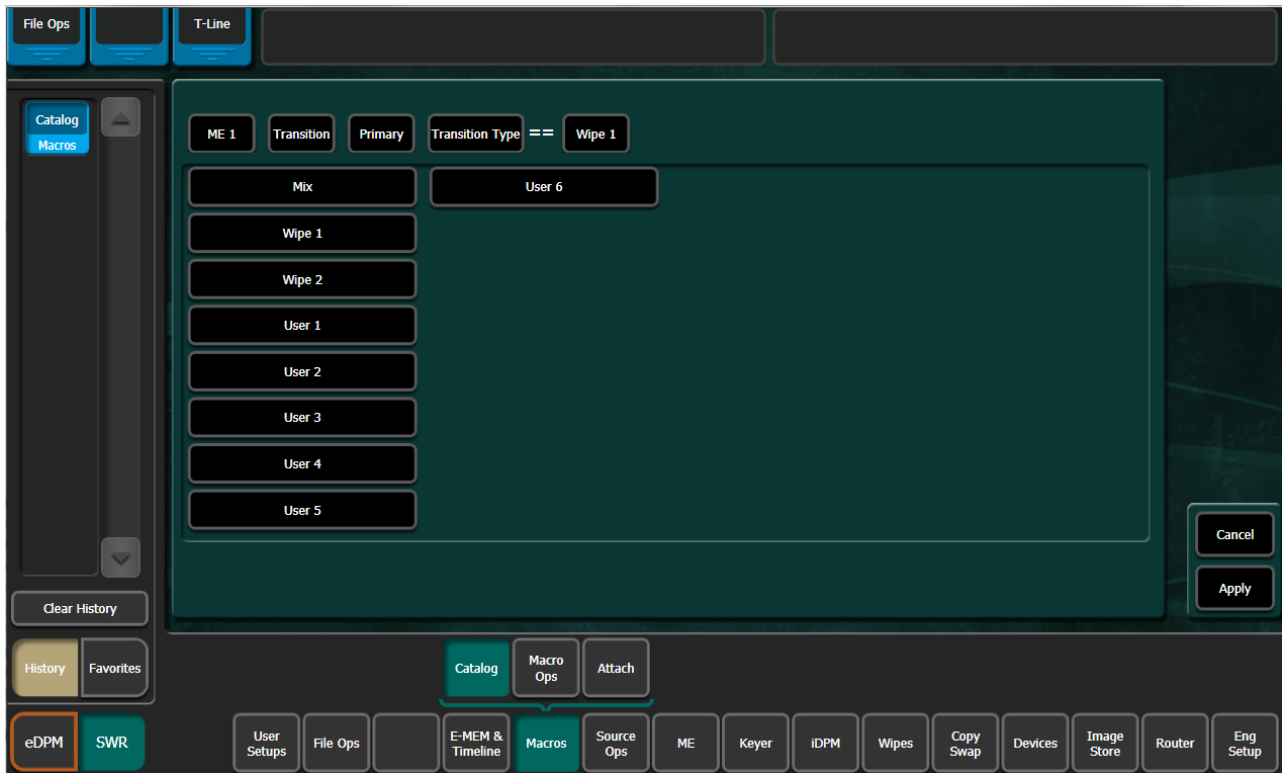
**Insert Delay**—Inserts a Delay (line) after the selected line.

**Insert Comment**—Inserts an editable comment after the selected line; comments do not effect macro performance

## Build a New Macro with Macro Builder

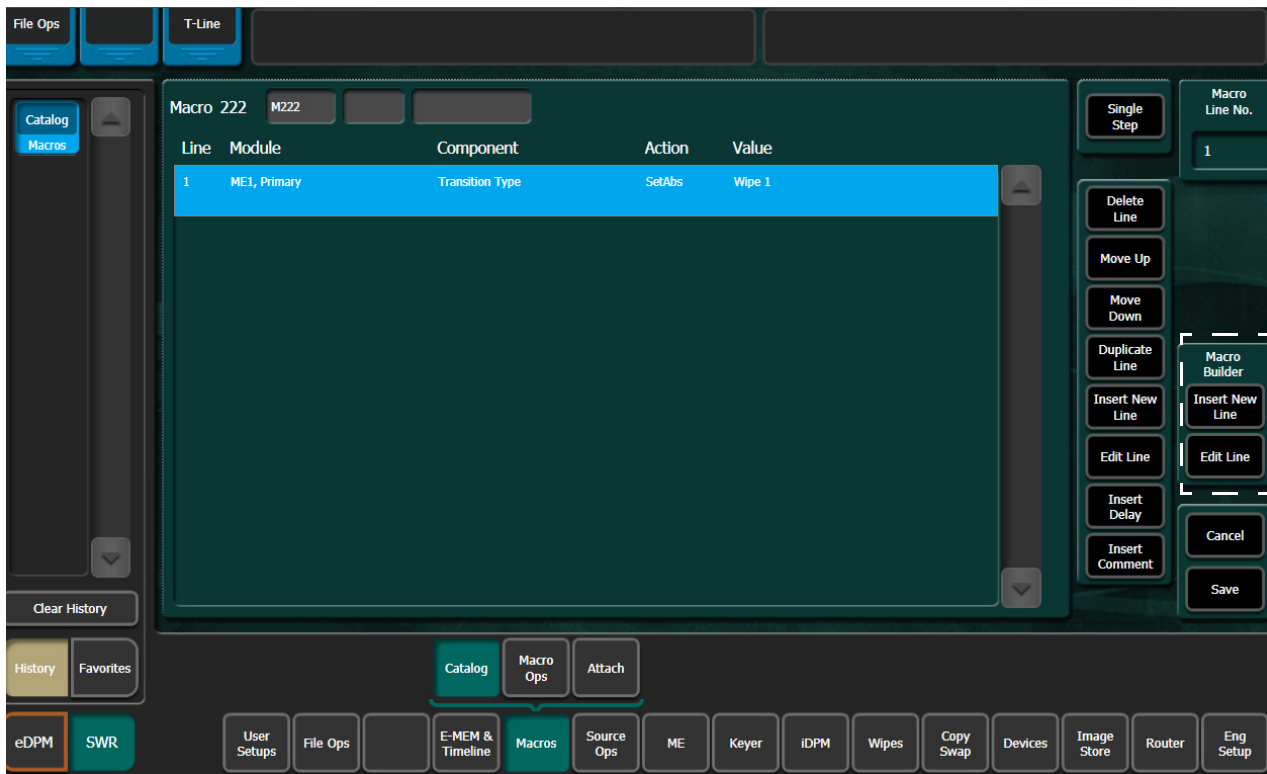
The Macro Builder Insert New Line menus guide you step-by-step through building a macro. The following is an example of building a new macro line for a wipe transition. Breadcrumb style menu navigation is displayed above and to the left of the menu.

Figure 177. Macro Builder—Final Selection, Transition



1. Select **Macros**, **Catalog** then select the **Edit** button in the Macro Edit/Build pane (lower right).

Figure 178. Macro Builder



2. Select the Macro Builder **Insert New Line** button on the far right of the menu.
3. Select an area of the switcher system—**ME 1**.
4. Make the next selection—**Transition**.
5. Make the next selection—**Primary**.
6. Make the next selection—**Transition Type**.
7. Make the next (and in this case the last) selection—**Wipe 1**.
8. Select the **Apply** button that is displayed when the final step of the macro has been completed.

Result: The macro to transition Wipe 1 is added to the macro register.

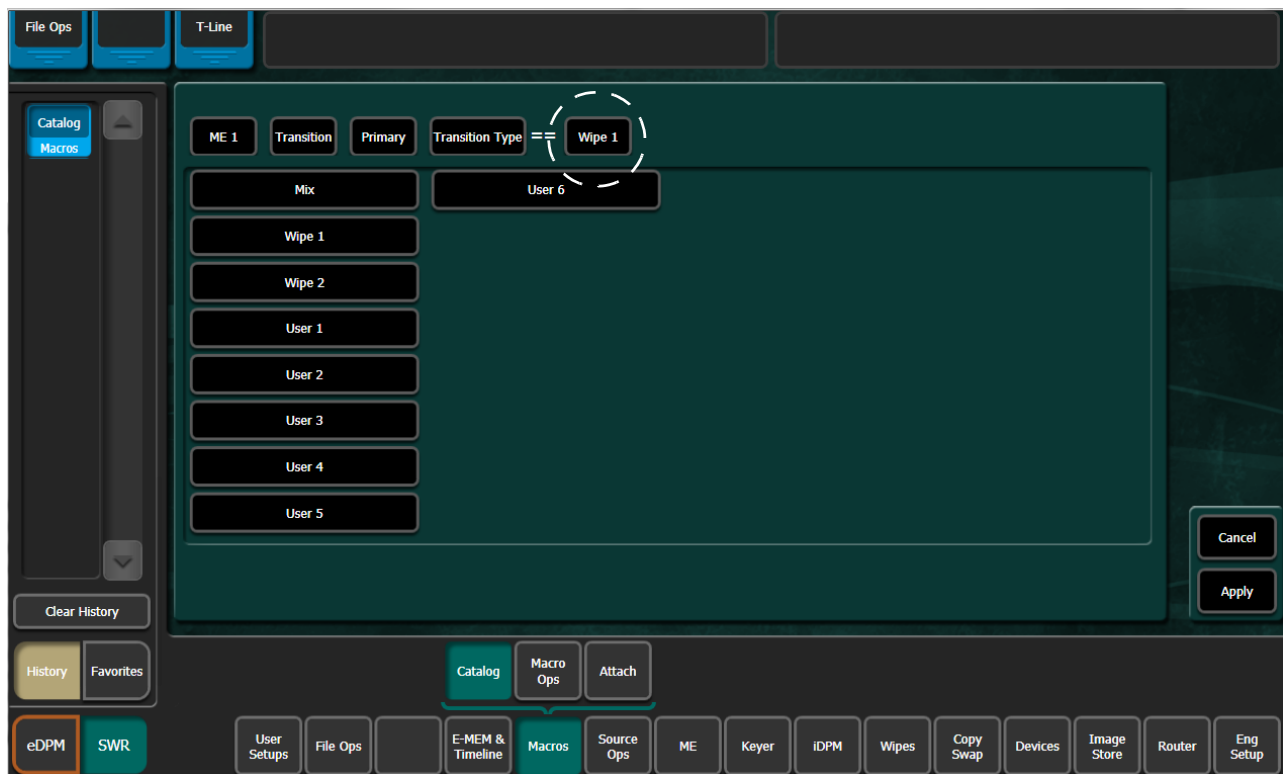
## Edit Macro Builder Created Macros

Lines in a macro supported by the Macro Builder can be edited by selecting the **Edit Line** Macro Builder button and selecting a new parameter. In this example, the Wipe 1 transition in this macro will be changed to Wipe 2. The **Single Step** button located at the top right of the menu is provided to step through each line.

**Note** If the Macro Builder **Edit Line** button is selected but the macro command in the line is not supported by the Macro Builder, the Macro Editor will open the more complex editing menus automatically.

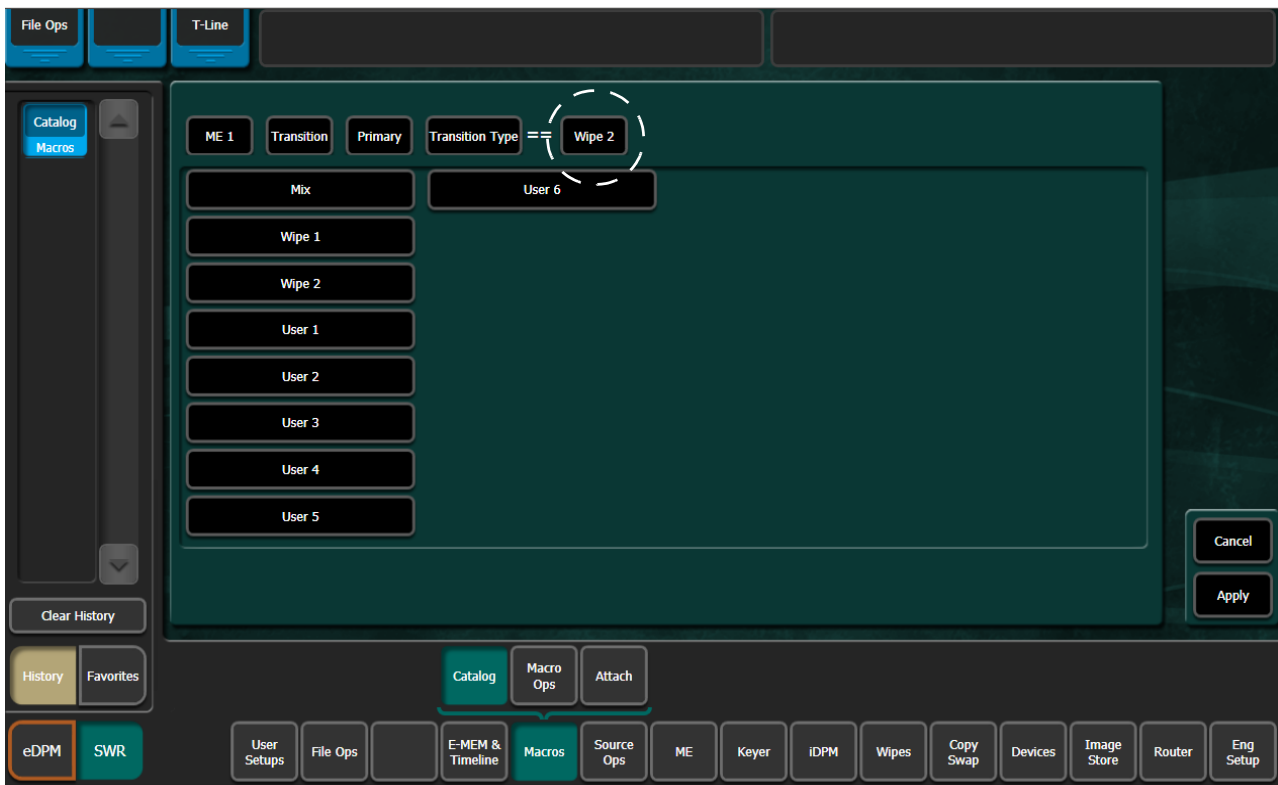
1. Select **Macros, Catalog** then select the macro to be edited.
2. Select the **Edit** button in the Macro Edit/Build pane (lower right).
3. Select a line to be edited; in this example a Wipe 1 transition.
4. Select the **Edit Line** button of the Macro Builder button pane.

Figure 179. Macro Builder—Final Selection, Transition



5. Select Wipe 2 and select **Apply**.

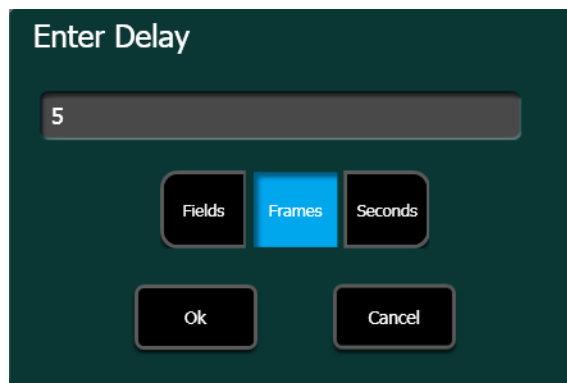
Figure 180. Macro Builder—Edit Selection, Transition



## Insert a Macro Delay

1. Select the **Insert Delay** button.
2. Select the **Enter Delay** data pad and enter the value in the pop-up numeric keypad, for Fields or Frames or Seconds.
3. Select **Enter**.

Figure 181. Enter Delay Dialog



## Insert External Device Control Commands in Macros

You can insert actions into macros using Macro Builder to trigger an event such as play or stop. You can also trigger parameter setting changes like a time code or a mark-in point; a dialog will display for actions with editable parameters when selected.

1. Select **Macros, Catalog** in the menu, and select a recorded macro.
2. In the Macro Edit/Build pane (right side of menu) select the **Edit** button.
3. In the Macro Builder pane (right edge of menu) select the **Insert New Line** button.
4. Select **Devices**, then select **Control**.
5. Select an external device.
6. Select an action; for editable parameters, enter those parameters in the pop-up dialog.
7. Select **Apply** (bottom right).

Result: The macro line is inserted into the Macro Editor.

8. Select **Save**.

## Creating a New Complex Macro

Creating a new macro can be done in the Macro Editor (not the Macro Builder), however it may not be practical. It is recommended that you learn about Tiers, Groups, and component locations using existing macros first.

To create a new macro:

1. Select an empty macro register in the Macros, Catalog menu.
2. Select the **Insert New Line** button in the Macro Line Edit menu ([Figure 176](#)), the Component Edit menu is displayed ([Figure 182](#)).
3. Choose the Tier 1, Tier 2, Tier 3 (if necessary) levels by selecting those buttons.
4. Choose the Group, Location, and Component by selecting those buttons.
5. Select the **Edit Value** button to set the value for the component.
6. Select **Apply**.
7. Select **Save**.

Repeat the above steps for each line of the macro.

## Editing Complex Macros

With Macro Editor, you do not have to re-create complex macros that you want to use for other parts of the switcher. You can copy a macro from one register to another and then edit the macro lines to fit your needs.

There are two levels of macro editing: editing or organizing macro lines and editing a macro line itself. When reorganizing macro lines, you use the macro editing buttons which allow you delete, move, insert lines, etc. whereas with line editing, you can edit the individual lines; location, values, etc. for each.

You can edit a macro line by selecting the line you wish to edit in the Macro Line Editing menu and then selecting the **Line Edit** button.

The Macro Editor displays a component level, hierarchical view of the selected macro line. In this view you can select a different Tier, Group, Location, and/or Component, and then set a new value for the Component (and apply and save the changes).

The parts of the switcher are organized hierarchically into tiers. Each selected tier has a number of groups. Each group contains a set of components which share the same set of locations. So when editing it is essential to select a group which contains the locations and components you wish the macro to act on.

**Note** Selecting the **Edit Line** button does not open the Component Edit menu for *all* lines, for example with an Insert Delay line, the Enter Delay dialog is displayed when the **Edit Line** button is selected.



Figure 182. Component Edit Value Menu



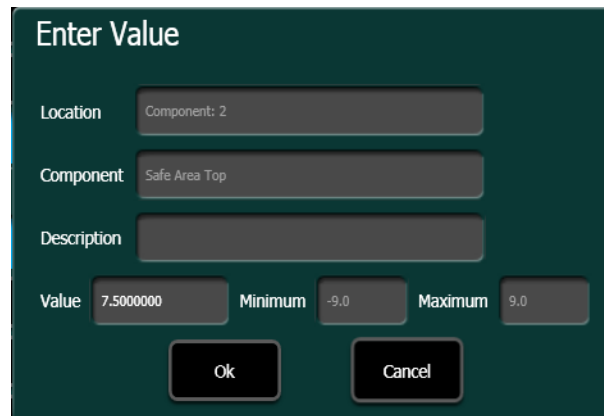
If you wanted to use a macro built for ME 1 on ME 2, you could copy the macro register and go through each line and simply change ME 1, Primary to ME 2, Primary. The macro will now perform identically but for ME 2.

## Edit Values

Changing component values is a very useful feature of line editing. For example you could change the value for the “Safe Area Top” component of Line 23 shown in [Figure 182](#).

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

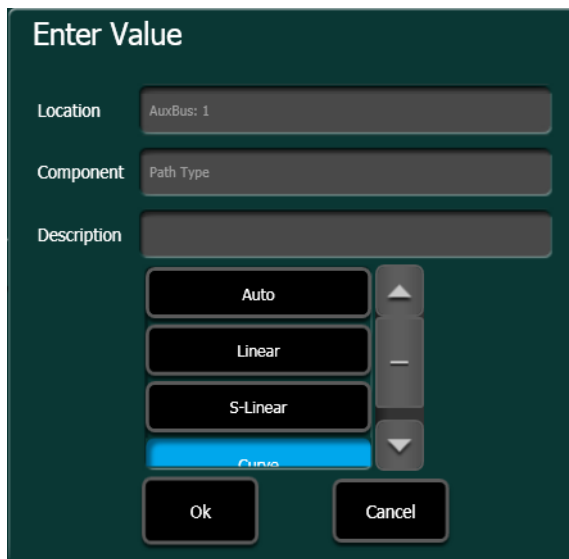
Figure 183. Edit Component Value Menu, Enter Value Dialog Example



2. Select the **Value** data pad, enter the new value in the pop-up numeric keypad, and select **Enter**.

Some components allow you to choose from a list of values.

Figure 184. Edit Component Value Menu, Enter Value from List Dialog Example



The dialog closes and the new value is displayed in the Component Value Menu’s **Edit Value** data pad.

**Note** It is very important to use a real show file data set, for instance if you were choosing from a list of sources.

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

The Macro Line Edit menu is updated to reflect the value change for Line 23.

## Frame Simulator and Macro Editing/Building

Using a correctly configured Frame Simulator and Show file, you will be assured that macros will properly reference sources and source names, as well as the expected durations for the required line and frame rate.

You can use the Frame Simulator included with the GV Switcher software to edit and create macros offline and save them to a USB Memory Stick or other storage device making them portable for use in future shows.

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

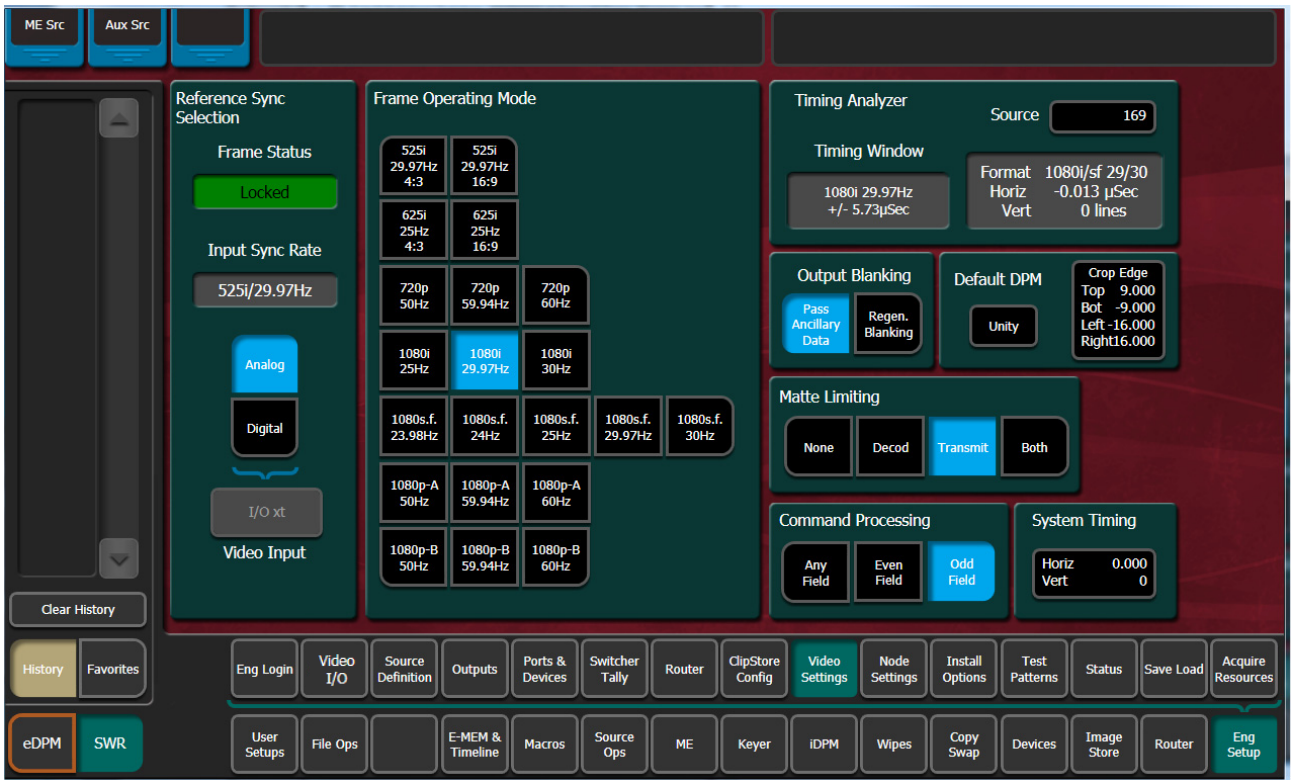
The GV Switcher Frame Simulator will be installed automatically in the Grass Valley directory, during the software installation (see the *Release Notes* for your switcher model) for a standalone PC. In order to run the Frame Simulator properly, the line rate will have to be configured once (as it affects all transition, timeline, and macro pause durations) and the main.exe file will need to be running simultaneously with the Menu on PC.

## Set the Line Rate for the Frame Simulator

Set the line rate in the Eng Setup, Video Settings menu prior to editing or building macros using the Frame Simulator. This will prevent video settings errors when macros are transferred from disk to a K-Frame system.

1. Select **Eng Setup, Video Settings**.
2. Select the line rate from the Frame Operating Mode pane.

## Video Settings Menu



## Offline Macro Editing with the Frame Simulator

You can use the Frame Simulator included with the GV Switcher software to edit and create macros offline and save them to a USB Memory Stick or other storage device making them portable for use in future shows.

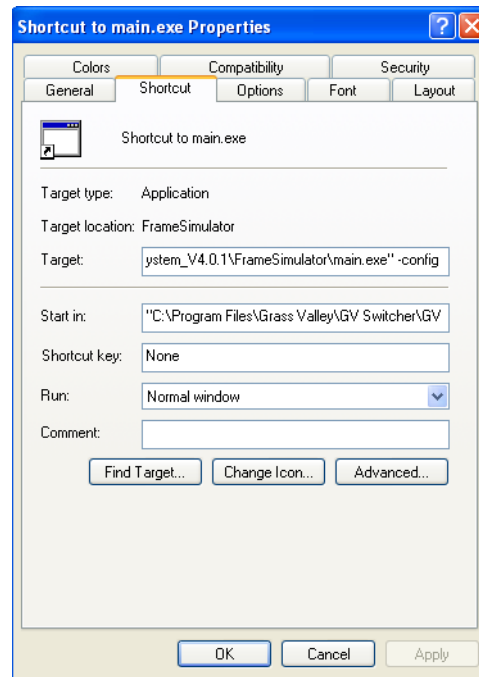
Also in this release, as part of the Frame Simulator interface, you can configure the line rate. The line rate will affect all transition, timeline, and macro pause durations.

## Configure the Frame Simulator

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

1. Navigate to C:\Program Files\Grass Valley\GV Switcher\GVSwitcherSystem\_Vx.x.x \Frame Simulator.
2. Right-click select Create Shortcut.
3. Right-click on the shortcut and select Properties.
4. Append -config to the Target address after main.exe as shown in [Figure 185](#).

Figure 185. Macro Editor Line Rate Shortcut



5. Open the shortcut to adjust the line rate.

## Configuring the GV Switcher Menu

Enter the Frame simulator IP Address:

1. In the GV Switcher menu, select **Eng Setup, Node Settings, Frame Suite Nodes & ID**.
2. Select the **Frame IP Address** data pad.
3. Enter **127.0.0.1** as the Frame IP address in the Frame IP numeric keypad and press **Enter**.

**Note** The Node Name "LocalHost" with the IP 127.0.0.1 for Suite1 Surface A has been auto-entered into the Eng Setup, Node Settings, Control Surfaces menu.

At this time, you may want to load a real Show file if the macros you will be editing/creating affect sources or other variables.

Macros can now be edited, created, and saved offline from a PC.

# Transition Chaining

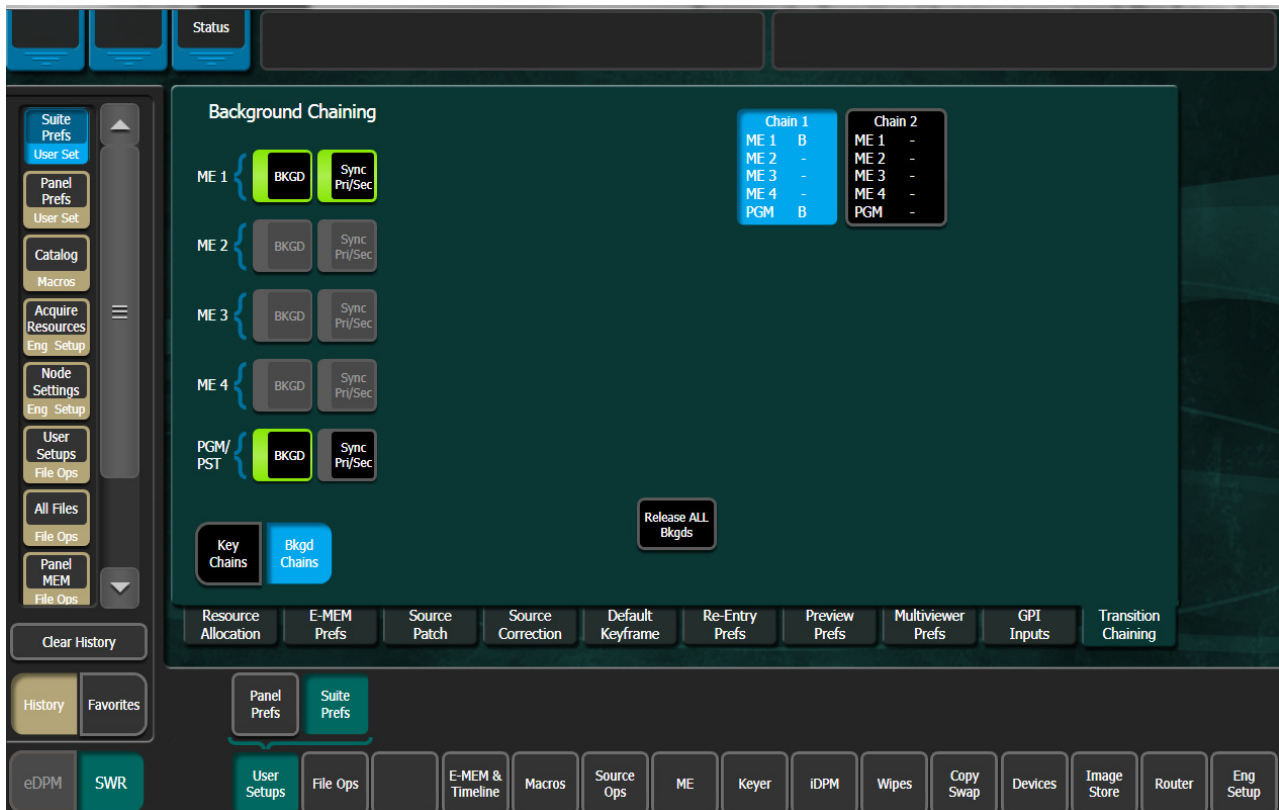
Transition Chaining allows you to chain transitions across different MEs. *Background Chaining* and *Partition Sync (Synchronization)* have been added to the Key Chaining feature to create “*Transition Chaining*”:

- **Key Chaining**—Allows you to chain keys to coordinate their keyer states (on and off) on a single ME or from one ME to another. There are 15 Key Chains available in a GV Switcher System. All keys in a chain transition on and off together (see *Key Chaining on page 349*).
- **Background Chaining**—Links background next-transition elements across different MEs; Primary to Primary partitions and Secondary to Secondary partitions. Two chains are available per suite (see *Background Transition Chaining on page 353*).
- **Partition Sync**—Links Primary and Secondary partitions within the same ME (see *Partition Sync Mode on page 354*).

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

To access the Transition Chaining menu, select **User Setups, Suite Prefs, Transition Chaining**.

Figure 186. Transition Chaining Menu



## Key Chaining

Key Chaining allows you to chain keys to coordinate their keyer states (on and off) on a single ME or from one ME to another. There are 15 Key Chains available in a GV Switcher System. All keys in a chain transition on and off together. Key Chaining is performed in the User Setup, Suite Prefs, Key Chaining menu (Figure 187).

Some uses for Key Chaining are:

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

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

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

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

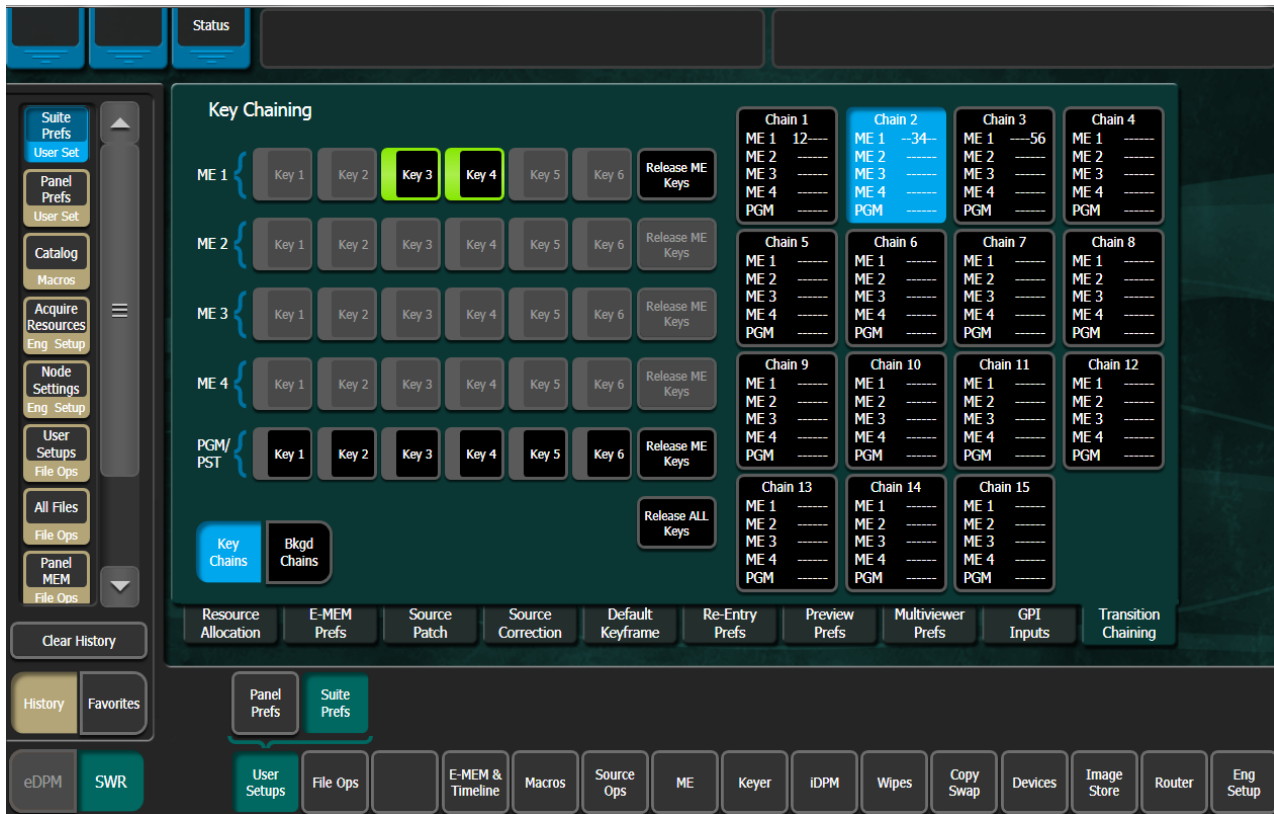
Keyers are controlled from the Transition Module on the GV Switcher Control Panel. They can be cut on/off or transitioned on/off using the dedicated Key Cut and Auto buttons. Key chaining allows for a single button push to transition all the keys in the chain. A single keyer selection in the Next-Transition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

## Creating Chains

To create a Key Chain or chains in a single ME, simply select a Chain parameter data pad (Chain 1, Chain 2, etc., see Figure 187) to select it (turns blue), and select the keys you wish to add to the chain. Select another Chain parameter data pad and repeat the process (for the same ME in this case).

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

Figure 187. Key Chaining Menu—Six Keyer System



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

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

## Using Key Cut/Auto Control Panel Buttons with Key Chaining

Pressing any of the key cut or key auto cut (for example **K1 Cut** or **K1 Auto**) transition buttons, with those keyers as part of a chain, will result in the following:

Chained keyers on the same or different MEs all transition simultaneously,

The transition rate of the button that is pressed (controlling keyer) is applied to all the other (controlled) keyers in the chain.

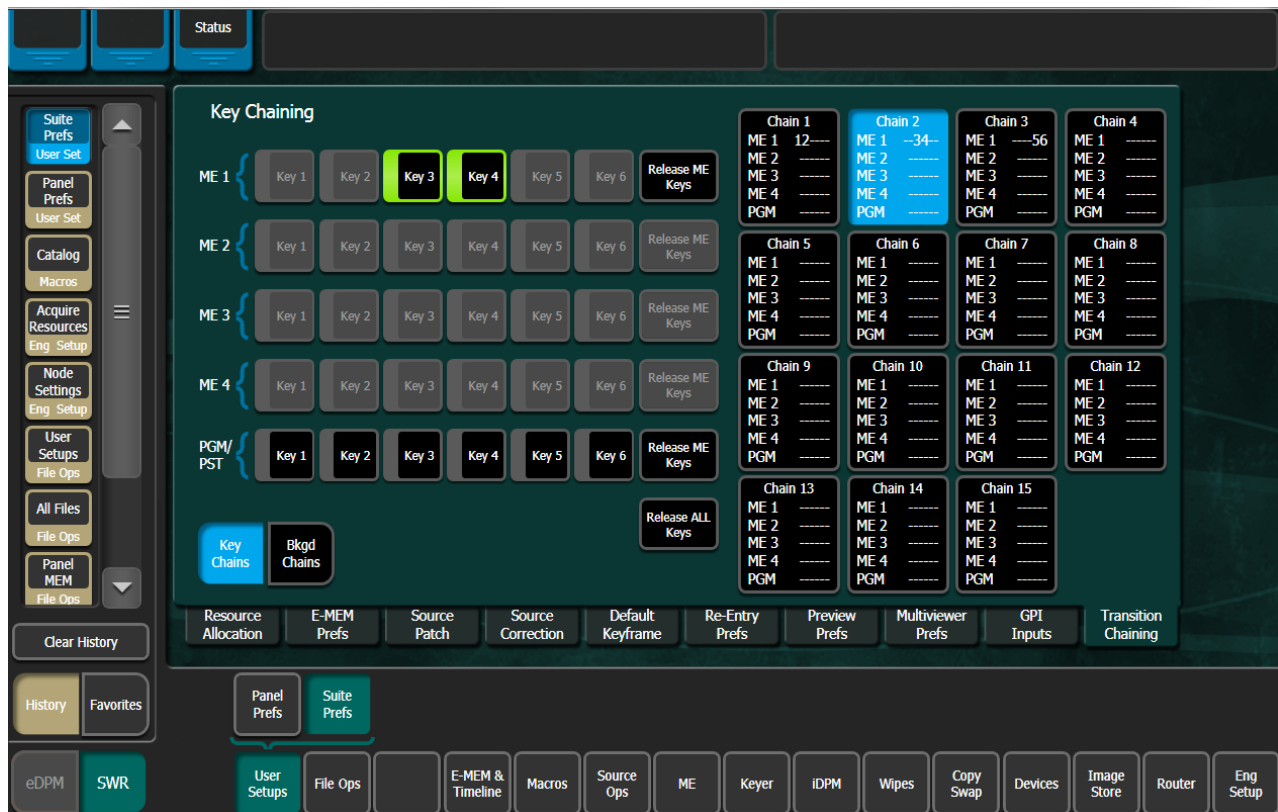


## Key Chaining on a Single ME

In the Chain parameter data pads, the following three key chains have been created for ME 1:

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

Figure 188. Single ME Key Chaining—Six Keyer System



Selecting keyers in the Next-Transition section of the Control Panel will make those keyers initiators for the transition. Key Chaining causes the chained (controlled) keyers to be selected as well. These chained keyers will flash to indicate they are in the chain. The keys which do not flash are the initiators. When the Lever Arm is moved, or the **Auto** button is pressed, the keys transition together.

If a selection is made for a keyer in the primary partition, and the chained controlled key is in the secondary partition, the controlled keyers will transition simultaneously with the keys in the primary partition, irrespective of the delegation of the **Sec** button (Source Select Module). The same is true for selections made in the secondary partition with controlled keys in the primary; they always delegate whether or not the **Pri** button (Source Select

Module) is delegated. This behavior corresponds to the tally of the next-transition buttons. The blinking tally indicates that the keys will transition.

## Key Chaining Across MEs

In the Chain 1 parameter data pad below, the following multiple ME key chain has been created:

- PGM/PST, Key 1,
- ME1 Key1

Figure 189. Multiple ME Key Chaining—Six Keyer System

Selecting a keyer in the Next-Transition section of the Control Panel will make that keyer the initiator. On the MEs with keyers in the chain, their next-transition selections will be erased and the keyers in the chain selected. These keyers will flash to indicate that they are in the chain. The key which is not flashing is the initiator.

You can also use the Cut/ Auto keys as described in *Using Key Cut/Auto Control Panel Buttons with Key Chaining on page 350*. If a Cut button is pressed on the initiating ME, then all the MEs with chained keyers, cut. If an Auto button is pressed, then similarly, all MEs with chained keyers shall perform the same transition at the same rate.

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

## Background Transition Chaining

There are two chains available for Background Chaining in the menu. You could for example chain backgrounds for ME 1, ME 2, and ME 3 in Chain 1 and for ME 4 and ME 5 in Chain 2 (Figure 190).

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

The Primary ME’s Bkgd Transition button (once pressed) will be high tally while chained Bkgd Transition buttons will flash.

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

To access the Background Chaining menu, select **User Setups, Suite Prefs, Transition Chaining, Bkgd Chains**.

Figure 190. Background Chains Menu



In the Background Chaining menu, in the **Chain 1/Chain 2** data pads, a “B” is displayed next to the ME when that ME’s background is part of the Background chain.

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

## Partition Sync Mode

Partition Sync mode (**Sync Pri/Sec** buttons) synchronizes or “locks” the chained background transitions together and puts the Lever Arm in a primary transition-only state, with the secondary transition attached. If you perform a Primary and Secondary transition without Partition Sync on for a split ME, the two outputs may be slightly offset. Turning on a **SyncPri/Sec** button (Figure 190) precisely synchronizes the backgrounds for transition.

**Note** There is no general need to chain the primary and secondary partitions of an ME, this can be done by selecting both the Pri and Sec buttons in Split Mode.

## Partition Sync

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

## Operations

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

With the introduction of GV Switcher DoubleTake, you could Split an ME and it's keyers between two feeds, for example one feed in English using the Primary Partition and one in French using the Secondary or you could use one partition with keyers for Left-Eye and one for Right-Eye for use with 3D. However, you were limited to up to six keyers divided between feeds (four full or "complex" keyers for K-Series systems (no keyers 5 and 6)), two of them being "simple" keyers (Key 5 and Key 6). With Background Chaining, you can have a split feed using two full MEs rather than two partitions, with the power and flexibility of all licensed keyers per feed and two backgrounds (with the same or different sources by using source substitution).

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

## Creating Primary and Secondary MEs (Dual Feed)

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

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

Prerequisite: ME 1 and ME 2 are licensed and acquired resources (or other licensed MEs, for example ME 3, ME 4).

1. In the User Setups, Suite Prefs, Transition Chaining, select the **Bkgd Chains** menu button (lower left).

2. select **ME 1** to assign it to the chain.
3. Select **ME 2** to assign it as the secondary or “controlled” ME.
4. To synchronize the background transitions, select the **Sync Pri/Sec** button for the controlling ME (in this example, ME 1).
5. Select the **Key Chains** selector button to access the Key Chaining menu.
6. Select one of the 15 Key Chain data pads and Chain ME 1, Key 1 to ME 2, Key 2 by selecting those buttons in the Key Chaining pane.
7. Repeat Step 5 for ME 1/ME 2 Key 2 and ME 1/ME 2 Key 3.
8. Go to the Bus Linking menu by selecting **Source Ops, Bus Links**.
9. In the Links Setup menu tab, select the Controlling Bus data pad in the Table Setup pane.
10. In the ME Buses pane, select **ME1 A**.
11. Select the **Linked Bus** data pad, and select **ME2 A** in the ME Buses pane.
12. Repeat Step 9 and Step 10 for **ME1 B** and **ME2 B**.  
The A and B buses for ME 2 will now follow the A and B buses for ME 1.
13. To make ME 1 the controlling ME for the chain, press the ME 1 **Bkgd** transition button on the Transition Module.

## Multiple Feed

Starting with the example in [Creating Primary and Secondary MEs \(Dual Feed\)](#), you could chain additional MEs for multiple feeds. This should be planned carefully but once configured, the entire show can be switched from the Primary ME thus simplifying a very complex set of operations.

## Including Source Substitutions

Source substitutions can also be a powerful part of chained MEs. They can be used to cut on two or more different sources for the chained MEs and switched from the Primary ME. For example during a “Home” verses “Away” baseball game, the Primary ME could take a camera source in the Home team’s dugout on Source 1 but take a different camera on Source 11 on the Secondary ME in the Away team’s dugout using the source substitution (see [Bus Linking Source Substitution Tables on page 187](#)).

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

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

## ME Split Mode

Split Mode allows the operator to divide a GV Switcher system ME into two partitions (Primary and Secondary) by enabling Split Mode on that ME. Each Split Mode ME partition can be assigned resources (keyers and wipe generators) of that ME. Each partition can be setup and controlled from the Control Panel using the **Pri** and **Sec** delegation buttons, and each partition has its own E-MEM sub-level, permitting precise independent control of ME partition effects. A powerful aspect of Split Mode is control of the partitioning resides in the E-MEM system itself. It is possible to create ME partitions when needed with an effect recall, and then quickly return the MEs to full functionality with another effect recall. The Split Mode feature also provides Preview outputs for each partition

Putting MEs in Split Mode essentially gives the operator more MEs (up to eight on a 4-ME GV Switcher system), each with part of the MEs functionality. This can be useful for some styles of production. In fast paced programs an operator may dedicate an ME to a simple task for the duration of the show and never change it. Split Mode provides a way to use some resources of an ME for these set-and-forget requirements, and allow the operator to use the remaining resources of the ME for other purposes.

**Note** E-MEM control of the Primary and Secondary ME outputs and Layered parameters (on the ME Mode menu) have been placed in the ME/eDPM Part sub-level. This is a logical organization of ME output/layered control for E-MEM recall and will prevent ME Secondary output recall issues that may have occurred with earlier releases.

An example of using Split Mode in this manner is a shot clock at a sporting event. The shot clock composite requires only one or two keys plus a background and uses a fixed camera that doesn't move. During pre-production ME 1 can be split and the Secondary partition can be set up with the shot clock composite. When the shot clock is needed during the show, that partition of the ME is taken on-air. The Control Panel ME 1 controls can be delegated to the Primary partition and be used for other effects, which can be set up, recalled, and run independently from the Secondary partition used for the shot clock (see [page 362](#) for setup information for this scenario).

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

Splitting an ME with Split Mode is useful when independent control of each partition is desired, so E-MEM recalls and transitions only affect part of the ME. If you want an alternate output from the same ME but wish to

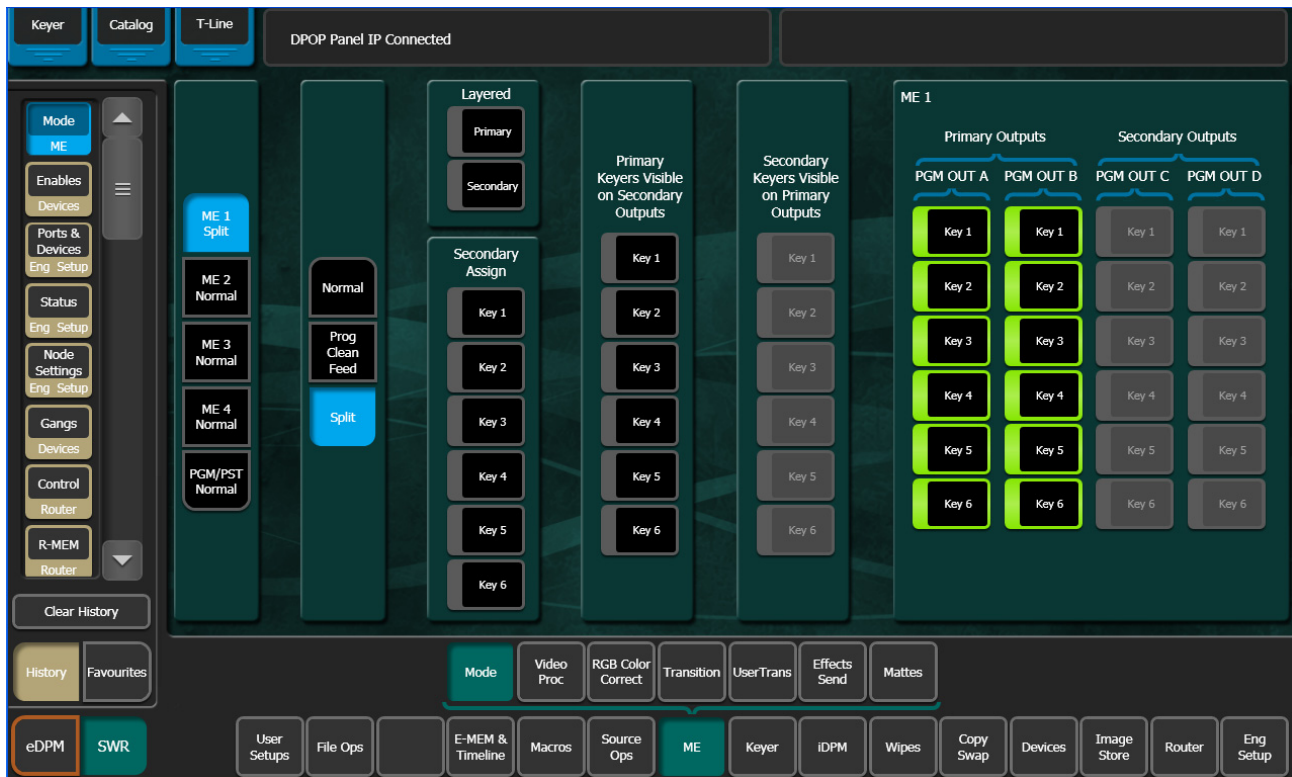


have the effects and transitions track on both outputs, Programmable Clean Feed mode is probably the better choice.

## ME Split Mode from the Menu

The ME Mode menu is used to activate Split Mode on an ME and assign resources to the partitions. Select **ME, Mode** to access the menu, then select the desired ME and select **Split** to partition that ME (Figure 191).

Figure 191. ME Mode Menu, Split ME Selected—Six Keyer System



In **Split** operating mode, the ME is divided into Primary and Secondary partitions. The Primary partition has the Pgm A and Pgm B outputs that use the Background A and B buses, and the Secondary output has the Pgm C and D outputs that use the Utility buses. The Pgm Out columns on the menu are re-arranged when Split mode is selected to show the A and B Primary outputs on the left and the C and D Secondary outputs on the right.

The Secondary Assign pane is used to assign Keyers to the Secondary partition. Assignments made here affect what elements are learned and recalled by the E-MEM levels (see [Split MEs and E-MEM Control on page 361](#)). Selecting an item so its indicator illuminates green, assigns it to the Secondary partition. The buttons for these items are then activated on the Secondary partition outputs. Unselected items remain assigned to the



Primary partition. Note that keyers can be activated or deactivated (green button indicators on or off) on the individual outputs if desired, the same as in Programmable Clean Feed mode.

## Keyer Partition Visibility

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

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

For example, Key 2 and Key 3 on the Secondary Partition can be made visible on the Primary Partition by selecting **Key 2** and **Key 3** in the Secondary Keyers Visible on Primary Partition pane in the ME, Mode menu.

The keyers will be visible in the Primary Partition but are controlled only by the Secondary.

## ME Split Mode from the Control Panel

When an ME has been split, the **Pri** and **Sec** delegation buttons on that ME are activated. All ME stripe resources (E-MEM, Transition, etc.) are delegated to the selected partition. When both the **Pri** and **Sec** buttons are selected, the Primary partition's state will be delegated.

### Secondary Partition Only

With the Secondary partition delegated (the **Sec** button selected), a separate set of background sources from the Primary can be delegated. This can be useful for example if you want to delegate keyer buses Keyer 1 and Keyer 2 to the Primary partition and Keyer 3 and Keyer 4 buses to the Secondary. Any background buses can be assigned to a partition, even the same buses; for example the same background in each partition but with different key sources composited.

## ME Partition Preview

Preview outputs are available for both partitions of a Split ME. The \_\_\_ **MxpA** output of each bank is used for the Primary partition preview, and the \_\_\_ **Mxp2** output is used for the Secondary partition preview. These preview signals can be mapped to output connectors with the Output Assignments menu, accessed by selecting **Eng Setup, Outputs**.

You can preview ME primary and secondary ME partitions on switched preview using the System Bar. Press the **Sw PVW** button and select an ME for primary, select the ALT button (next to Sw PVW) to see the secondary.

## Transitions in Split Mode

When the Control Panel controls of a split ME are delegated to only one partition, the ME's main transition system controls only that partition. Moving the Transition Lever Arm or pressing the **Auto Tran** or **Cut** buttons will affect only the delegated partition. Only elements assigned to that partition may be selected for the next transition. Keyers associated with the other partition may not be selected and therefore can not be included in the transition.

When a split ME has been delegated to both partitions, all the controls become functional and simultaneous transitions in both partitions will occur for what ever elements are selected.

As an exception to the independence of the two partitions, the **Key Cut** and **Key Mix** buttons can always be used regardless of partitioning and panel delegation. If a keyer is associated with the secondary partition, the **SEC** indicator above the keyer's cut and mix buttons illuminates to inform the operator that the keyers are not assigned to the primary partition.

## Correcting Split ME Mode Out of Sync Transition Lever Arm

If a split ME is delegated to a different partition when a transition is in progress, an out of sync condition of the transition lever arm will probably result. This situation is similar to recalling an E-MEM register that splits the screen with a transition wipe. The Transition Lever Arm will need to be re-synced (by moving the lever arm to a limit) before it can be used to finish the transition or start a new one.

## Local E-MEM in Split Mode (Kayenne/Karrera)

When the ME bank of a split ME is delegated to one partition, that ME's Local E-MEM will control only that partition's E-MEM registers. Learning, recalling, and running effects will only occur on the currently selected partition.

When the ME bank is delegated to both partitions, effect recalls and runs are initiated in both partitions and are controlled simultaneously.

When effect registers are saved to disk, all the levels of that effect are saved, including information for both partitions of a split ME.

## Master E-MEM in Split Mode

The Master E-MEM allows for enabling the ME levels. If the ME is not split then all ME control except for ME Mode is with the ME Primary level and the ME Secondary level is disabled. When the ME is split then the control for the Secondary is with the ME Sec level.

The ME Mode is controlled by the ME Partition sub-level. ME Mode includes ME Split Mode, the assignments of the Keyers, Layered Mode and configuration of the ME PGM outputs.

The Partition Level by default has the ME partition sub-level for each of the MEs. The ME partition sub-level can be assigned to other levels. It's recommended that if having an ME level control its own partitioning is desired, then the Primary ME level should be used. If the ME partition sub-level is assigned to an ME Secondary level, there is a potential for that level to be disabled and the partition sub-level with it.

## Split MEs and E-MEM Control

When an ME is split, the Primary and Secondary partitions each have their own essentially separate E-MEM system. How each of these partitions are controlled by E-MEM operations depends on the E-MEM Prefs settings for that ME.

## ME Copy in Split Mode

The Copy/Swap function can be used to copy ME settings from one location to another. ME Copy and Swap operates on the entire ME regardless of mode or secondary assignments. For example, if a source ME is split and the destination ME is not, after a copy both MEs will be split. Swaps behave in a similar manner, with the split setting and resource assignments being swapped between the MEs.

## Partition Boundaries

The ME mode (Normal, Prog CF, and Layered Mode when in Split mode), output, and any secondary assignment information is stored as partition boundary information in the E-MEM system itself. This makes it possible to change an ME's mode with an E-MEM recall. This partition boundary information is maintained as a separate component to permit isolation between Primary and Secondary partitions. See *Partition Boundary Control on page 362*.

On a GV Switcher system, the default settings assigns the partition boundary to the partition level (PART) accessed in the User Setups, Suite Prefs, E-MEM Prefs, ME Partitions menu.

## E-MEM Level Assignments in Split Mode

When an ME is split, essentially two separate E-MEM systems are created. The primary partition is always associated with its own E-MEM level. The secondary partition is part of the PART Level and becomes enabled when the ME is placed into Split Mode. These settings affect how each split ME's Local E-MEM Module and how the Master E-MEM Module is used to enact E-MEM control of the MEs.

## Partition Boundary Control

The partition control information can be assigned to an E-MEM level, or not be assigned (Not Assigned). Which level the partition control is associated with controls the amount of isolation between Primary and Secondary partition E-MEM behavior.

- For the switcher default, the partition boundary is assigned to a different E-MEM level entirely and complete independence of the split ME partitions results. This setting can be used to map all ME partition boundaries to the same separate level. This level can be used to preset the partitioning of the entire switcher, and then Primary and Secondary E-MEM operations would not change the switcher settings.
- If the partition boundary is assigned to the Secondary partition, recalls by the Secondary partition splits that ME. This setting would work with the shot clock example cited in the introduction, especially if the shot clock is used frequently and the remaining resources of that ME are sufficient. Note that there is a chicken and egg aspect to this mapping. The ME cannot be split from the Control Panel by recalling a Secondary partition unless the ME is already split. You will need to go to the ME Mode menu and manually turn on Split mode to activate Secondary partition recalls from the Control Panel. You will also need to manually turn Split mode off from the menu to restore all the resources to the Primary partition.
- If the partition boundary is assigned to the Primary partition E-MEM level, every E-MEM recall of the Primary partition of a split ME imposes the ME mode and the secondary resource assignments. E-MEM recalls of the Secondary partition will not change the current mode or alter any resource assignments. This mapping is useful in cases where split ME mode is used occasionally during a show, but the ME is normally used unsplit. Primary partition E-MEM recalls will split the ME when desired and restores it when all resources are needed by the Primary partition. Note that all the effects built on the Primary partition will need to include consistent partition boundary information. If any change is made later in ME partitioning, all the Primary partition effects will need to be edited.

- If the partition boundary is unassigned (none), E-MEM recalls will not affect the current ME settings. Changes can only be done manually in the ME Mode menu.

A Primary partition is always associated with an ME's main E-MEM level and has a dedicated button in the Master E-MEM Module (**ME 1**, **ME 2**, **ME 3**, **Pgm Pst**). A Secondary partition has its own level, enabled in Split Mode. There are also dedicated buttons in the Master E-MEM Module (**ME 1 Sec**, **ME 2 Sec**, etc.) which are enabled when the ME is in Split Mode.

- If a Secondary partition is unassigned (none), E-MEM control is only available on that ME's individual Local E-MEM when it has been delegated to a Secondary partition. The Master E-MEM will have no control of that ME's Secondary partition.
- If a Secondary partition is enabled, then E-MEM control of that Secondary partition will be available from the Master E-MEM. Control continues to be available from that ME's individual Local E-MEM when it is delegated to its Secondary partition.
- If a Secondary partition is attached to its Primary partition level, E-MEM control of the two partitions will be linked together. Specifically, Master E-MEM operations for that level will always affect both partitions. When the individual ME is delegated, E-MEM operations will affect both partitions. However, when the individual ME Secondary is delegated, E-MEM operation will only affect that Secondary partition.

## Split Layered Mode

Video Compositing, or Layered Mode is a feature that allows the operator to composite two keyers together to create a single video/key pair. These two signals are to be routed in parallel to provide a much cleaner key than would normally be possible. This key pair can be re-entered into the switcher on another keyer to create more key layers on a different ME. This compositing of keys can be done on either or both of the primary and secondary outputs.

Split Layered mode can be particularly useful for taking more keyers than are available on one ME board. For instance you can split ME 1 and assign keyer 1 to the primary side and keyers 2, 3, 4, 5, and 6 (on a six keyer system) to the secondary side. On Pgm-Pst, assign keyer 6 to ME 1 secondary as the source for the keyer. You now have the six keyers on Pgm-Pst plus the ME 1 Keyers 2, 3, 4, 5, and 6 on Keyer 4.

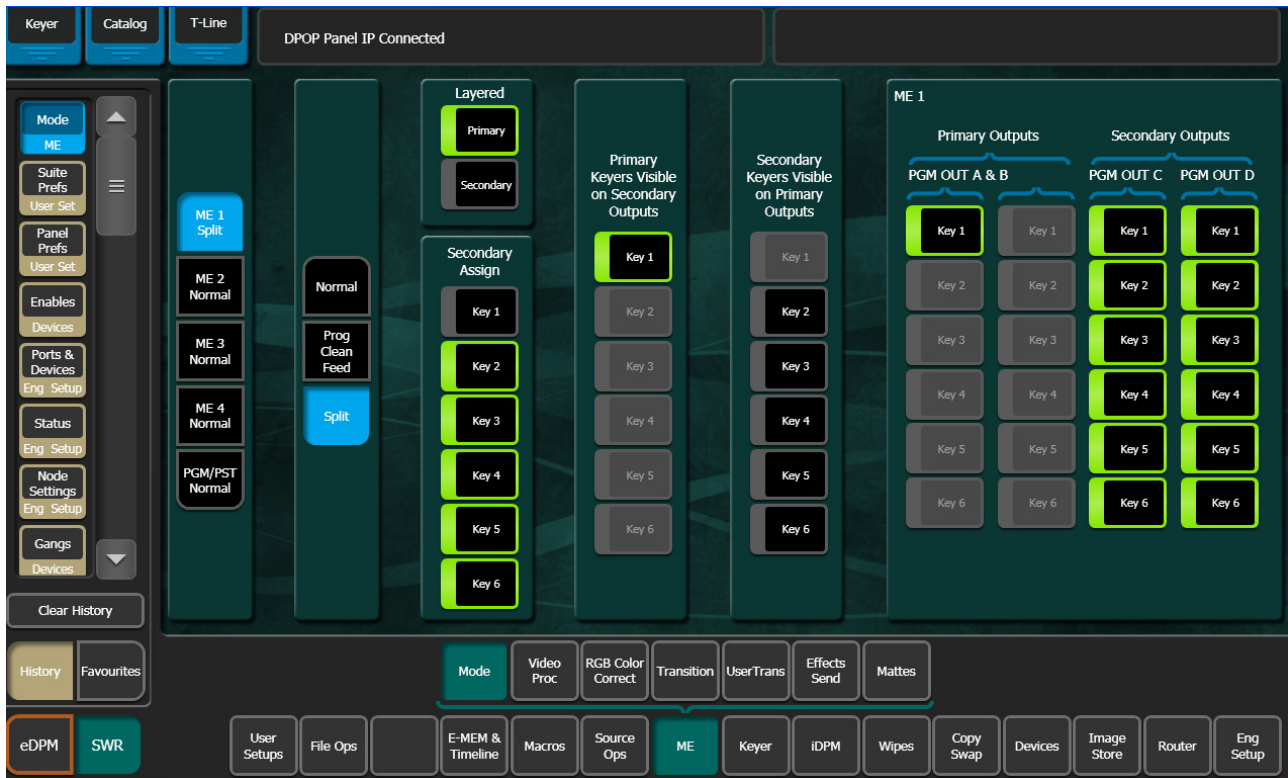
Layering is enabled on an ME-by-ME basis in the ME Mode menu. When enabled for the primary output, the A output has black selected as the background source and the B output acts as the key cut signal for the keyers selected for the primary output. Similarly, for the secondary output the C output has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

as the key cut signal for the keys selected. Priority of the layers is set using normal keyer priority controls.

## Split Layered Mode Menu Controls

The Layered panes are enabled only when the **Split** button is selected in the Mode pane. Selecting **Split**, then selecting the **Primary** button sets the Primary partition to Layered mode. Likewise, selecting the **Secondary** button sets the Secondary partition to Layered mode.

Figure 192. ME Mode, Split Layered



# Keyer Transforms and Effects

The DPM Keyer Transform Engines in the Grass Valley switcher systems provide operators with many additional options for effects and transitions. It is recommended users refer to other chapters of this manual for more basic instruction before using advanced features (see *Video Mix/Effects* on [page 89](#) for detailed information about Keyers and DPM Effects).

## 4K Video Frame Operating Modes

### 4K Transmission

Within the studio 4K Transmission, the following formats are supported:

- 2 Sample (Dual Pixel) Interleave (2SI)—First Line: 1,1,2,2,1,1,2,2 and Second Line: 3,3,4,4,3,3,4,4 on four simultaneous streams,
- Quad Link—four quadrants sent simultaneously, and
- Compression—TICO (Tiny CODEC) combining the 4K signals into a 3G signal at 4:1 compression.

### 1080P ME Resources Available in 4K Frame Operating Mode

MEs can be released from 4K mode (Suite 1) and acquired as 1080p. This allows you to create a dual show in both 4K and 1080p or a sub-show, in either suite, from a single K-Frame system. It is recommended that you save separate Engineering Setup and Show files before and after releasing and acquiring ME resources so they can be reloaded as needed.

To reacquire the ME as 4K, the 4K Frame Operating Mode must be selected either by loading the saved Show file or in the Eng Setup, Video Settings menu. See the *K-Frame Installation & Service Manual* for information about Frame Operating Modes and allocating resources across suites.

**Note** ME-4 is 1080p only, and allocated to Suite 1 by default.

### 4K System Configuration

Standard and Compact Frame switcher systems support 4K 2SI and 4K Quadrant (Quad), Frame Operating Modes. Engineers can refer to the *K-Frame Installation & Service Manual* for 4K Frame Operating Mode video settings, video and key source configuration, and resource acquisition information.

When you place the switcher in a 4K mode, the MEs and Keyers are automatically configured. The backgrounds and the first three keys for each ME are 4K; simply turn on a key and a full 4K image is displayed.

When placed in a 4K Frame Operating Mode, two physical VPEs (Video Processing Engines) are used per logical ME to automatically configure 4K MEs, with three keyers each. Every two full VPEs starting with ME-A1 and ME-A2 will be acquired as a logical 4K ME. The Controller ME (ME-CT), is a 1080p resource in 4K mode. See the *K-Frame Kayenne/Karrera/GV Korona Installation & Service Manual*.

MEs are placed into Split Mode in order to configure the system for three 4K keys.

**CAUTION** Keys must remain split between the Primary (Key 1-3) and Secondary (Key 4-6) partitions for an ME to function properly in 4K mode.

## 4K Video and Key Sources

4K video and key sources are configured for use prior to operation. Once a 4K source has been configured, it is previewed and taken to air the same as any other source, either as video or key. See the *K-Frame Kayenne/Karrera/GV Korona Installation & Service Manual*.

In 4K 2SI mode, two pixels from each of the four inputs are layered to create one 4K image.

In 4K Quad mode, each quadrant of video from the 4K source (for example a 4K camera in 4K Quad mode) is one quarter of the 4K source's image. Four physical inputs, each with one quarter of the 4K image, are passed through the switcher.

## 4K 2D-DPMs

In 4K Mode, logical 4K MEs have three keyers. 2D-DPM effects can be enabled for each, up to twelve for 4K 2SI or one for every two MEs in Quad mode. 2D-DPMs are delegated to 4K keyers in the iDPM, Transform, Keyers 2DPM menu (as with any keyer) or from the Control Panel (*Enable/Delegate DPM Channels on page 113*).

**Note** iDPMs are not supported in 4K Frame Operation Modes, currently.

## iDPM Support for Full 4K 2SI Effects

Four iDPMs per keyer are used to fly a full 4K effect in 4K 2SI Frame Operating Mode. Up to four 4K iDPMs are possible with 16 physical iDPM resources licensed and acquired. See the *K-Frame Installation & Service Manual* for physical resource allocation between suites and iDPM licensing instructions.

When an iDPM is selected in 4K 2SI mode, four sub-images from the keyer source are delegated to four iDPMs. This allows you to create a full 4K iDPM effect when the keyer source image is 3840x2160 (a 1080p image will be replicated to four iDPMs).



## 4K Mode and Image Store

In 4K Mode, images and image sequences imported into the Image Store cache will be divided into four sub-images, and assigned Image IDs and descriptions to reflect their association as a 4K image. For example, Image ID 1000 will load as ID's 1000, 1001, 1002, and 1003. The image descriptions will be 1000-1, 1000-2, 1000-3, 1000-4.

**CAUTION** A tolerance of +/-10% of the width and height of an image is allowed. Stills, sequences, or movies outside those tolerances will be center cut, the default for progressive images.

Two Image Store channels are automatically configured as 4K, Image Store 1 and Image Store 5. Each source uses four channels.

Each of the four sub-images must be loaded starting in either Image Store Channel 1 or Channel 5, then each sub-image in order of Image ID. For example, Image Store Channels:

- 1/2—1000/1001
- 3/4—1002/1003
- -or-
- 5/6—1000/1001
- 7/8—1002/1003

### Importing Images with Audio to Image Store

Images, image sequences, and movies with paired audio (stereo) can be imported into Image Store cache, and/or saved to disk. The video with audio must also match the frame rate; 59.97Hz, 50Hz, or 60Hz, otherwise only the video will be imported.

## 4K 2SI (2 Sample Interleave) Modes and 2D-DPMs

Three 4K Keyers (Keyers 1-3) are available per 4K ME, up to twelve on a 4-ME switcher. Enabling a 2D-DPM on a 4K key, is the same as in non-4K modes.

iDPMs are not supported in 4K 2SI mode currently but if used they will replicate the input of sub-image 4. This will have the affect of down sampling the image to a pixel replicated 1080p image on-screen. This may be sufficient quality for some uses.

## Enable a 2D-DPM Effect in 4K 2SI Mode

In 4K 2SI mode, the 2D-DPM keyers can be sized or moved using the menu soft knobs, data pads, or by putting them under joystick or knob control on the Control Panel. You can enable up to twelve 2D-DPM keyers (three per logical ME on a 4-ME switcher).

**Note** The Controller ME is 1080p (not 4K) and has six 1080p 2D-DPM keyers available.

1. Enable a 2D-DPM on a 4K 2SI keyer in the menu:
  - a. In the Source Ops, MEs menu, select a 4K ME.
  - b. Select Key 1, Key 2, or Key 3 and select a 4K source from the Logical/Fixed scrolling list.
  - c. In the iDPM, Transform, Keyers 2DPM switcher menu tab, select one or multiple keyers, using the **Multi select** button.
2. Or, Enable a 2D-DPM on a keyer on the Control Panel:
  - a. Press and hold one of the first three Source Select Keyer buttons on an ME and press a source select button with a 4K source mapped.
  - b. With that keyer delegated to the 4K ME, press the **2DPM** button in the Multi-Function area.

## Enable a 4K 2SI iDPM in the Menu

Prerequisite: At least four iDPMs are acquired in the suite.

1. In the Source Ops, MEs menu, select a 4K ME.
2. Select a key:
  - a. Select Key 1, Key 2, or Key 3 and select a 4K source from the Logical/Fixed scrolling list (see the *K-Frame User Manual* for information about configuring a 4K source).
  - b. In the iDPM, Transform, Keyers iDPM switcher menu tab, select a keyer.

Result: The selected iDPM and three others are used to create the full 4K iDPM. The physical delegations can be seen in the ME, Effects Send menu.

## Enable a 4K 2SI iDPM from the Control Panel

Press and hold one of the first three Source Select Keyer buttons on an ME and press a source select button with a 4K source mapped.

With that keyer delegated to the 4K ME, press the iDPM button in the Multi-Function area (Master E-MEM area for GV Korona).

Result: Sub-images are delegated to the selected iDPM and three others, creating a full 4K iDPM. The physical delegations can be seen in the ME, Effects Send menu.

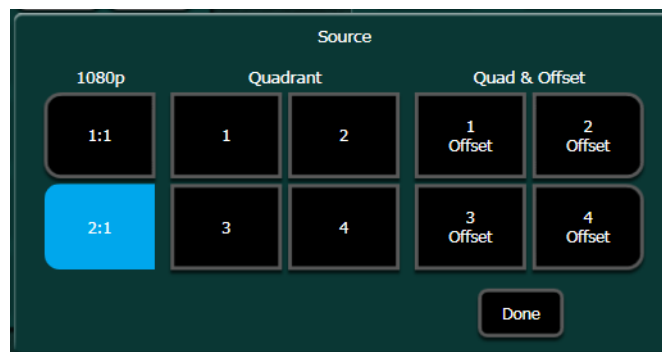
## 4K Quad Modes and 2D-DPMs

### 4K Quad Mode and 1080p Keyers

When a 2D-DPM is enabled for a 1080p source, the result is a full 1080p, 1:1 image. Images can be sized at 2:1 (double) with a button selection in the iDPM, Transform, Keyers 2DPM menu, (Quadrant) Source pane.

When the 1080p source image is set to the 2:1 setting, the 1080p source is scaled to a full sized screen. 2D-DPM effects built on an HD system can be run and they will look the same but scaled to a 4K screen.

Figure 193. 2DPM Keyers, Quadrant Source Pane



When the keyer is cut on, the 1080p image is located in the center of the screen (or target space) over the 4K background. You can size and move the image on the screen.

### 4K Quad Mode and 4K Keyers

When a 2D-DPM is enabled on a keyer with a 4K source in 4K Quad mode, the resulting image is a 1080p, 1:1 quadrant (one quarter) of a 4K image.

Sizing or moving a 4K keyer in 4K Quad mode requires four 2D-DPMs, one for each quarter of the image. Since there are three keyers per logical ME, keyers from two MEs are required to perform this operation: for example, two keyers from ME-2 and ME-3. When these keyers are cut on, the 1080p images (each one quarter of the image) will be layered in the center of the screen over the 4K background.

In order to size and move the four 2D-DPMs as one image, Quadrant Offsets are provided that are configurable in the 2DPM Keyers menu, Quadrant Source pane (see [Create a 4K 2D-DPM Effect in 4K Quad Mode](#)). Using the quadrant offsets, the keyers can be offset to upper left (1), upper right (2), lower left (3), and lower right (4) in the target space, resulting in one full 3840 x 2160 4K keyer that can be sized and moved.

You can change the quadrant/video selection. For example, you could use two 1080p quadrants for a lower third (Quadrants 3 and 4) or a split screen two-box effect (Quadrants 2 and 4), or cut on one quarter of a 4K graphic with text or a logo and apply a lower right offset (Quadrant 4).

## 4K 2K-DPM Quad Offset Borders and Cropping

When a 4K 2D-DPM is created using four 2D-DPMs, the inner borders are disabled. When a Quadrant Offset is enabled for one 1080p 2D-DPM, the inner borders are enabled.

Crops are calculated so that when you crop from the top or sides of a 4K keyer using Quadrant Offsets, the entire image is cropped simultaneously. This means, if for example only the keyers for Quadrant 3 and 4 are on, the crop will not be visible until it reaches the top edge of Quadrants 1 and 2 in the target space.

## Create a 4K 2D-DPM Effect in 4K Quad Mode

In 4K Quad mode, a 4K 2D-DPM is configured using keyers from two logical MEs. Each 4K ME has the first three keyers available (Key 1-Key 3). 4K DPMs require a 4K source, see the *K-Frame Kayenne/Karrera/GV Korona Installation & Service Manual* for information about configuring 4K sources.

The following example describes how to use bus linking so the same source will be selected on four keyers from two MEs and enable a 4K 2D-DPM that uses Control Panel reentry to delegate the 2D-DPM to a single keyer button on PGM.

Prerequisite: 4K sources are mapped to the Control Panel (2D-DPM configuration can also be completed using just the switcher menu).

1. Create a bus link so each key will select the same source simultaneously (example):
  - a. In the Source Ops, Bus Links, Links Setup tab, select the **Controlling Bus** data pad.
  - b. Select a Controlling Bus in the ME Buses tab (ME2, Key1).
  - c. Select the Controlling Bus (Controller) in the Current Link pane, left.
  - d. Select the **Linked Bus** data pad and select a linked bus (ME 2, Key 2).

- e. Repeat for the next two links (ME 3, Key 1 and ME 3, Key 2).
  - f. Verify all current links are enabled and the **Link Enable** button is on.
2. Select a 4K key source on the Control Panel.
  3. In the iDPM, Transform, Keyers 2DPM menu tab, select the ME and keyer to be used as a quarter of the 4K image.
  4. Select the **Quadrant** button in the Clears & Enables pane, top right of the menu and select an Offset button to move the quarter image to the desired location;
    - **1 Offset**, top left
    - **2 Offset**, top right
    - **3 Offset**, bottom left
    - **4 Offset**, bottom right.
  5. Enable and select quadrants for the other three 2D-DPMs, making sure the correct images for each of the four quadrants are on-screen.  
Result: With all four keyers cut on, a full 4K key is visible on-screen.
  6. Chain the 2D-DPM enabled keyers so they will go on and off air simultaneously:
    - a. In the User Setups, Suite Prefs, Transition Key Chaining menu, with the **Key Chains** button selected (bottom left), select a Key Chaining data pad (turns light blue).
    - b. Select the four keys with 2D-DPMs enabled for the 4K source; the Key Chaining will appear in the selected Chain data pad.
  7. In the ME, Mode menu, select an ME you used with the 2D-DPM and turn on **Primary** in the Layered pane, repeat for the second ME.

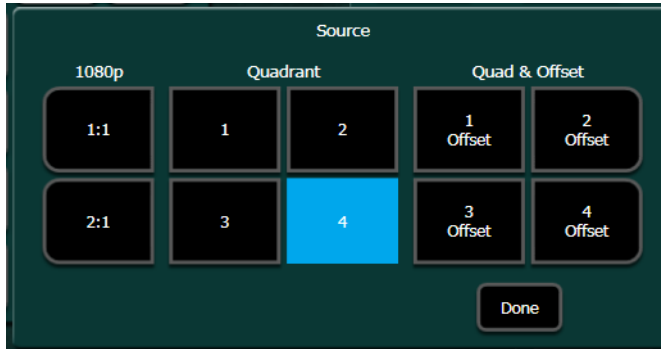
**Note** In Layered mode, the ME keys are displayed while the backgrounds are disabled.

8. Delegate the 4K keyer to the PGM/Preset ME:
  - a. On the Control Panel, hold down one of the three keyers not used for the 2D-DPM on an ME (ME 3, Keyer 3 for example) and delegate the second ME to the button by selecting the ME source in the Source Select area (**ME 2**).
  - b. On the PGM/PVW ME, press and hold one of the three available keyers and press the source select button with the ME (**ME 3**).

Result: The 4K 2D-DPM can be cut on/off or recorded in an E-MEM or Macro register with one button press.

9. When a 2D-DPM is enabled, a 4K keyer quadrant is displayed on the 1080p 2D-DPM. Select another quadrant to display from source video:
  - a. In the iDPM, Transform, Keyers 2DPM menu tab, select an ME and keyer.
  - b. Select the **Quadrant** button in the Clears & Enables pane, top right of the menu and choose a Quadrant button 1-4 to select the source video.

Figure 194. DPM, Transform, Quadrant Source Pane

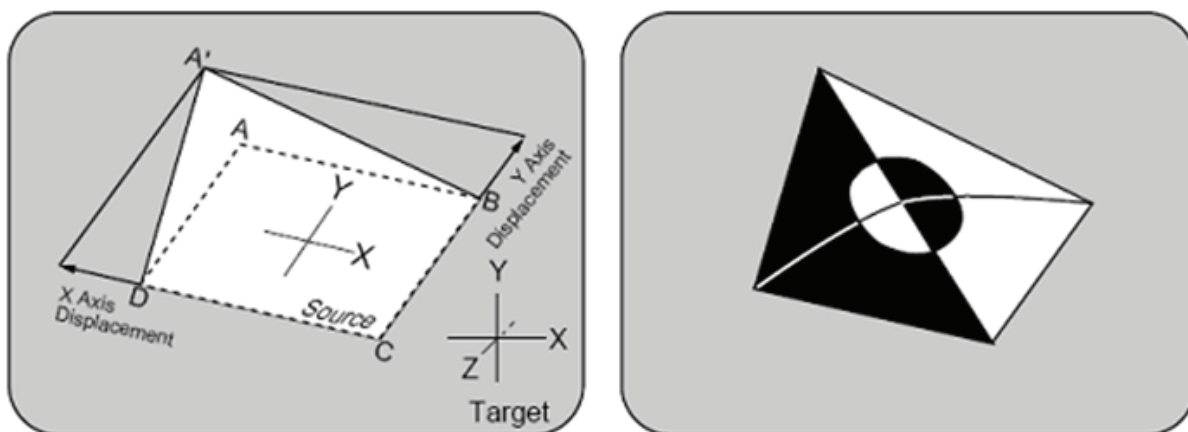


# Corner Pinning

Corner Pinning allows you to move the corners of a source image relative to the background. Corner Pinning is keyframeable, with all standard path control functions. The new corner locations do not need to form a rectangle.

Corner Pinning is accomplished by distorting the source to fit into its newly defined corners. The modified image remains in its original source plane, and is not “bent” along the Z axis. Corner Pinning does not change the location of the axis of rotation or spin of the source image.

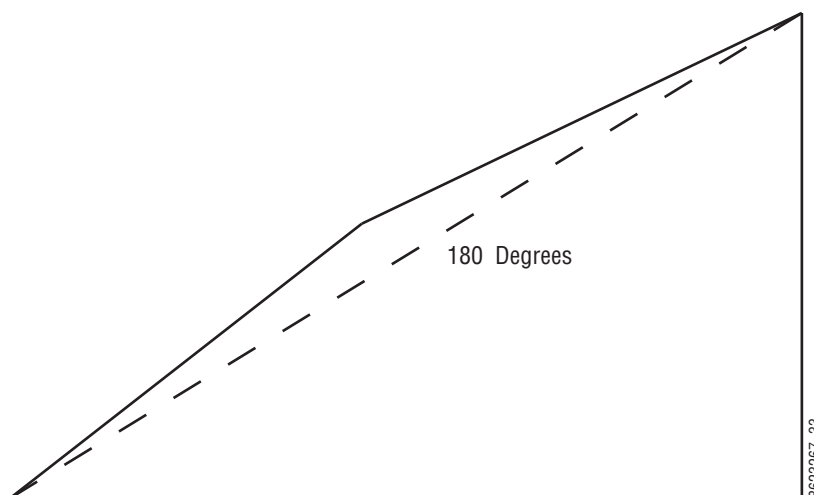
Figure 195. Corner Pinned Object



**Corner Adjust Limits**—Corner Pinning works for convex quadrilaterals but not for concave quadrilaterals. A convex quadrilateral is defined as a four-sided shape with all angles less than 180 degrees, all vertices point outwards and all diagonals lie entirely inside the quadrilateral.

Results from adjusting a corner beyond the limits are undefined.

Figure 196. Convex Quadrilateral—Corner Adjust Limits



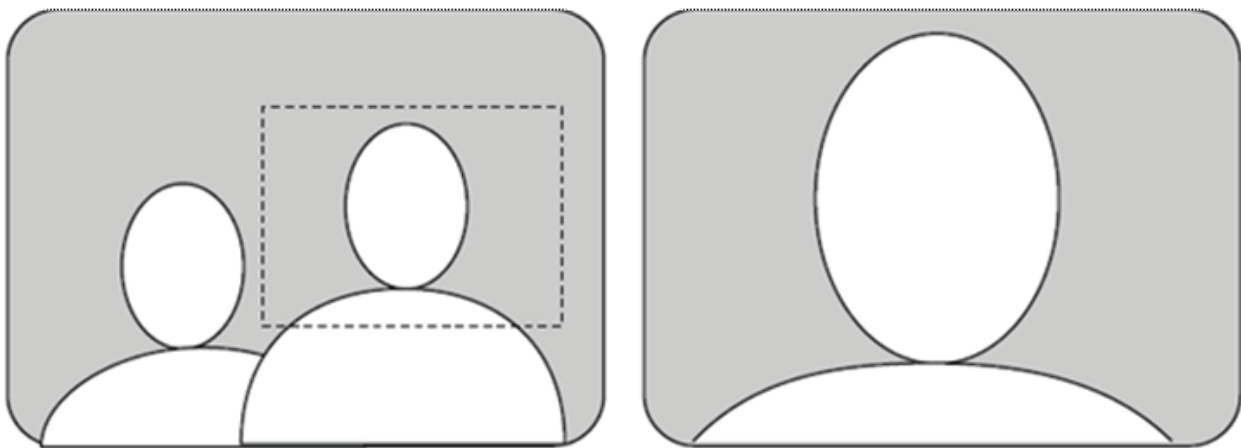
To allow fine adjustment of an image when using Corner Pinning, the View Through (View Thru Enable) feature allows you to temporarily (for editing purposes only) reduce the opacity of an iDPM channel to let you “look through” the image to align the corners precisely with the background.

## Corner Pinning and Cropping

Corner Pinning is designed to work in conjunction with cropping. Each time Corner Pinning is turned on, the pinned corners will be adjusted to match the current iDPM crop settings. After pinning the corners of an image you can crop it to select the exact portion of the source video to display in the corner pinned area.

For example, your source video could contain two people, but you may want to fly the image of only one person. In this case, you could build an effect, turn on Corner Pinning, use crop mode, and leave the corners at the defaults. If you now move the crops maintaining the original aspect ratio (4x3 or 16x9) you can position these crops so that only the desired person is shown. If the person or the camera moves, you can adjust the user crops to keep the person centered between the edges of the crops. This will result in the person being centered in the video and the effect can be flown around the screen.

Figure 197. Corner Pinned Cropped Object



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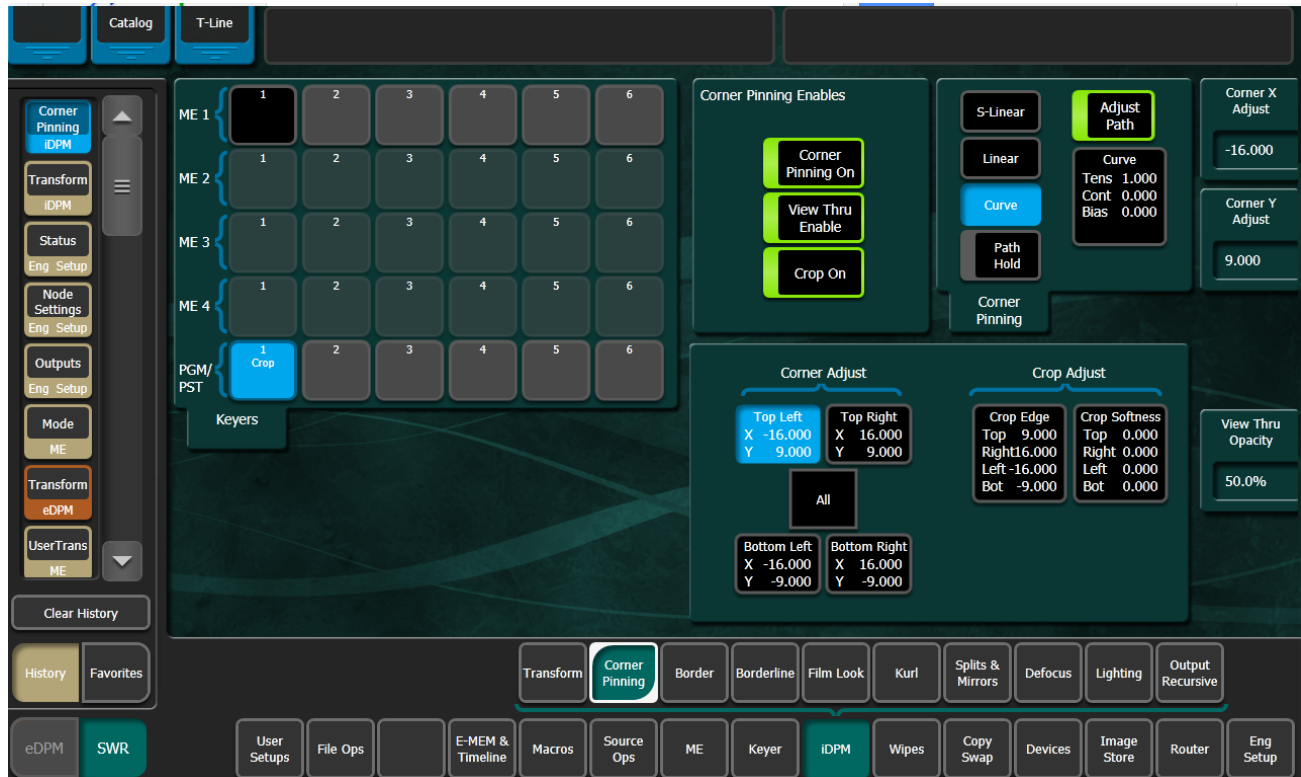
**Note** Toggling Corner Pinning on and off will reset the corners to the current crop values and change the pinned corners.



## Corner Pinning Menus

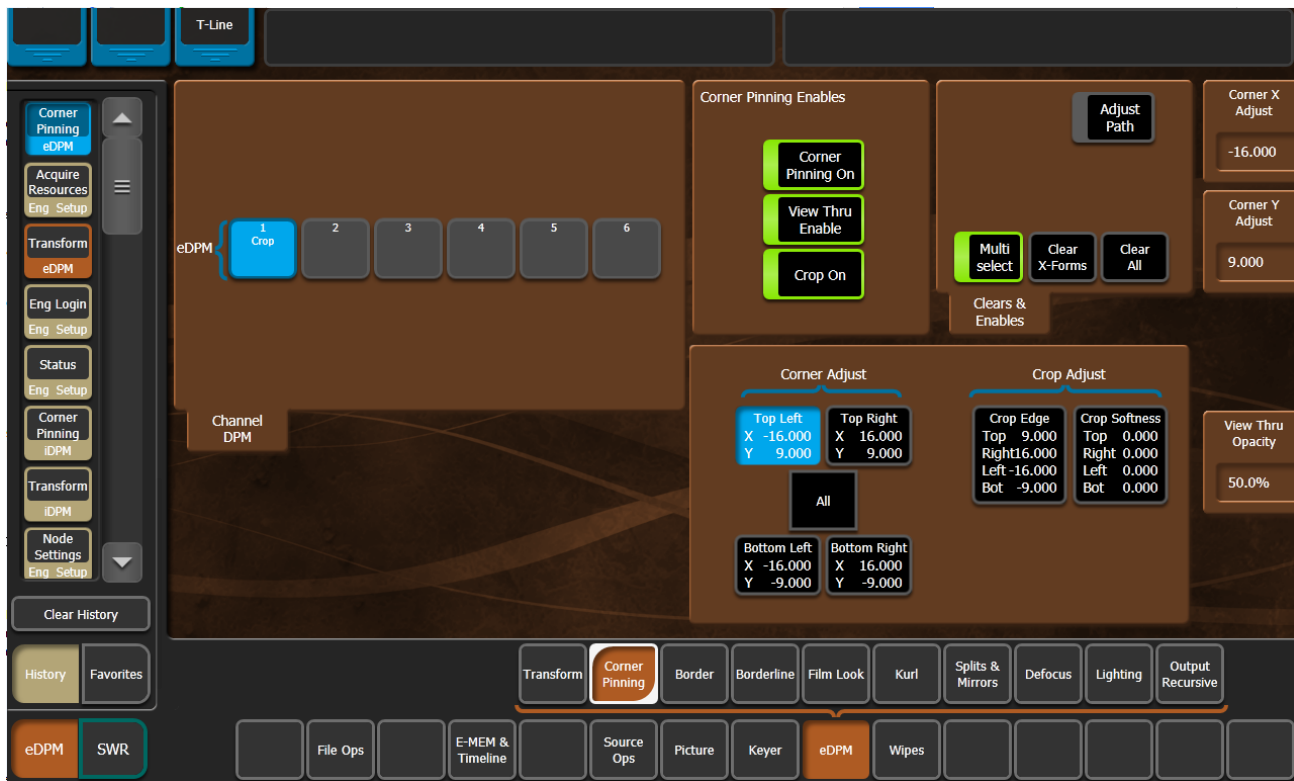
The Corner Pinning menu is available in both the SWR (Switcher) (iDPM, Corner Pinning) and the eDPM (option) mode (eDPM, Corner Pinning). The menus function identically.

Figure 198. iDPM, Corner Pinning Menu—Six Keyer System



Select the **eDPM** mode button (lower left), **eDPM, Corner Pinning**.

Figure 199. eDPM, Corner Pinning Menu—Six Keyer System



Corner Pinning example: during a sporting event, a camera points at a shot clock. The DPM uses Corner Pinning to build a box to contain the clock and crop adjustments place the clock exactly in the box but the camera is accidentally moved and the content of the box no longer shows the entire shot clock. Using Pan and Scan, you can move the camera content to be shown correctly without moving the edges of the box.

Crop enables/disables and crop edge parameter changes are global. For example, if crops are enabled in the iDPM, Transform menu, and the top crop edge parameter was changed, the effect would be mirrored in the Corner Pinning menu and vice versa in the iDPM, Corner Pinning menu.

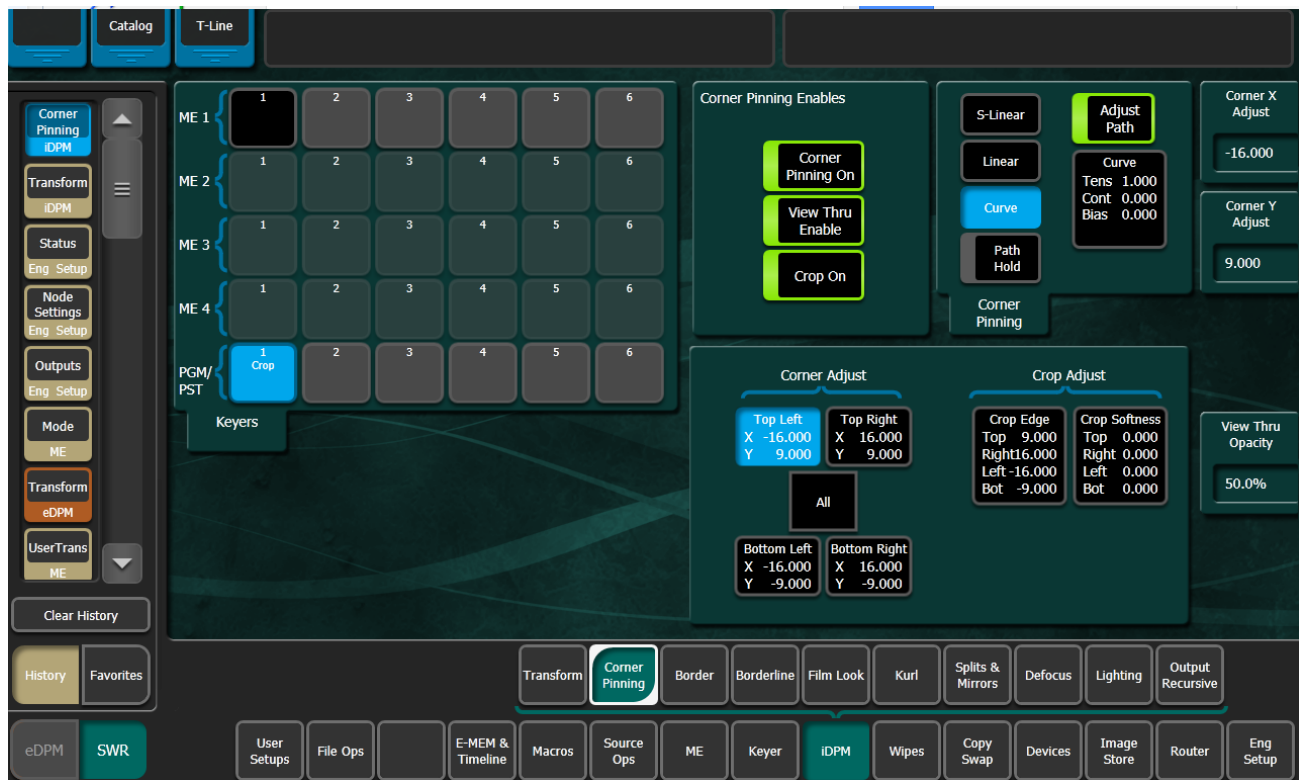
## Create a Corner Pinning Effect (Example)

By completing this task you will have an understanding of how to create an effect using Corner Pinning. This understanding of Corner Pinning functionality will allow you to create Corner Pinning effects for your own show.

1. Select a background source.
2. Select a source for a keyer, and cut on the key over the background.

3. Go to the iDPM, Transform menu and select the **Crop On** button to turn it on (highlights green).
4. Select the **Crop Edge** data pad (turns light blue), the Crop Edge soft knobs will be displayed.
5. Adjust the crop edges to include the portion of the video you want in the key.
6. Go to the iDPM, Corner Pinning menu.

Figure 200. Corner Pinning On—Six Keyer System

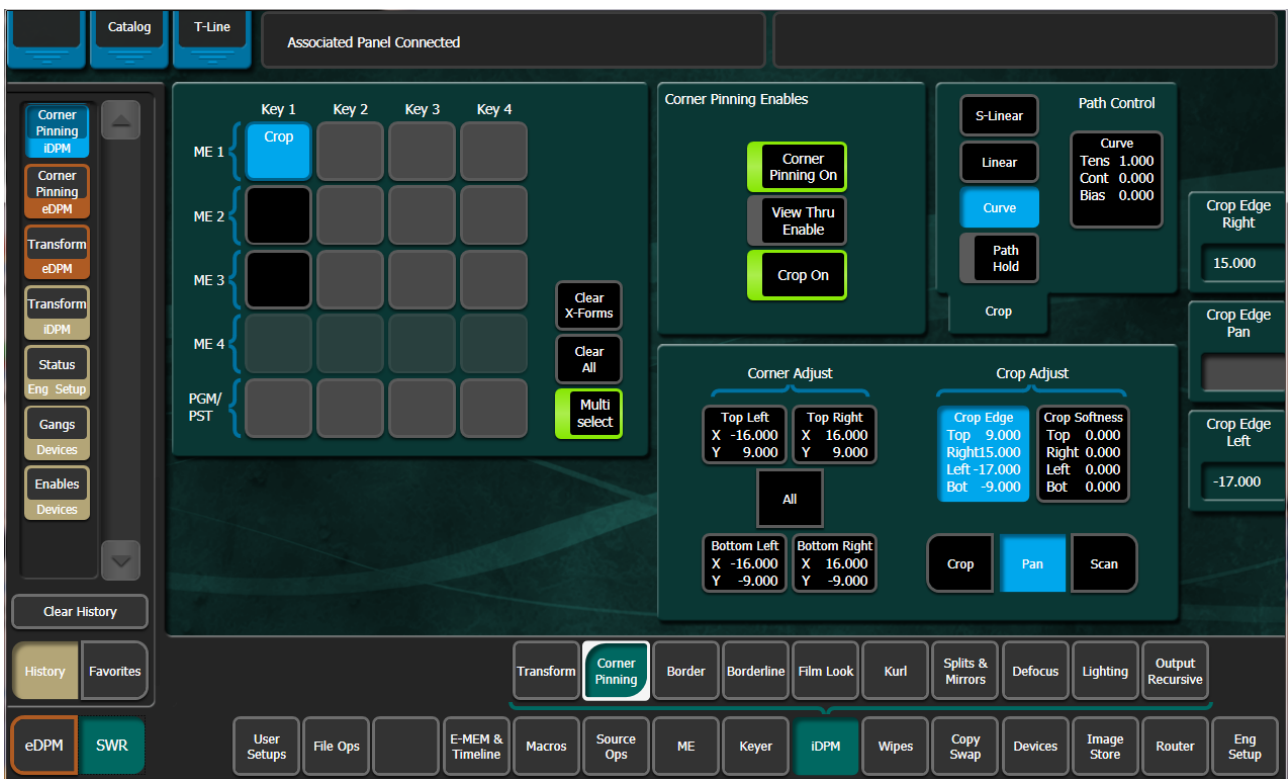


7. Select the **Corner Pinning On** button to turn it on (highlights green).  
The image will fill the screen—each corner of the key is now pinned to the corners of the monitor.
8. Select the **All** button in the Corner Adjust area of the Corner Adjust/ Crop Adjust pane. Adjusting the iDPM with the Corner Pinning **All** button enabled, acts similar to a zoom. Use the **Corner All** soft knob to adjust the size of the key; in this case to the approximate size of the shot clock.
9. Turn off All Corner Adjust.

10. Select the **View Thru Enable** button to turn it on. This will set the opacity of the video in the key to 50% so you can see the shot clock through the video which will help you align the corners of the image to the background video (the shot clock). The opacity can be changed using the **View Thru Opacity** data pad or soft knob.
11. Select a Corner Adjust button—**Top Left**, **Top Right**, **Bottom Left**, or **Bottom Right**, and use the **Corner Adjust X** and **Corner Adjust Y** soft knobs to pin the corner to the corner of the shot clock in the background video. This will allow you very precise adjustment. Repeat for each corner.
12. Turn off the View Thru Enable feature.

If the background video changes, you can re-center the image (shot clock in the example) using the **Pan** and **Scan** crop buttons. You 'Pan' the crop; move the crop sideways which simultaneously trims the value of the Left Crop and Right Crop, or 'Scan' the crop; move the crop up and down, which simultaneously trims the Top Crop and Bottom Crop values ([Figure 201](#)).

Figure 201. Crop Pan and Scan—Four Keyer System



1. Select the **Crop Edge** data pad.
2. Select the **Pan** or **Scan** button.
3. Use the **Crop Edge Pan** or **Crop Edge Scan** soft knob to pan or scan until the image is re-centered.

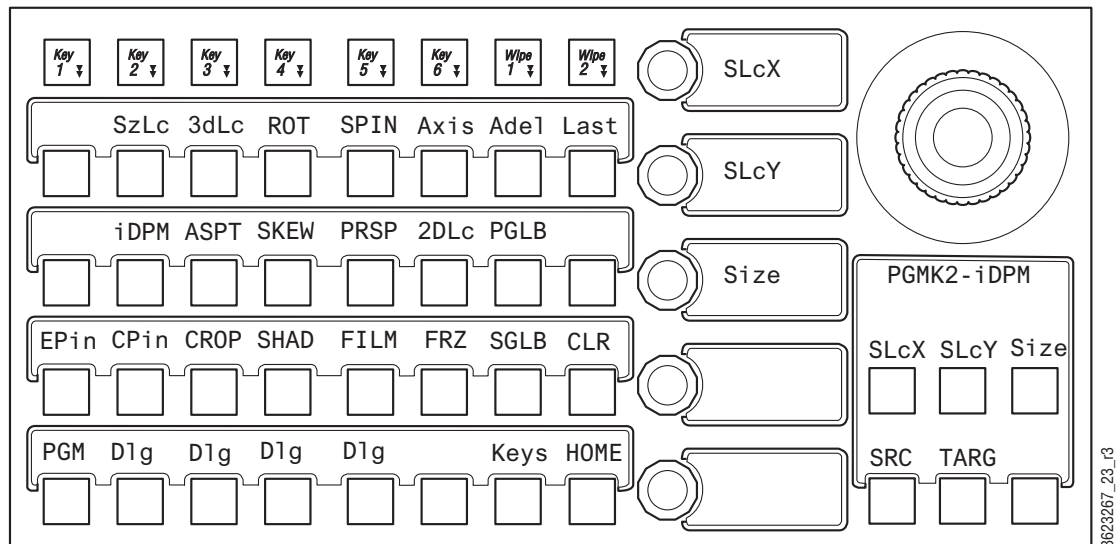
**Note** Panning scanning beyond (+ 16:9 for example) can have unexpected results, i.e. the picture may begin to stretch.

## Corner Pinning from the Kayenne K-Frame Control Panel

Corner Pinning can be performed from the MFM (Multi-Function Module), in the iDPM (and identically the eDPM), CPin menu.

The CPin (Corner Pinning) button has been added to the iDPM menu in the MFM.

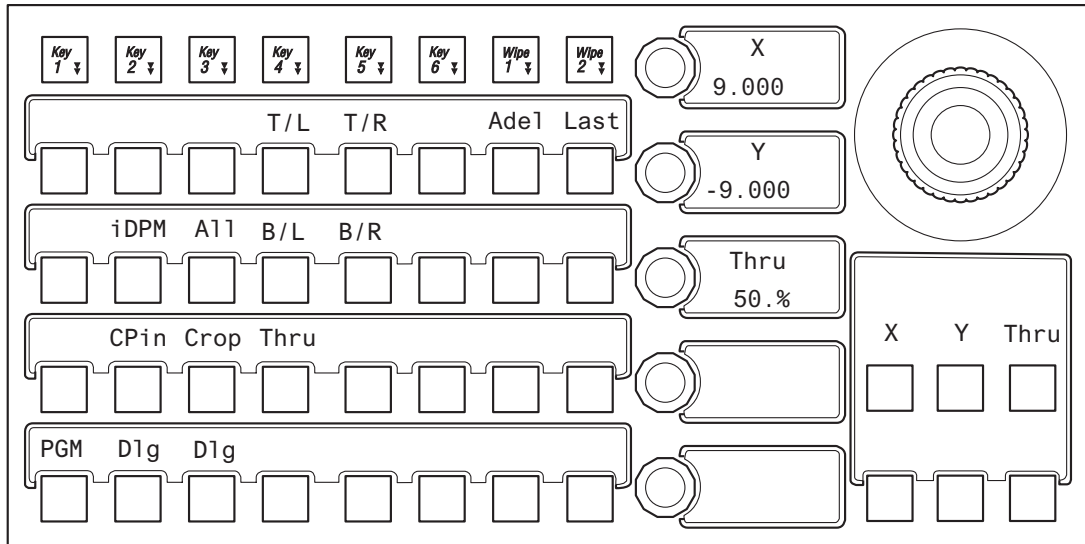
Figure 202. MFM—iDPM



Corner Pinning and Crop controls are located in the CPin MFM Module menu. Press the CPin button to enable/disable Corner Pinning, press the D1g button directly below to turn on Corner pinning and adjust the Corner Pinning parameters using the soft knobs.

**Note** Corner Pinning and Crops have their own path controls, however each corner and each crop edge share the same path. See *Change Path Control Values in an Effect* on page 310 for more information about paths.

Figure 203. MFM—iDPM, CPin (Corner Pinning)



The use of the All and corner buttons:

T/L—Top Left,

T/R—Top Right,

B/L—Bottom Left, and

B/R—Bottom Right,

are the same as in the Corner Pinning menu (see *Corner Pinning Menus* on page 375). The MFM soft knobs are used for adjusting the corners when selected.

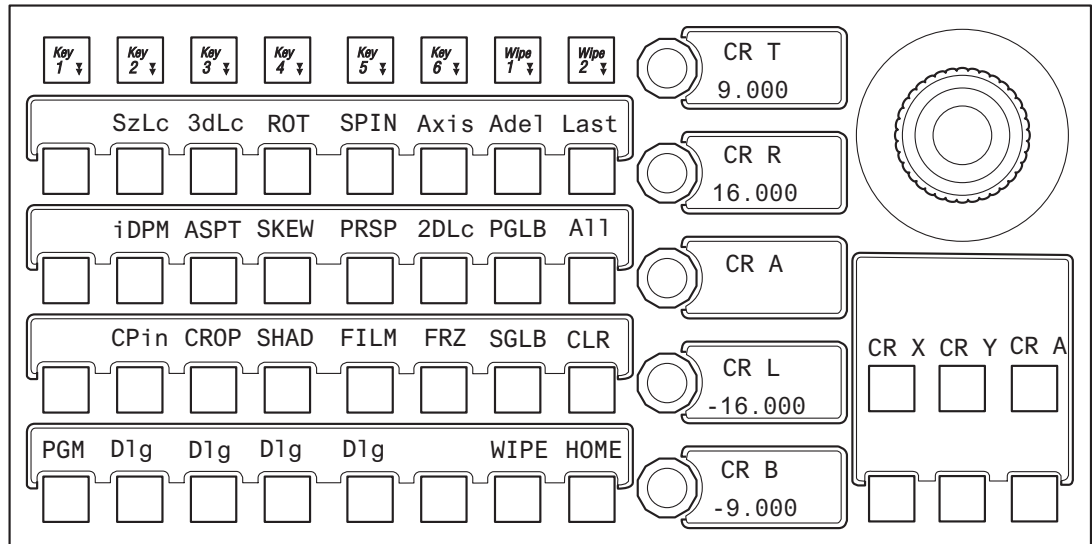
The Thru button performs the same function as the View Thru Enable button in the menu but is momentary (opacity setting is only visible when the button is held down). The opacity is adjusted with the Thru soft knob (Figure 203).

Crop is available in the CPin menu. When Corner Pinning is enabled, and the Crop button is pressed, the All button will be added to the Crop menu. The All button is a toggle that includes All, Pan, and Scan. Each work as in the menu. Z operation of the joystick operates the All crop adjustment (works similar to zoom), X and Y operates as Pan and Scan (Figure 204).

Crop All and Crop Edges can be adjusted using the soft knobs (Figure 204).

**Note** Crop Softness controls are not available for crops when Corner Pinning is enabled in the MFM, however Crop Softness controls are available in the Menu Panel.

Figure 204. MFM—Crop (Corner Pinning, Crop Menu)

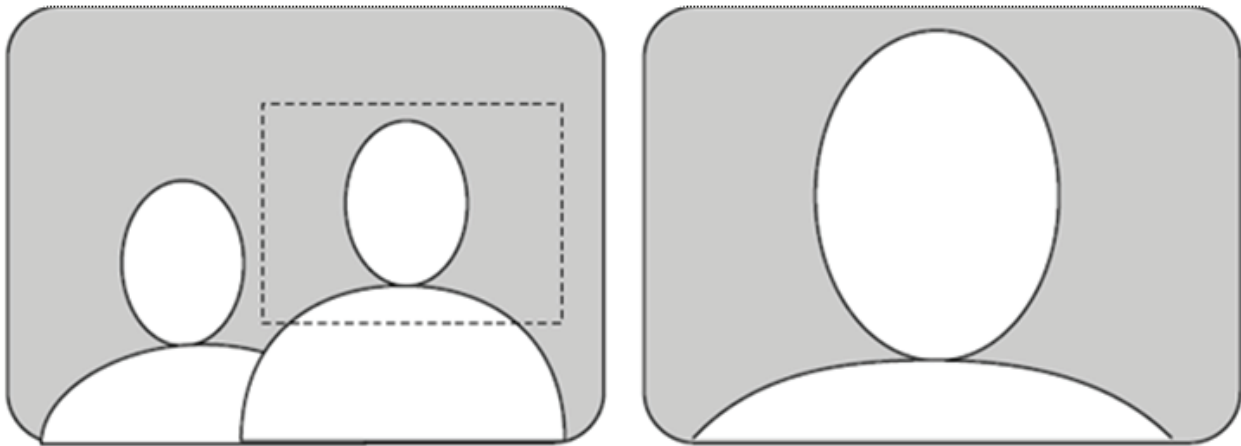


## 2D-DPM Edge Pinning

Edge Pinning is the 2D version of Corner Pinning and is designed to work in conjunction with cropping. Each time Edge Pinning is turned on, the pinned edges will be adjusted to match the current 2D-DPM crop settings. After pinning the edges of an image you can crop it to select the exact portion of the source video to display or, conversely, you can crop the image and then pin the edges by stretching the image to the target location.

For example, your source video could contain two people, but you may want to fly the image of only one person. In this case, you could build an effect, turn on Edge Pinning, use crop mode, and leave the edges at the defaults. If you now move the crops maintaining the original aspect ratio (4x3 or 16x9) you can position these crops so that only the desired person is shown. If the person or the camera moves, you can adjust the user crops to keep the person centered between the edges of the crops. This will result in the person being centered in the video and the effect can be flown around the screen.

Figure 205. Edge Pinned Cropped Object



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**Note** Toggling Edge Pinning on and off will reset the edges to the current crop values and change the pinned edges.

Edge Pinning allows you to move the edges of a 2D-DPM source image relative to the background. Edge Pinning is keyframeable, with all standard path control functions. Edge Pinning is accomplished by distorting the source to fit into its newly defined edges. Edge Pinning does not change the location of the axis of rotation or spin of the source image.

Edge Pinning example: during a basketball game, a camera points at a shot clock. The 2D-DPM uses Edge Pinning to build a box to contain the clock and crop adjustments place the clock exactly in the box but the camera is accidentally moved and the content of the box no longer shows the entire shot clock. Using Pan and Scan, you can move the camera content to be shown correctly without moving the edges of the box.



Crop enables/disables and crop edge parameter changes are reflected across 2DPM menu tabs. For example, if crops are enabled in the Transform, Keyers 2DPM menu tab and the top crop edge parameter was changed, the effect would be mirrored in the Pinning, 2DPM menu tab and vice versa.

## Create an Edge Pinning Effect (Example)

In this example of a shot clock box effect, used in a sporting event, a 2D-DPM cropped box effect will be created and the edges of the box's video source pinned to the cropped edges. Then, using pan and scan, the video source will be repositioned inside the 2D-DPM box effect without moving the box. This effect is very useful if the camera is bumped or moved so the switcher operator can reposition the video from the switcher.

1. Select a background source.
2. Select **iDPM, Transform, 2DPM** in the menu and select a keyer with the source for the box; in this case a camera pointed at a shot clock, and cut on the key over the background.
3. Enable the **Crop On** button (highlights green).
4. Enable the **Crop Edge** data pad (turns light blue), the Crop Edge soft knobs will be displayed.
5. Adjust the crop edges using the soft knobs to define the portion of the video you want in the box (key); the shot clock in this example.
6. Enable the **Post xform** data pad and use the soft knobs to size and position the key close to the desired area of the background using the soft knobs.
7. Select **iDPM, Pinning, 2DPM** and enable the **Edge Pinning On** button (highlights green).

Enabling Edge Pinning will pin the video edges to the cropped edges of the box.

- a. Optionally, enable the **View Thru Enable** button to see the location of the box effect over the background video; this sets the opacity of the video in the key to 50%. The opacity can be adjusted by enabling the **View Thru Opac** data pad and turning the **View Thru Opacity** soft knob.
8. Enable the **Edge** data pad in the Edge Adjust/Crop Adjust pane (lower right; highlights blue).
9. Use the **Edge All, Top, Right, Left, and Bottom** soft knobs to pin the edges to the box; this allows very precise edge adjustment. Repeat for each edge.
 

Adjusting the 2D-DPM Edge Pinning **Edge All** acts similar to a zoom.
10. Turn off the View Thru Enable if enabled.

11. Use the Pan and Scan features to reposition the shot clock if the camera is moved.

## Adjusting a 2D-DPM Image with Edge Pinning Pan and Scan

To 'Pan' a cropped image means to move the crop sideways which simultaneously trims the value of the Left Crop and Right Crop. To 'Scan' a cropped image means to move the crop up and down, which simultaneously trims the Top Crop and Bottom Crop values.

1. Select the **Crop Edge** data pad.
2. Select the **Pan** or **Scan** button.
3. Use the **Crop Edge Pan** or **Crop Edge Scan** soft knob to pan or scan until the image is correctly displayed.

**Note** Panning or scanning beyond (+ 16:9 for example) can have unexpected results, i.e. the picture may begin to stretch.

## Using Edge Pinning with the Kayenne Multi-Function Module

Edge Pinning can be performed from the MFM (Multi-Function Module) of the Kayenne Control Panel, in the 2DPM (and identically the eDPM), EPin menu.

In this example of a shot clock box effect, used in a sporting event, a 2D-DPM cropped box effect will be created and the edges of the box's video source pinned to the cropped edges. Then, using pan and scan, the video source will be repositioned inside the 2D-DPM box effect without moving the box. This effect is very useful if the camera is bumped or moved so the switcher operator can reposition the video from the switcher.

1. Select a background source.
2. Select a keyer with the source for the box; in this case a camera pointed at a shot clock, and cut on the key over the background.

3. On the MFM, press **2DPM**, **Crop** and the **Dlg** button just below **Crop**.

Figure 206. Multi-Function Module—2D-DPM Edge Pinning, Crop



4. Adjust the crop edges using the soft knobs to include the portion of the video you want in the box (key); the shot clock in this example.
5. Press the **Size** button and use the Size and X and Y positioning soft knobs to size and locate the cropped key over the background.
  - a. On the MFM, press **Thru** to turn it on to see the location of the box effect over the background video. This will set the opacity of the video in the key to 50%. The opacity can be adjusted by turning the **Thru** soft knob.
6. Turn off the Crop **Dlg** button.

7. On the MFM, press **EPin** and then the **Dlg** button directly below to turn on Edge Pinning.

Figure 207. Multi-Function Module—2D-DPM Edge Pinning, EPin



8. Press the **All**, **Top**, **Right**, **Left**, or **Bottom** button and use the soft knobs to pin the edges to the cropped box; this allows very precise edge adjustment. Adjusting the 2D-DPM with the Edge Pinning **All** soft knob acts similar to a zoom.
9. Turn off the View Thru Enable feature if enabled.
10. Use the Pan and Scan features to reposition the shot clock if the camera is moved.

## Using Pan and Scan to Adjust a 2D-DPM Image with the Kayenne Multi-Function Module

To 'Pan' a cropped image means to move the crop sideways which simultaneously trims the value of the Left Crop and Right Crop. To 'Scan' a cropped image means to move the crop up and down, which simultaneously trims the Top Crop and Bottom Crop values.

1. Press the **Crop** button to turn it on.
2. Press the **All** button which toggles from **All** to **Pan** and **Scan** and choose **Pan** or **Scan**.
3. Use the **Pan** or **Scan** soft knob to pan or scan until the image is correctly placed in the cropped box.

**Note** Panning or scanning beyond (+ 16:9 for example) can have unexpected results, i.e. the picture may begin to stretch.

Figure 208. Multi-Function Module—2D-DPM Edge Pinning, Pan/Scan



## Copy/Swap

Copy and Swap functions are available for MEs, Keyers, and eDPM Channels. With Copy you can use the settings of one location at a different location in the system. This can be useful if, for example, an effect has been set up on ME 1 but it needs to be placed on-air using ME 2. You can quickly copy the ME 1 settings to ME 2 and place it on-air, freeing ME 1 for another purpose. Swap can be useful for multiple users, for example one TD prefers to use ME 2 for an effect where another TD prefers ME 3. MEs can be swapped, and swapped back for each preference. When an ME copy or swap is performed, all the ME settings are transferred. This includes the current source selections and all keyer settings.

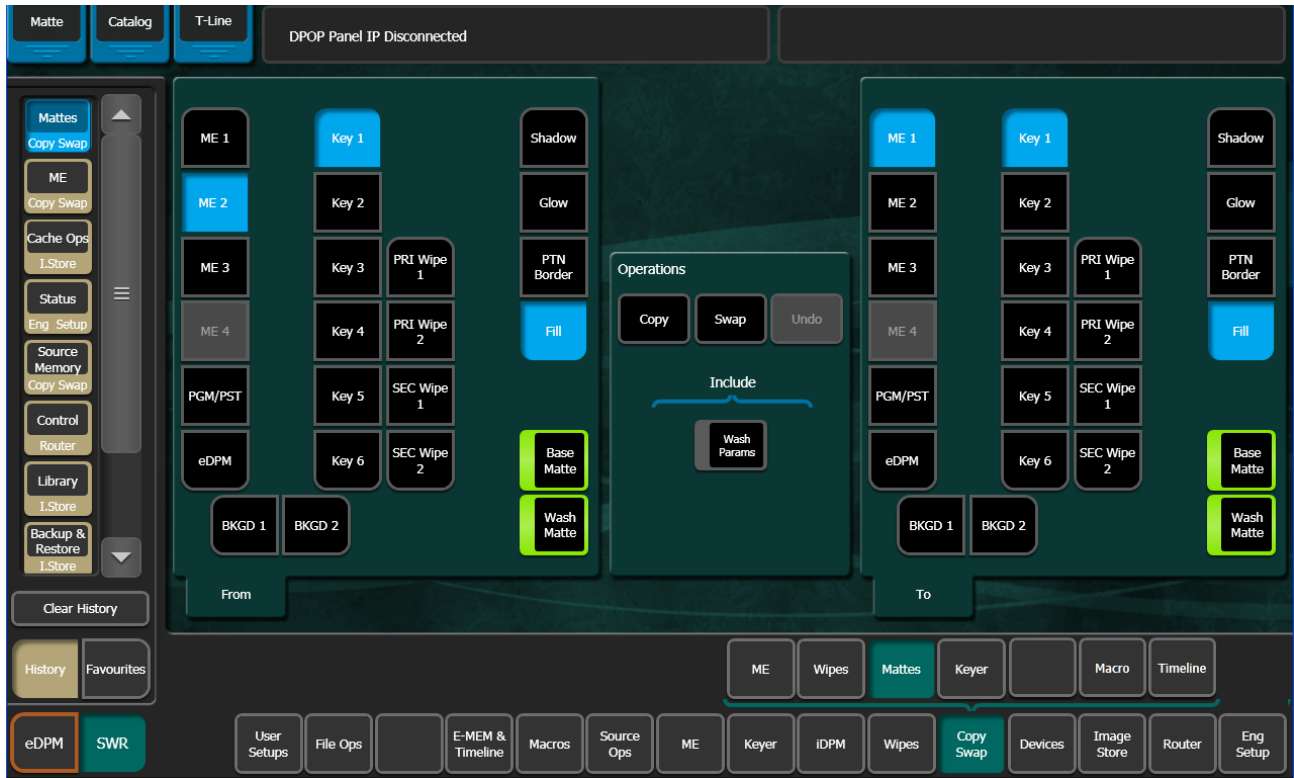
### Copy Swap Menus

The Copy Swap menus are used for copying setups from one part of the system to another. For example, if a chroma key was set up on ME 1, but the operator needs the key while ME 1 is in use, he can copy the keyer's setup to ME 2 and place the chroma key on air there.

The set of menus for Copy and Swap use a common layout. The Copy Swap Mattes menu, shown in [Figure 209](#), typifies the layout shared by the others. Choose a source in the From pane, choose a destination in the To pane, and

an action in the Operations pane. After performing a Copy or Swap, one level of Undo is available until another button on the menu is selected.

Figure 209. Copy Swap Menu





## Copy Swap ME Menu

The Copy Swap, ME menu is used to copy an entire setup from one ME to another.

Figure 210. Copy Swap ME Menu



## Copy Swap Wipes Menu

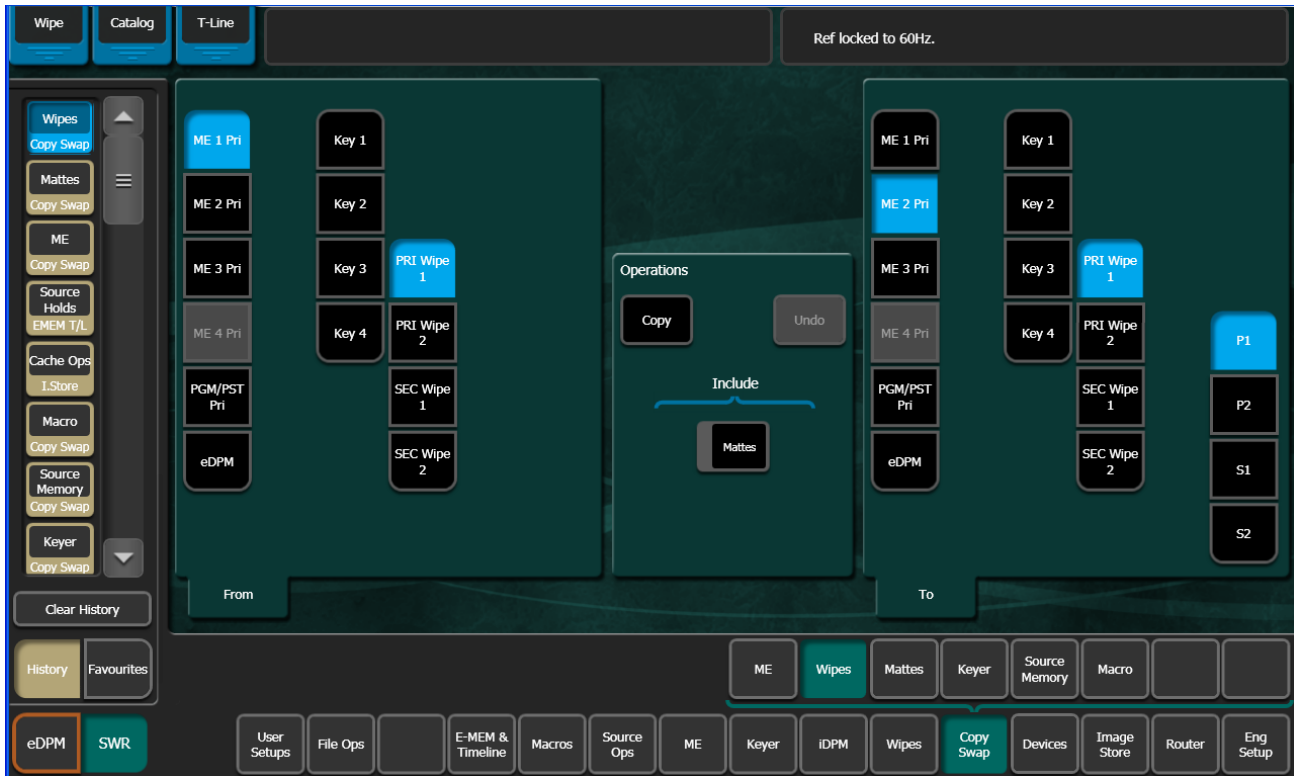
Wipe parameters can be copied from one wipe to another. This can be done on the same ME (or eDPM) or from one ME (or eDPM) to another.

Transition or complex wipes can be copied to Transition Wipes and Keyer Wipes can be copied to keyer wipes directly. Transition Wipes can be copied to Keyer wipes and vice versa.

Mattes can be included or excluded when copying wipes.

The Copy Swap, Wipes menu is used to copy wipe settings from one location to another.

Figure 211. Copy Swap Wipes Menu



### Wipe Generator Buttons in the To Pane

When one of the **P1**, **P2**, **S1** or **S2** Wipe Generator buttons is selected in the To pane (Figure 211), and **Copy** is selected, the Primary Wipe or Keyer Wipe selected in the To pane will have that complex generator copied to it. For example, if ME 2, Pri Wipe 1 is selected in the To pane, and **P2** is selected, when **Copy** is selected P2 replaces the ME 2, Primary Wipe 1-P1 wipe generator.

## Copying Transition Wipes

To copy a Transition wipe to a Transition wipe:

1. Select the ME and Primary (**Pri Wipe 1** or **Pri Wipe 2**) or Secondary (**Sec Wipe 1** or **Sec Wipe 2**) wipe button in the From panel.
2. Turn on or off the **Mattes** button: On highlights green.
3. Select an ME and Primary Wipe button in the To pane.
4. Select the **Copy** button.



## Copy a Key wipe to a Key wipe

1. Select the ME and Key Wipe (**Key 1 - Key 4**) button in the From panel.
2. Turn on or off the **Mattes** button: On highlights green.
3. Select an ME and Key Wipe button in the To pane, and if desired, choose a **Preset Patt**, **Inhibit Mask**, or **Force Mask** button to copy parameters from/to.
4. Select the **Copy** button.

## Copying Between Transition and Key Wipes

If the keyer (to) is using a complex generator, you can choose which complex wipe will be the destination. The complex wipe generator will be copied and the keyer will be assigned to that generator. The generator is also assigned to the transition wipe (in most cases) and the generator for that transition wipe is also changed. If the Keyer is assigned to a keyer wipe, only a subset of the complex wipe parameters will be assigned.

## Copy a Transition Wipe to a Keyer Wipe (and Vice Versa)

1. Select the ME and Primary (**Pri Wipe 1** or **Pri Wipe 2**) or Secondary (**Sec Wipe 1** or **Sec Wipe 2**) wipe button in the From panel.
2. Turn on or off the **Mattes** button: On highlights green.
3. Select an ME and Key Wipe (**Key 1 - Key 4**) button in the To pane, and if desired, choose a **Preset Pattern**, **Inhibit Mask**, or **Force Mask** button to copy parameters from/to.
4. Select the **Copy** button.

Copying from a Key Wipe to a Transition Wipe works the same, however Keyer wipe values will be copied to the Transition Wipe, not the Wipe Generator.

## Copy an eDPM Wipe

eDPM Channels can be copied from one to another and between Transition and Key Wipes. eDPM Wipes are simple wipes, similar to the Key Wipes.

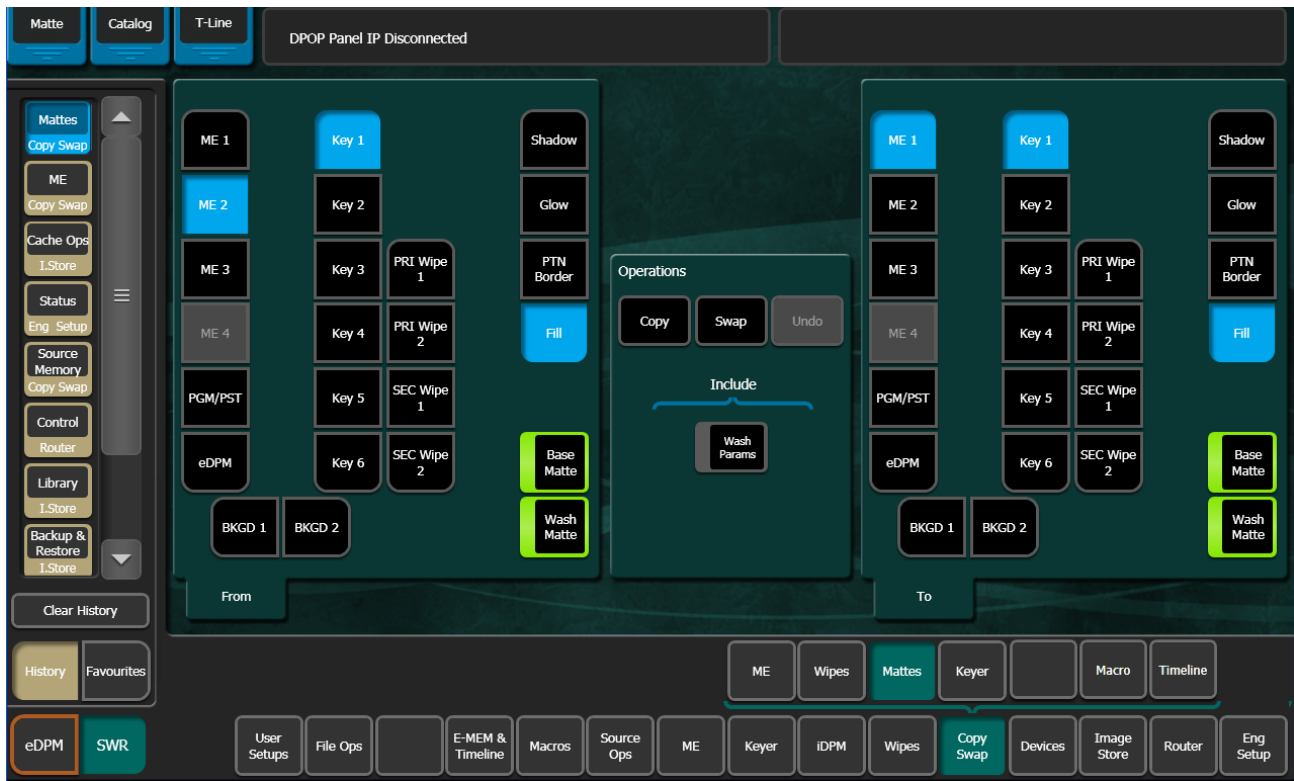
1. Select the **eDPM** button in the From or To pane.
2. Select a channel button (**CH 1 - CH 4**) with the parameters you wish to copy from or to, and if desired, choose a **Preset Patt**, **Inhibit Mask**, or **Force Mask** button to copy parameters from/to.

3. Select the **Copy** button.

## Copy Swap Mattes Menu

Select **Copy Swap, Mattes** to access the Copy Swap Matte menu.

Figure 212. Example, Copy Swap Mattes Menu

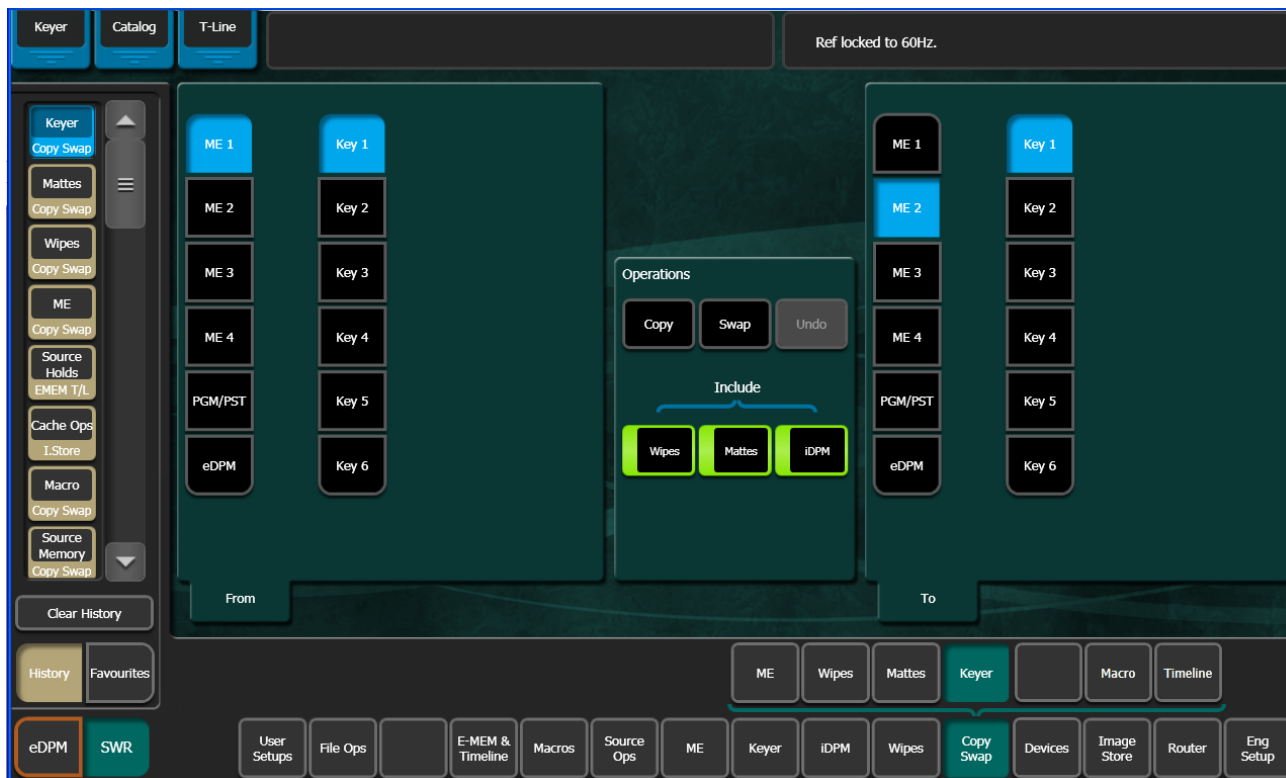


Some combinations of ME level, Key level, and matte generator level do not exist. For example, the destination matte is ME 1's Trans Wipe. Pst Ptn Border, and Fill are grayed out because they only apply to keyer mattes. Similarly, if Bkgd 1 had been chosen, no further delegation would be needed, so all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

## Copy Swap Keyer Menu

Select **Copy Swap, Keyer** to access the Copy Swap Keyer menu.

Figure 213. Copy Swap Keyer Menu



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

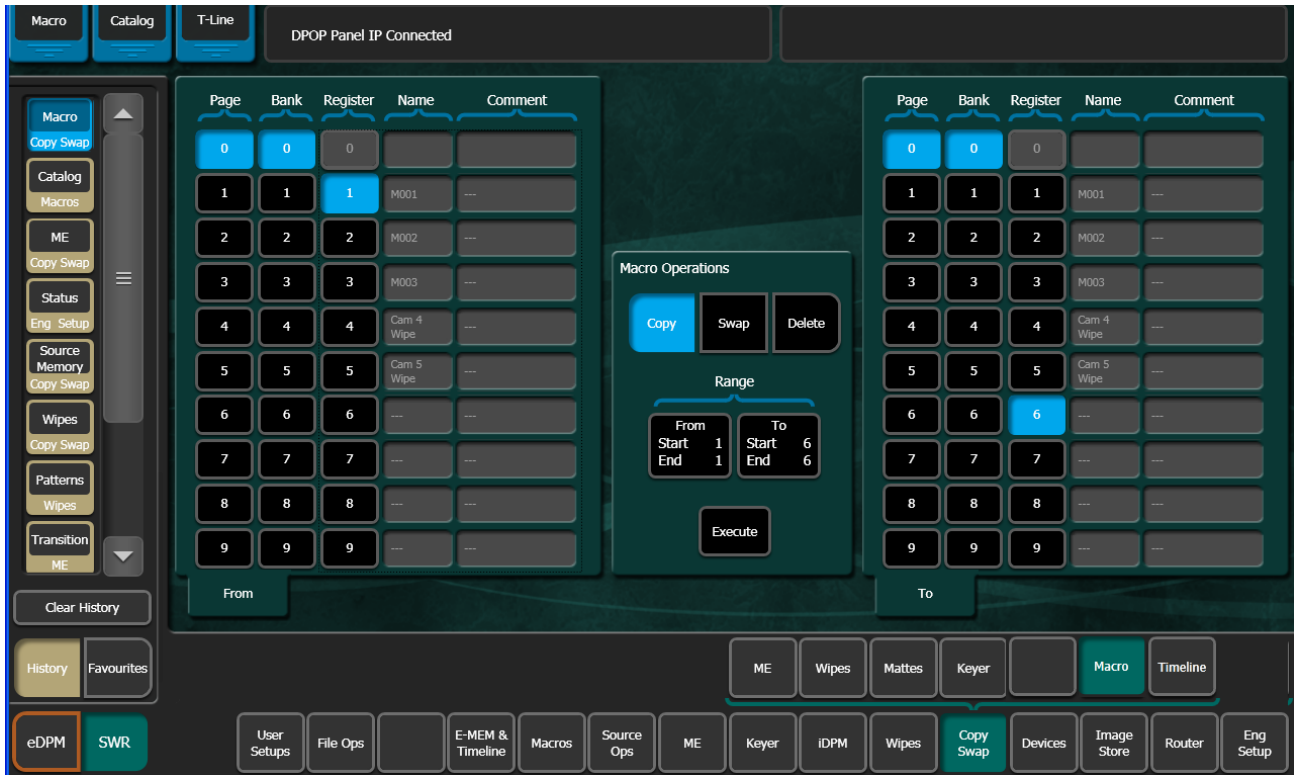
Wipes, Mattes, and iDPM resources can be included/excluded using the buttons in the *Include* section of the Operations pane.

## Copy Swap Macro Menu

The Copy Swap Macro menu is accessed by selecting **Copy Swap, Macro**.

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

Figure 214. Copy Swap Macro Menu

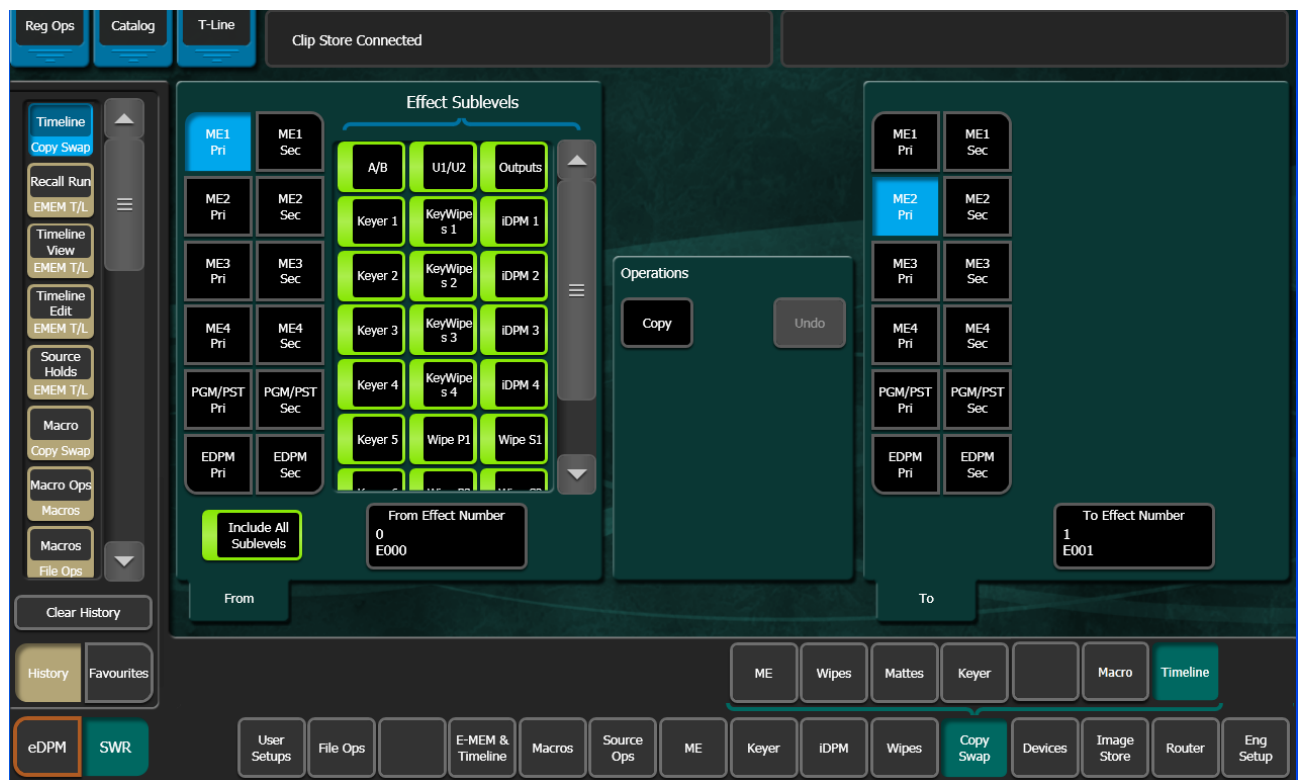


Macro register information can be moved from one register to another with this menu by selecting the registers in the From and To scrolling panes, then selecting the **Copy** or **Swap** buttons in the Macro Operations pane. The soft knobs and data pads on the upper right can be used to quickly select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

### Copy Swap Timeline Menu

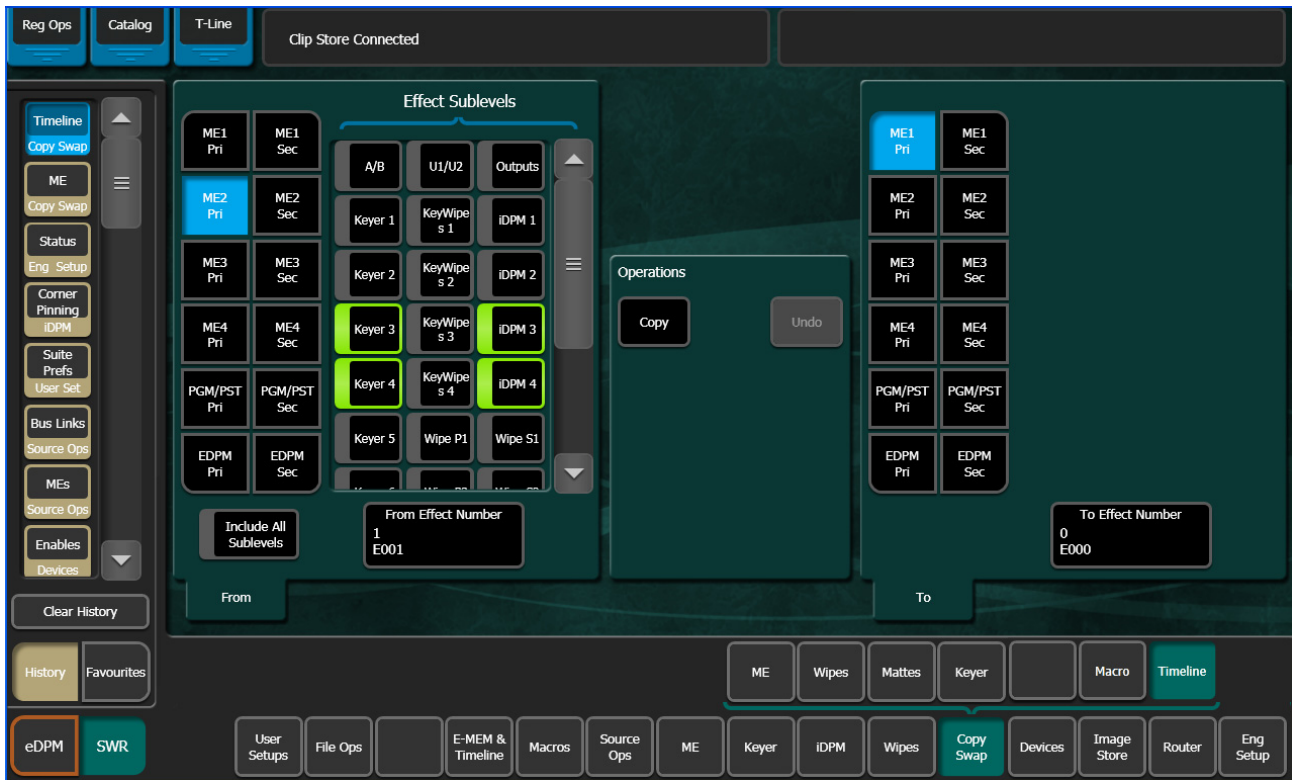
The Copy Swap Timeline menu is accessed by selecting **Copy Swap, Timeline**.

Figure 215. Copy Swap Timeline



Complete E-MEM timelines containing multiple keyframes can be copied from one ME to another ME or the eDPM and vice versa. All sub-level information can be included using the **Include All Sublevels** button or with this button off, sub-levels can be excluded from being copied by selecting the sub-level's enable button.

Figure 216. Copy Swap Timeline Sub-level Selection



For example, ME2 Pri, Effect Register 1, has two keyers with iDPM parameter settings you want as part of an effect but you want to use those sub-levels with the parameter settings in Effect Register 0, on ME1 Pri. One way to accomplish this is to copy the Keyer/iDPM sub-level information of Effect ME2 Pri, Effect Register 1, to Register 0, on ME1 Pri.

## Copy a Timeline with Copy/Swap

1. Select the **From Effect Number** data pad and enter the effect register number you want to copy 'from' in the Enter Source Register pop-up keypad.
2. Select the **To Effect Number** data pad and enter the effect register number you want to copy 'to' in the Enter Destination Register pop-up keypad.
3. With the **Include All Sublevels** button off, select the **Keyer 3**, **Keyer 4**, **iDPM 3** and **iDPM 4** sub-level buttons to turn them on (alternatively, you can turn on Include All sub-levels and individually select each sub-level to disable them).
4. Select the **Copy** button.

- Recall the destination register to see the result (selecting the Copy button does not trigger a recall).

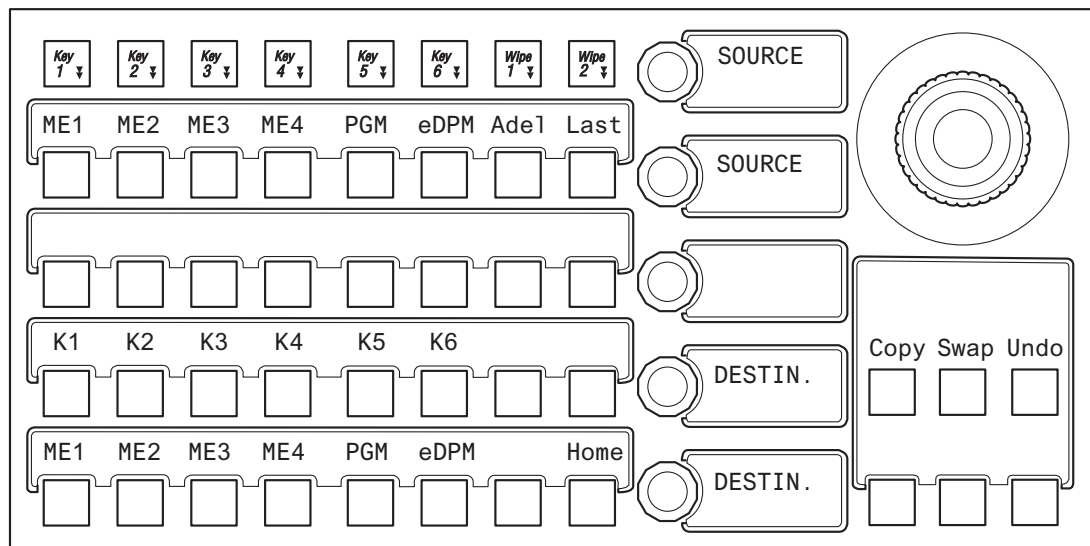
The result is that only Keyer 3, Keyer 4, iDPM 3, and iDPM 4 are copied to Register 0, on ME1 Pri. All other effect parameter settings are the same. Definable sub-levels can also be part of the copied register.

## Copy/Swap with the Multi-Function Module

Use the Copy and Swap mode buttons in the Multi-Function Module to enter those modes and copy or swap ME, Keyer, and e-DPM settings between MEs.

The Wipe, Matt, and DPM buttons can be turned on and off (default is on) in the MFM. With an ME and keyer selected in either Copy or Swap menu delegations, the buttons will be available therefore you can include/exclude those parameters from the copy/swap operations.

Figure 217. Copy Swap—Multi-Function Module



### Copy an ME

In Copy or Swap mode, the ME/Keyer/e-DPM sources are selected from the source buttons in the top two button rows in the MFM and destinations are selected in the bottom two rows.

**Note** ME Keyers can be copied/swapped with e-DPM channels and vice versa.

1. From the Home mode in the Multi-Function Module, press the Copy button.
2. Select the Source ME/Key.
3. Select the Destination ME/Key.
4. Press the Copy button (below the joystick).

## Swap MEs

1. From the Home mode in the Multi-Function Module, press the Swap button.
2. Select the Source ME.
3. Select the Destination ME.
4. Press the Swap button (below the joystick).

## Copy a Keyer

1. From the Home mode in the Multi-Function Module, press the Copy button.
2. Select the Source ME ([Figure 217](#)).
3. Select a Source Keyer (K1-K6) (Keyers can also be copied to e-DPM Channels and vice versa).
4. Select the Destination ME.
5. Select a Destination Keyer (e-DPM Channel).
6. Press the Copy button (below the joystick).

To Swap Keys:

1. From the Home mode in the Multi-Function Module, press the Swap button.
2. Select the Source ME ([Figure 217](#)).
3. Select the Destination ME.
4. Select a Destination Keyer (Keyers can also be swapped with e-DPM Channels and vice versa, see [Swap e-DPM Channels](#)).
5. Press the Swap button (below the joystick).



## Copy e-DPMs

e-DPM Channels can also be copied to Keyers and vice versa.

1. From the Home mode in the Multi-Function Module, press the Copy button.
2. Press the Source eDPM button (Figure 217), K1-K4 buttons of the top row are now assigned as e-DPM channels Ch1-Ch4 (the button legends remain K1-K4).
3. Select a Source e-DPM channel.
4. Select the Destination eDPM button (K1-K4 destination button LED labels change to Ch1-Ch4).
5. Select a Destination e-DPM channel.
6. Press the Copy button (below the joystick).

## Swap e-DPM Channels

e-DPM Channels can swapped with Keyers and vice versa.

1. From the Home mode in the Multi-Function Module, press the Swap button.
2. Press the Source eDPM button (Figure 217), K1-K4 buttons of the top row are now assigned as e-DPM channels Ch1-Ch4, however the button legends remain K1-K4.
3. Select a Source e-DPM channel.
4. Press the Destination eDPM button, K1-K4 destination button LED labels change to Ch1-Ch4.
5. Select a Destination e-DPM channel.
6. Press the Swap button (below the joystick).

### Undo Button

The Undo button (below the joystick) reverses a copy or swap operation that has been performed. Only one level of undo is supported. For example, pressing Undo a second times does not return the MEs to their previous states before the first Undo was performed.

## Image Store Options

Two Image Store Options exist, the basic option for Stills and an enhancement that also supports movies. The Image Store hardware board is required, and cache memory must also be licensed.

### Image Store Memory

Image Store cache is licensed with either 16GB or 32GB of memory. The memory is available for suite allocation in units of 1GB. Memory must be released from one Suite to be acquired by another suite's cache.

Each unit of Image Store memory provides cache memory in frames; for example a 1GB unit is enough memory for approximately 90 frames of 1080i. See *Image Store Movie Maximum Length* [on page 418](#) for memory requirements for Movies.

### Image Store Images Menus

The four Image Store Images menus are selected using the **Stills**, **Movies**, **Movie Record**, and **Movie Edit** tabs. The three Movies menu tabs are grayed out if the option is not licensed.

Figure 218. Image Store Images Stills Menu



- The scrolling window on the left displays the items in the cache.
- The buttons on the right represent the Image Store channels. Channels acquired by the current suite are active. The selected channel has a blue box when selected, which turns red when that channel is on-air.
- The **Scroll Image List** data pad and soft knob on the right can be used to select and/or load images and movies.
- The **Cache Remaining** data field indicates the unused portion of the currently allocated cache memory, in frames.
- The **Number of Images** data field displays the number of stills or movies currently loaded into the allocated cache memory.

## Image Store Quick Tabs

There are three Quick Tabs (top-left) in the Image Store menus: **Src Ops** (Source Operations), **Catalog** (Macro Catalog), and **T-Line** (Timeline Edit for the Master E-MEM).

Figure 219. Image Store Quick Tabs



## Image Store Stills

With K-Frame Image Store, still images are captured as Video/key or video-only and can be used as part of an effect or selected and loaded to output from the K-Frame Menu or Control Panel.

### Local Still File Format

Locally, still images are stored as .eif file format.

## Imported Still File Formats

The following image formats are supported by K-Frame and are converted when transferred into the Image Store Cache from disk:

- GIF
- JPEG
- TIFF
- BMP
- PNG
- TGA
- Kalypso (.gva/.gva)
- Kayenne/Karrera/Korona (.kif)

## Operating the Menu Panel

From the Image Store menu, you can perform the following with still images:

- Still capture and playback,
- File operations (Library), and
- Backup and restore.

## Modifying/Adding Image Descriptions

Image descriptions can be modified or added by selecting the **Change Description** button (top of scrolling image list) and entering the name in the pop-up keyboard. The name will appear in the image's icon when **Enter** is pressed

# Configure Image Store Resources

Image Store resources can be allocated between the two K-Frame Suites. By default all resources are assigned to Suite 1. To assign Image Store resources to Suite 2, do the following:

1. Go to Eng Setups and log into Suite 1.
2. Release one or more Image Store channels.
3. Login to Suite 2 and acquire one or more Image Store channels.

4. With an Image Store channel selected, allocate some Image Store memory to that suite (see below). This will reduce the memory available in the other suite.

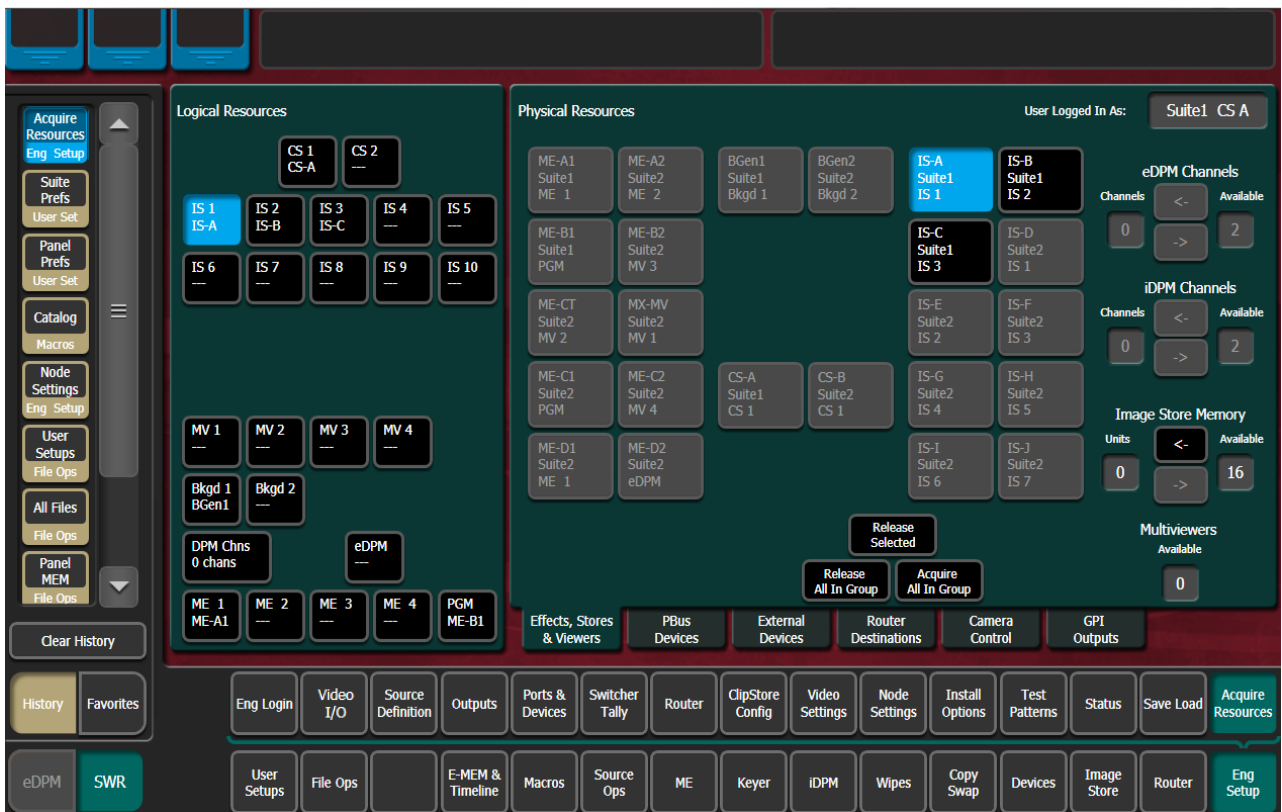
## Release/Acquire Image Store Memory for Suites

Image Store memory must be allocated to any suite that will perform Image Store operations.

In the Eng Setup, Acquire Resources menu, release and/or acquire available Image Store memory:

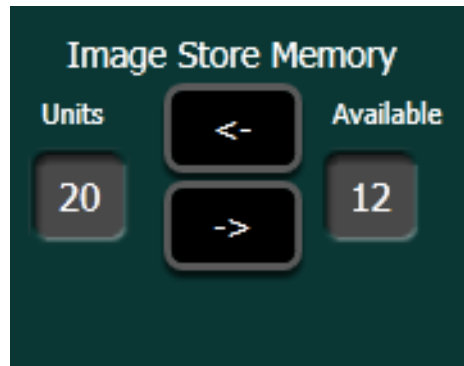
1. Select an allocated Image Store Logical Resource in the Logical Resources pane on the top left of the Acquire Resources menu.

Figure 220. Image Store Acquire Resources



2. Release Units of Memory from the current suite by moving them from **Units** to **Available** using the **Right Arrow** button in the **Image Store Memory** acquisition group.

Figure 221. Image Store Memory Acquisition Group



3. Login to the other suite in the Eng Setup, Eng Login menu (see the *K-Frame Kayenne/Karrera/Korona Installation & Service Manual*).
4. Returning to the Acquire Resources menu, acquire available memory using the **Left Arrow** button.

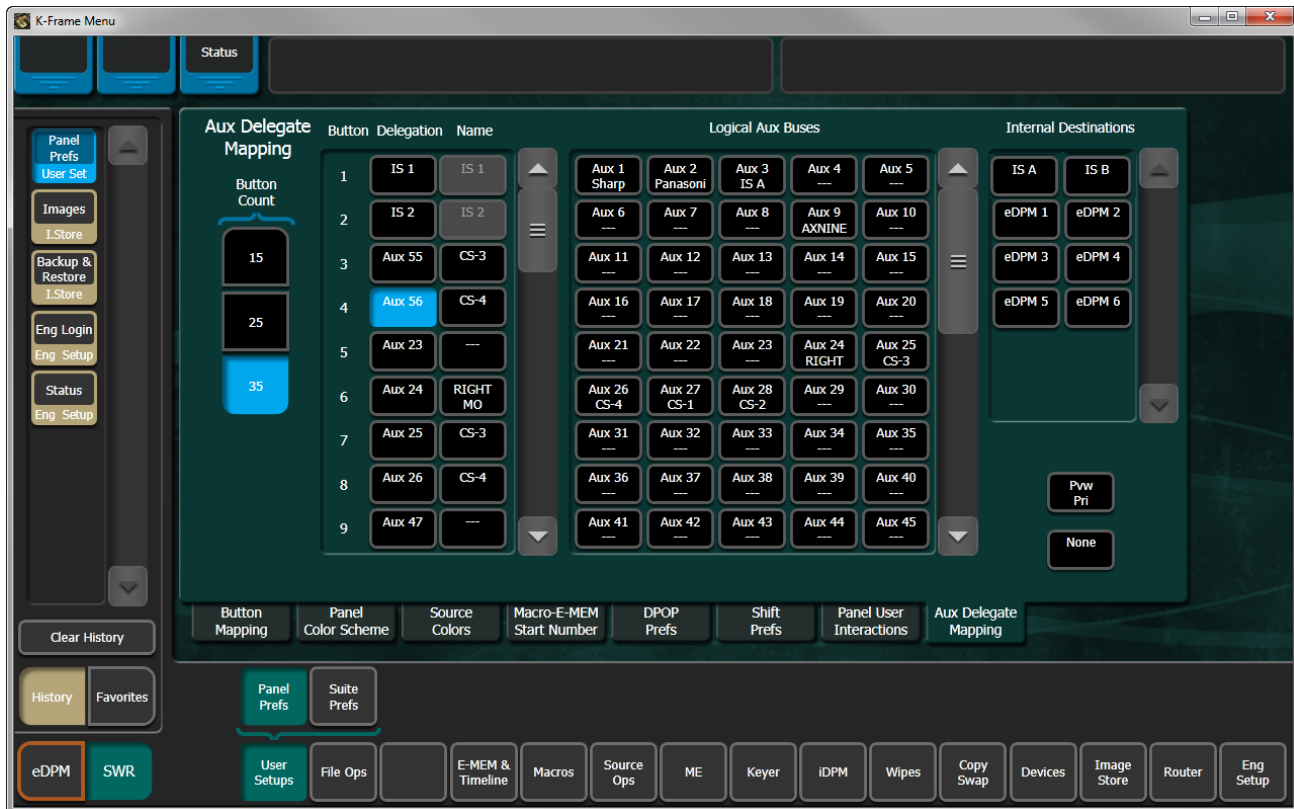
## Map Image Store Input Delegates

Delegate Image Store inputs to the aux bus delegates on the Local Aux Module:

**Note** Alternatively, you can select Image Store input sources from the Image Store menu.

1. Go to the Aux Delegate Mapping menu by selecting **User Setups, Panel Prefs, Aux Delegate Mapping**.
2. Select a Local Aux Module button in the Button/Delegation scrolling list.
3. Select an Image Store input (**IS A-IS B**) in the Internal Destination scrolling list.

Figure 222. Image Store, Aux Delegate Mapping Menu



## Capture a Still from Input Video

Image Store channels use the “Grab” function to capture a still (in RAM) and the “Keep” function to load that still into cache. A “grabbed” still can be replaced with another Grab.

Stills can be captured as a video/key pair or video only (when replayed, video only stills will have a full raster white key applied).

1. Do one of the following:
  - Setup the input sources on the Local Aux Module (see *Map Image Store Input Delegates on page 405*), or
  - In the Image Store, Images, Stills menu:
    - a. Select the **Capture Still** button to turn it on.
    - b. Select the **Input Source** data pad.
    - c. Select the input from the Inputs scrolling list.
2. Go to the Images menu by selecting **Image Store**, **Images** menu tab.
3. Select an Image Store channel 1-10 by selecting it.



- Optionally, select the **Key** Record Elements button to capture a video-only still.

Figure 223. Capture Still Menu



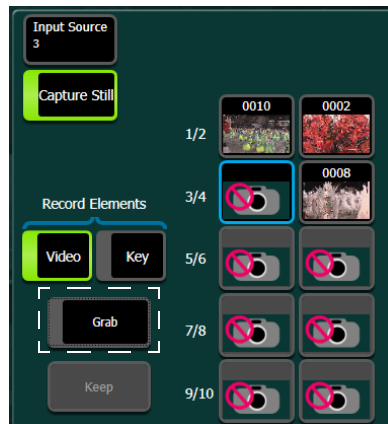
5. Select the **Input Source** data pad and select the input source for the selected channel ([Figure 224](#)) (or select the desired source from the Aux panel).

Figure 224. Input Source Button/Menu



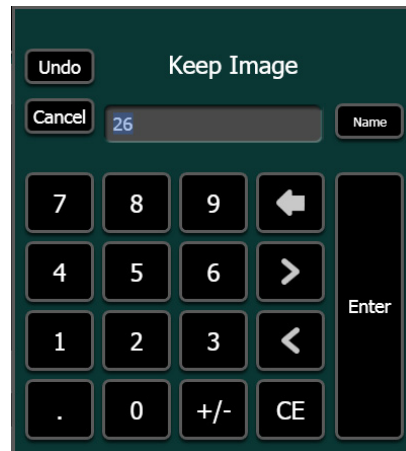
6. Select the **Show E-E** button. The **Show E-E** button becomes the **Grab** button ([Figure 225](#)).

Figure 225. Capture Still, Grab Button



7. Select the **Grab** button; the captured still is displayed in the selected output (the **Grab** button returns to **Show E-E**).  
The **Show E-E/Grab** buttons can be pressed repeatedly until the desired still is captured before selecting the **Keep** button.
8. With Show E-E enabled, select the **Keep** button (Figure 225) to place the captured still into cache.
9. A keypad is displayed with a **Name** button (Figure 226).

Figure 226. Keypad with Name Button



10. Choose one of the following three options:
    - a. Select **Enter** to accept the auto-generated Image ID,
    - b. Type your own Image ID (1-8999) and select **Enter**, or
- CAUTION** Entering an existing Image ID and selecting the **Enter** button will overwrite the existing image associated with that ID.
- c. Select the **Name** button and type an Image Description in the pop-up keyboard, select **Enter**, and select **Enter** again in the keypad.

The captured still will be placed in cache and displayed in the scrolling image list in the Still menu.

## Create a Split Key for a Still Store Still

A “split key” is when the key source is different than that of the video source. When an Image Store video/key still is captured, in the Image Store, Images, Stills menu, the video and key signals are from the same source. Split Key allows you to change the key signal source.

1. Navigate to the Source Ops, Image Store menu by selecting the **Src Ops** Quick Tab or the **Source Ops, Image Store** menu buttons.

Figure 227. Source Ops, Quick Tab Menu



2. Select the Split Key button to turn it on.
3. Select the **IS Input B** button (top-right, center of menu) to select it, then select a source from either the Logical or Fixed sources scrolling list to change the key signal source.

## Create an Image Store Still with another Video (Not Key)

Image Store channels capture a video/key still as the default. A still can also be captured using another video for a video/video still by changing the key to video in the Source Ops, Image Store menu.

1. Navigate to the Source Ops, Image Store menu by selecting the **Src Ops** Quick Tab from the Image Store, Images, Stills menu or the **Source Ops, Image Store** menu buttons.

Figure 228. Source Ops, Quick Tab Menu



2. Turn off the **Input B is Key** button.  
The **IS Input B** is now a second video.
3. Select the **IS Input B** button to select it, then select a source from either the Logical or Fixed sources scrolling list to change the video signal source.

## Still Playback from the Menu

### Load a still

Still playback is performed in the Image Store, Images, Stills menu tab. Stills are loaded directly to Program or they can be modified without being loaded.

Load stills to an Image Store channel output in one of the following ways:

- With the **Auto Load** button turned on, select a channel to select it then select a still in the scrolling list to load the still or turn the **Scroll Image List** soft knob to load stills sequentially.
- For direct keypad entry, type <Image ID #> + **dot** (.) + <Channel #> in the Image ID keypad and select **Enter** to load the image ID.

Example: typing **123.3** then selecting **Enter** loads Image ID 123 on output channel 3.

Figure 229. Playback Menu



## Modify a Still

To find and modify stills without loading them to a channel:

1. Toggle the **Auto Load** button to off.
2. Select the **Scroll Image List** soft knob button data pad to display the *Enter an Image ID to go to keypad* (Figure 230).
3. Enter an image number, then select **Enter**.

Figure 230. Scroll Image List Keypad



## Set Freeze Mode

In interlaced formats, Freeze Mode can be set to Frame, Field 1, or Field 2 using the **Frame**, **Field 1** or **Field 2** buttons. This is very useful if you need to eliminate motion flicker or artifacts from an interlaced still.

To set the Freeze Mode:

1. Select a still from the scrolling list.
2. Select the **Freeze Mode** button.

Figure 231. Freeze Mode Button



3. Viewing the still on a monitor, select the **Frame /Field 1 /Field 2** buttons to change the mode for the best result.
4. Select the **Confirm** button.

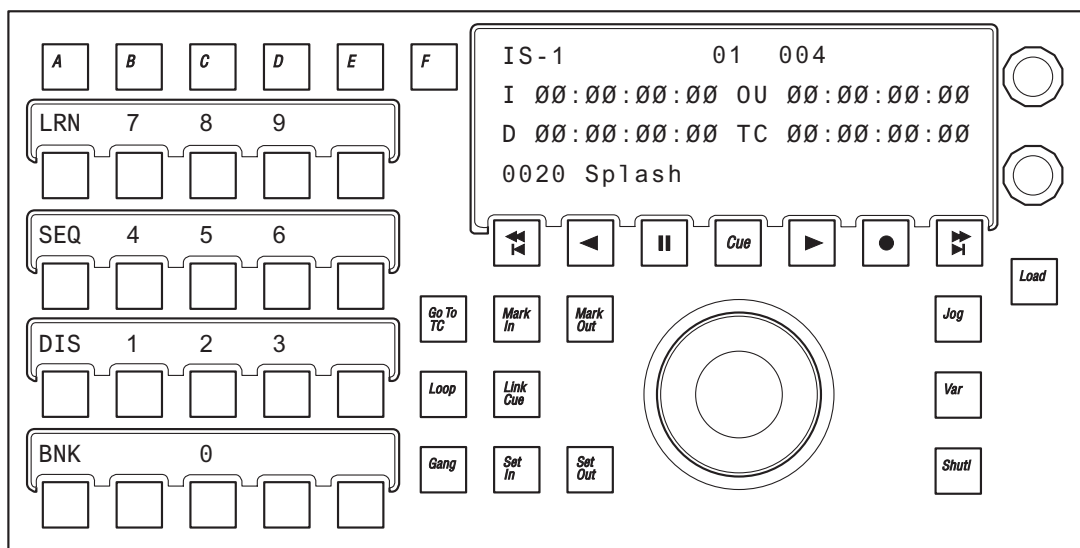


# Kayenne K-Frame Image Store Device Control

Stills can be controlled from both the DCM (Device Control Module) and the System Bar on the Control Panel.

The DCM (Device Control Module), allows you to scroll through and select an Image Store channel (1-10), select a still for the channel, and load that still.

Figure 232. DCM, Image Store Device Control



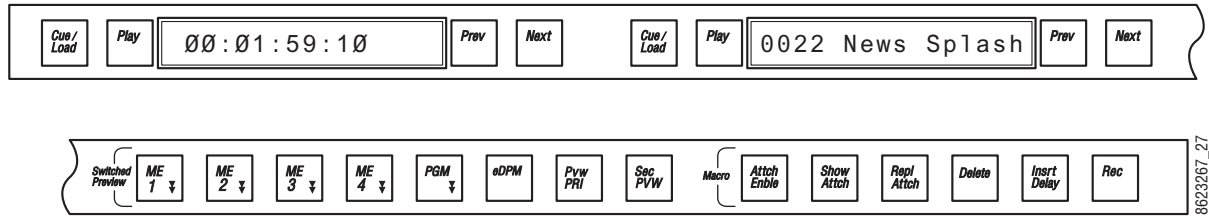
1. Use the soft knob in the upper right of the DCM to scroll through the devices until the desired Image Store channel is seen in the display.
2. Use the bottom-most soft knob to scroll through the stills until the desired Image ID is displayed.
3. Press the Load button.

The still is loaded to the Image Store output channel.

## Kayenne K-Frame System Bar Control

Image Store channel stills can be selected and loaded from the System Bar Module.

Figure 233. System Bar Module, Image Store Device Control



1. Press and hold down a source select button that has an Image Store channel attached.
2. Press the PREV and NEXT buttons together in the desired Device Control Group (alternatively, you can press and hold down the PREV and NEXT buttons and then press a source button).
3. Press the Prev/Next buttons for that Device Control Group until the desired still is displayed.
4. Press the Cue/Load button to load the still.

## **Image Store Movies Option**

Image Store movies are recorded to and played from K-Frame cache memory. The Image Store option is completely different from ClipStore clips, which are recorded to and played from an external server.

When enabled, the Image Store Movies option provides:

- Movie recording
- Movie playback, including loop and bounce
- Mark thumbnail image
- Mark-in and mark-out cue points
- Trim start and end points
- Cut and Join operations
- Build and Edit operations
- Import and conversion of video files
- Import and conversion of still sequences into a movie file
- Export of movies in one standard file format
- Timeline Events for movies

The Image Store Backup & Restore Menu, used for cache management, also supports Image Store movies.

The Image Store Library Menu used with Image Store stills and ClipStore material is also used for movie file management.

## Image Store Movie File Formats Supported

- AVI
- MOV
- Mp4
- KayakHD (xtendd)
- Kalypso (gvi, gva)
- PNG sequences (load a series of still images and create a single ID movie from them)
- TGA (Targa) sequences (create as above)

## Recording Image Store Movies Longer than Maximum Lengths

Image Store movies longer than the maximum save-to-disk file lengths can be recorded and played back, just not saved. Movies can be as long as the available cache.

## Image Store Movie Maximum Length

Image Store maximum movie length by video format.

Table 14. Maximum Image Store Movie Lengths

Line Rate	Frequency	Seconds	Frames
525i	30Hz	1:39.03	2973
720p	60Hz	18.56	1136
1080i	30Hz	16.25	505
1080p	60Hz	8.25	505
625i	25Hz	1:40.12	2512
720p	50Hz	22.36	1136
1080i	25Hz	10.05	505
1080p	50Hz	10.05	505

## Image Store Movie Storage Capacity

Image Store maximum storage capacity of movies saved to disk for 16GB, 32GB, or 64GB licensed memory.

Table 15. 16GB Maximum Image Store Capacity

Line Rate	Frequency	Total Frames	Total Time
525i	30Hz	12011	00:06:40:10
720p	60Hz	4587	00:01:16:27
1080i	30Hz	2027	00:01:07:17
1080p	60Hz	2027	00:00:33:47
625i	25Hz	10219	00:06:48:18
720p	50Hz	4587	00:01:31:37
1080i	25Hz	2027	00:01:21:02
1080p	50Hz	2027	00:00:40:27

Table 16. 32GB Maximum Image Store Capacity

Line Rate	Frequency	Total Frames	Total Time
525i	30Hz	24027	00:13:20:27
720p	60Hz	9179	00:02:32:59
1080i	30Hz	4059	00:02:15:09
1080p	60Hz	4059	00:01:07:39
625i	25Hz	20443	00:13:37:18
720p	50Hz	9179	00:03:03:06
1080i	25Hz	4059	00:02:42:09
1080p	50Hz	4059	00:01:21:09

Table 17. 64GB Maximum Image Store Capacity

Line Rate	Frequency	Total Frames	Total Time
525i	30Hz	48059	00:26:43:17
720p	60Hz	18363	00:05:06:01
1080i	30Hz	8123	00:04:30:23
1080p	60Hz	8123	00:02:15:11
625i	25Hz	40831	00:27:15:16
720p	50Hz	18363	00:06:07:06
1080i	25Hz	8123	00:05:24:22
1080p	50Hz	8123	00:02:42:11

## Image Store Movies Feature Configuration

### Prerequisites

The Image Store Movies feature requires:

- the optional Image Store hardware board installed,
- an Image Store Movies license code, and
- activation of Image Store Cache Size (16 or 32GB).

### License the Image Store Option

To enable the Image Store Movies option:

1. Go to the Eng Setup/Install Options menu.
2. Click on the **New Auth Code for Perm** data field.
3. Enter the authorization license code.
4. Select **Replace** or **Install**. The authorization code will be added.

You will also need 16 or 32GB of Image Store Cache Size enabled.

5. If necessary, using the procedure above enable your Image Store Cache size. 32GB is recommended to maximize your movie storage time.

### Movie Playback with the Menu Application

Movies that have been loaded to Image Stores can be cued and played from any of the Image Store Images tabs (**Stills**, **Movies**, **Movie Record**, **Movie Edit**). When an Image Store channel with a loaded movie is selected, the Cue to Start, Play Reverse, Stop, Play Forward, and Cue to End buttons are activated, and the progress bar above them indicates the current location of the movie.

### Movie Cueing and Playback Controls

Once a movie is loaded and selected for control, the Cue to Start, Play Reverse, Stop, Play Forward, and Cue to End buttons are available. Additional menu playback controls include:

**Loop**—Sets the movie to run continuously, jumping from its last frame to the first.

**Bounce**—Sets the movie to run to its end, reverse playback to its beginning, then play forward, and repeat (only available when Loop is active).

**Auto Start**—Sets the movie to play when taken On-Air.

**KF Trigs**— Enables EMEM KF triggering (see *E-MEM Keyframe Triggers for Image Store Movies* on page 421).

**Timecode**—Opens a keypad allowing entry of a time code value to cue the movie to. This control is also available on the Movie Record and Movie Edit menus.

**Mark In**—Sets the current cued location of the movie as its playback start point.

**Mark Out**— Sets the current location of the movie as its playback end point.

**Cue to Begin**— Cues to the Mark In point, if set.

**Var Play Speed**— When On, plays the clip at the percentage speed displayed on the right. Clicking on the percentage allows entry of the desired speed. Supported range is from 0.1% to 5000%.

**Jog Movie**—The knob on the Menu Panel can be used to jog the movie forwards and backwards. This control is also available on the Movie Record and Movie Edit menus.

## Movie Playback with the System Bar

Selecting an Image Store channel on the PVW bus activates the System Bar controls, which will display the currently loaded item. The System Bar **Cue/Load, Play, Previous,** and **Next** buttons allow the loading, cuing and playback of movies on that Image Store channel.

If a Image Store channel is selected on the PGM bus, holding down that source select button activates the System Bar for control of that Image Store channel.

## E-MEM Keyframe Triggers for Image Store Movies

Movie replay can be controlled with E-MEMs. Keyframe triggers that are E-MEMable are:

- Load (Movie),
- Loop (Enable/Disable),
- Bounce (when Loop is On)
- Cue (to in), and

All Motion Controls:

- Movie Start,
- Reverse Play,
- Stop,
- Play,
- Movie End, and
- Variable Speed Play (**Var Play Speed** button).

Figure 234. Image Store Images, Stills Menu



The selected Image Store channel has a blue outline. If that Image Store channel is On-Air, it has a red outline.

The Stills, Movies, and Movie Record menus also allow directly loading movies and stills to acquired Image Store channels.



Figure 235. Image Store Images, Movies Menu



Previously recorded movies and captured clips appear in the pane on the left. Clicking the **Include Stills** or the **Include Movies** button will also show thumbnails of those items in that pane.

## Load a Movie

Movies are loaded to Image Store channels the same way as stills.

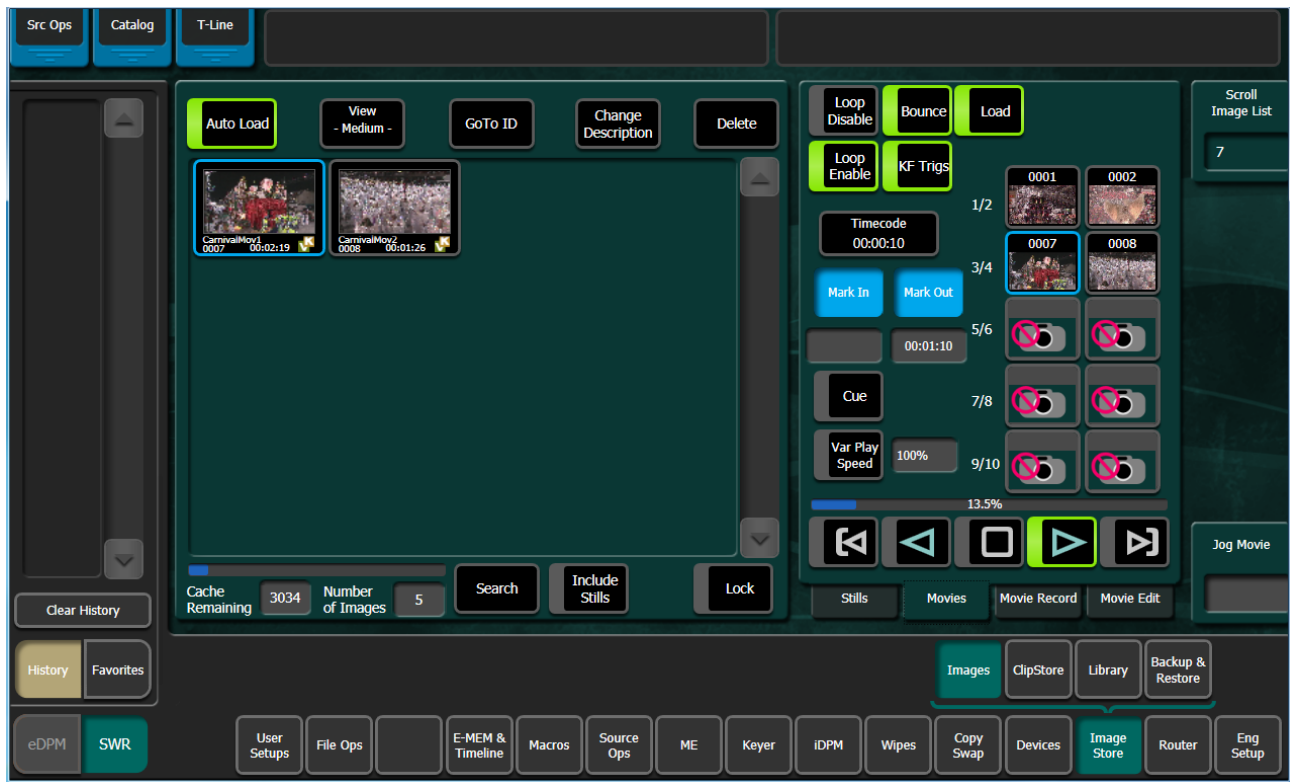
1. Select to select an Image Store channel to control.
2. Select **Auto Load** so it is illuminated.
3. Select a movie in the pane on the left. It will load to the selected Image Store channel.

## Create an E-MEM Keyframe Trigger

1. In the Devices menu, select the **Clear All Events** button, ensuring unwanted keyframe triggers are not included in your E-MEM.
2. In the Image Store, Images, Movies tab in the menu, select an Image Store channel (or pair), select a movie, then select the **Load** button.

3. Select the **KF Trigs** button. The motion control buttons become jeweled toggle buttons, and **Loop Enable**, **Loop Disable** and **Cue** buttons are displayed.

Figure 236. Image Store Images, Movies Menu with KF Triggering On



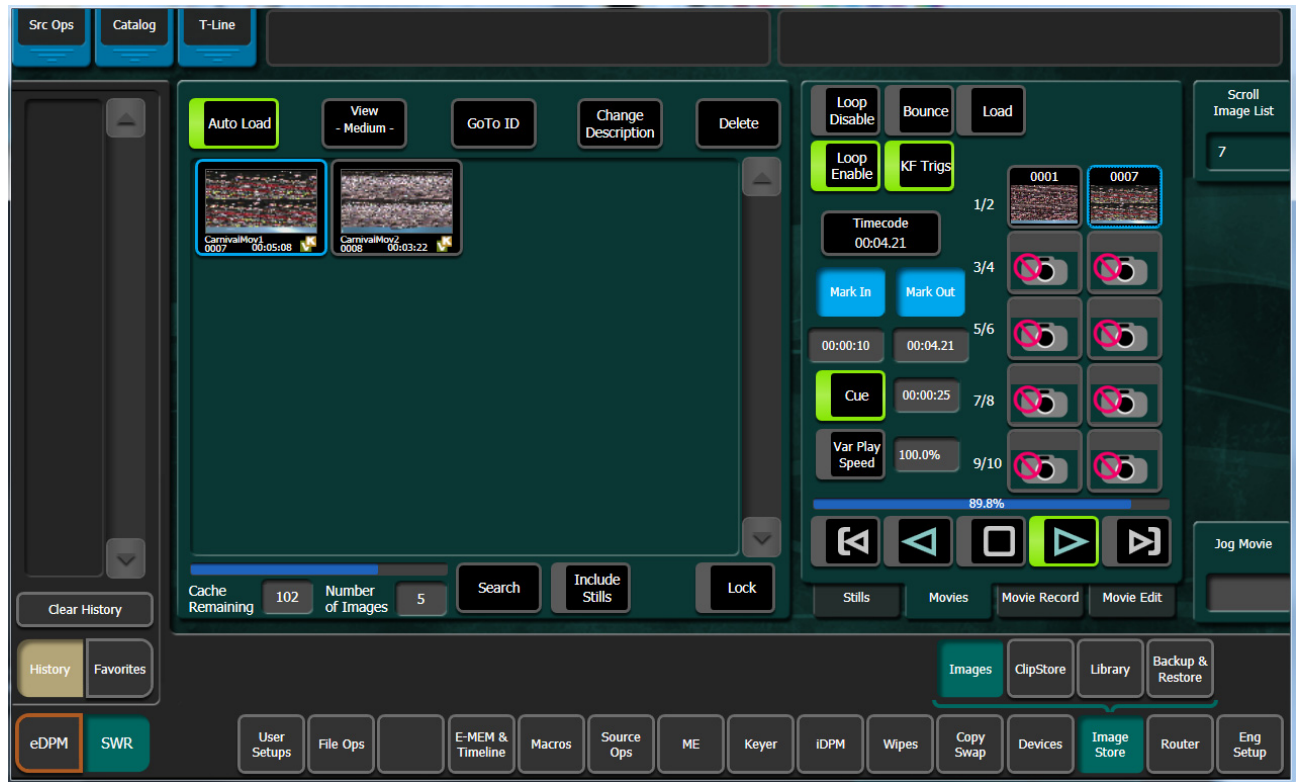
4. Select the controls that you want as part of the keyframe trigger (see *Movie Cueing and Playback Controls* on page 420).
5. Learn the keyframe trigger to an E-MEM on the Control Panel (*Learning E-MEM Registers from the Control Panel* on page 154) or from the EMEM & Timeline, Recall Run menu.

## Create an E-MEM Trigger Cue

A cue point, different from a Mark In point, can be defined with a KF Trigger. An example of this application would be to have an E-MEM recall a movie and cue it at midpoint, play the movie, and have it loop from Mark In and Mark Out points after the cue point.

1. With **KF Trigger** enabled, select the **Cue** button. A data pad will appear next to the button.

Figure 237. Image Store Images, Movies Menu with KF Trigger Cue



2. Select the data pad. A numeric keypad will open, allowing you to enter a movie frame location. The default value will be the current Mark In location.
3. Select **Enter** on the keypad. The cue value is stored and inserted as part of the keyframe.

**Note** Turning Cue off and back on will re-enter the current Mark In location for that Cue.

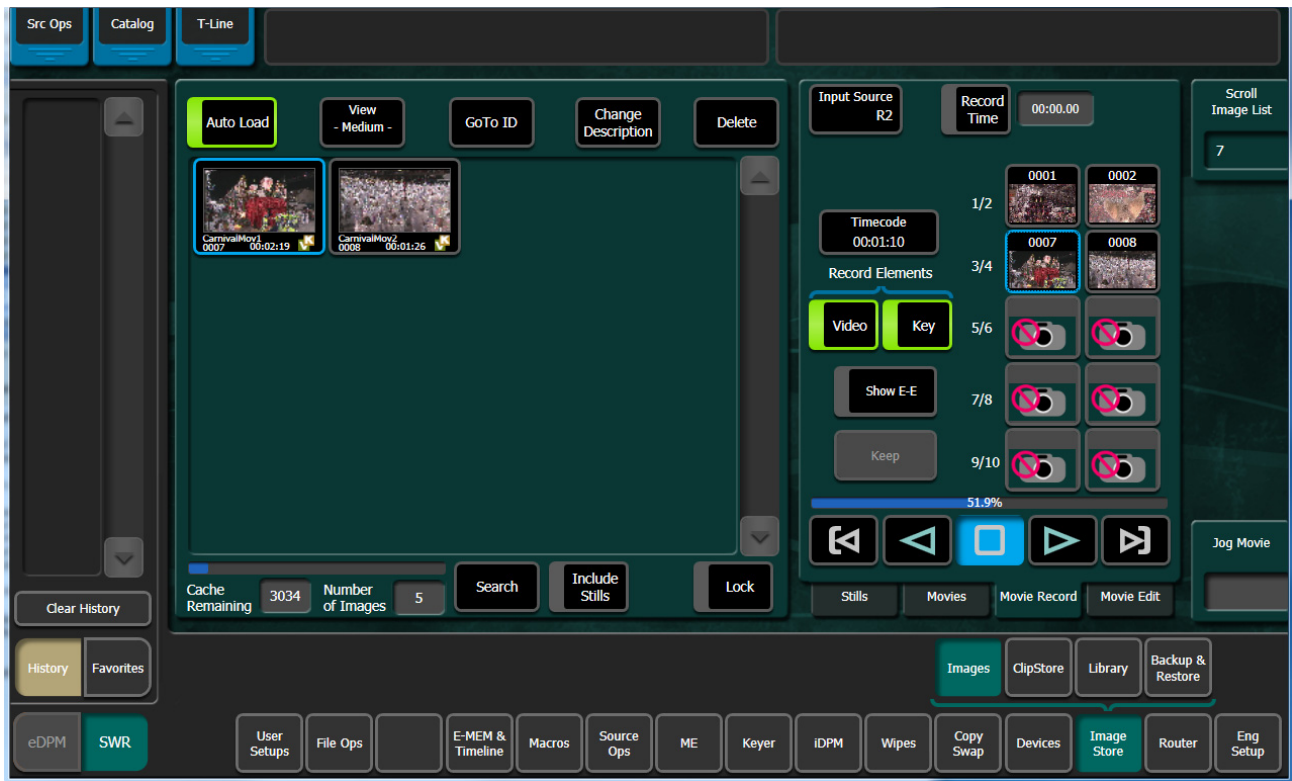
## Record a Movie

Movies are recorded by selecting an Image Store channel, selecting a video source, specifying any recording options, making the recording, inspecting the recording (optional), and then committing that recording to the cache with the **Keep** button.

1. Select to select an Image Store channel for recording.

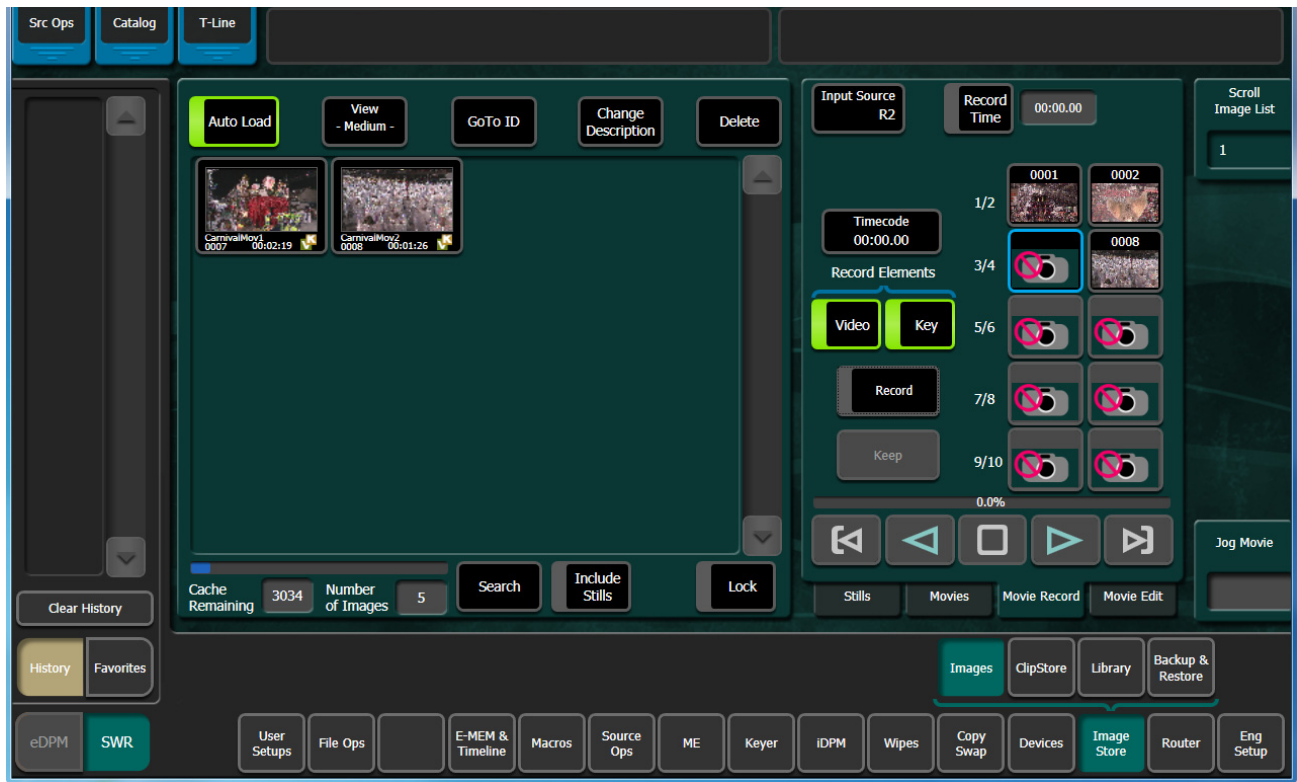
2. Select **Input Source** and choose the source of the video to be recorded.

Figure 238. Image Store Images, Movie Record Menu



3. Select the **Show E-E** button. The current movie or clip on that Image Store channel, if loaded, will be unloaded in preparation for recording. The incoming video will be displayed on the output of that Image Store channel. The **Show E-E** button legend also changes to **Record**.

Figure 239. Image Store Images, Movie Record Menu, E-E Mode



4. Define the options you wish to apply to the recording:
  - **Video & Key** or **Video** only.
  - **Record Time** (optional duration of the recording).
5. Select the **Record** mode button to initiate the recording, and then either press **Record** again to stop the recording, or let the movie record until the Record Time duration is reached.
6. You will now be able to cue and play the candidate recording to see if it meets your requirements.

**Note** The movie recording is not yet complete. If on inspection the recording isn't correct, you can select the **Show E-E** button again to discard that recording and prepare to make another.

7. When you are satisfied with the recording, select **Keep** to save it to cache. A key pad opens with a default new image number. You can use that number, or specify another, and then select **Enter**.

**Note** Specifying the number of an existing Image Store item will overwrite that existing item with the new recording.

8. That movie will now be loaded in that Image Store channel, and will also appear in the pane on the left. The movie can immediately be cued and played if desired.

## Name a Movie

A movie can be named after it has been recorded.

1. Go to the Movie Record menu.
2. Select the **Change Description** button.
3. Enter a name for the movie.

## Select a Thumbnail

When a movie is recorded a default thumbnail is created for that movie. If you wish to change the thumbnail, do the following.

1. Go to the Movie Edit menu.
2. Cue the movie to the desired thumbnail frame.
3. Select **Mark Thumbnail**. The thumbnail will change and the timecode of that location will be displayed.

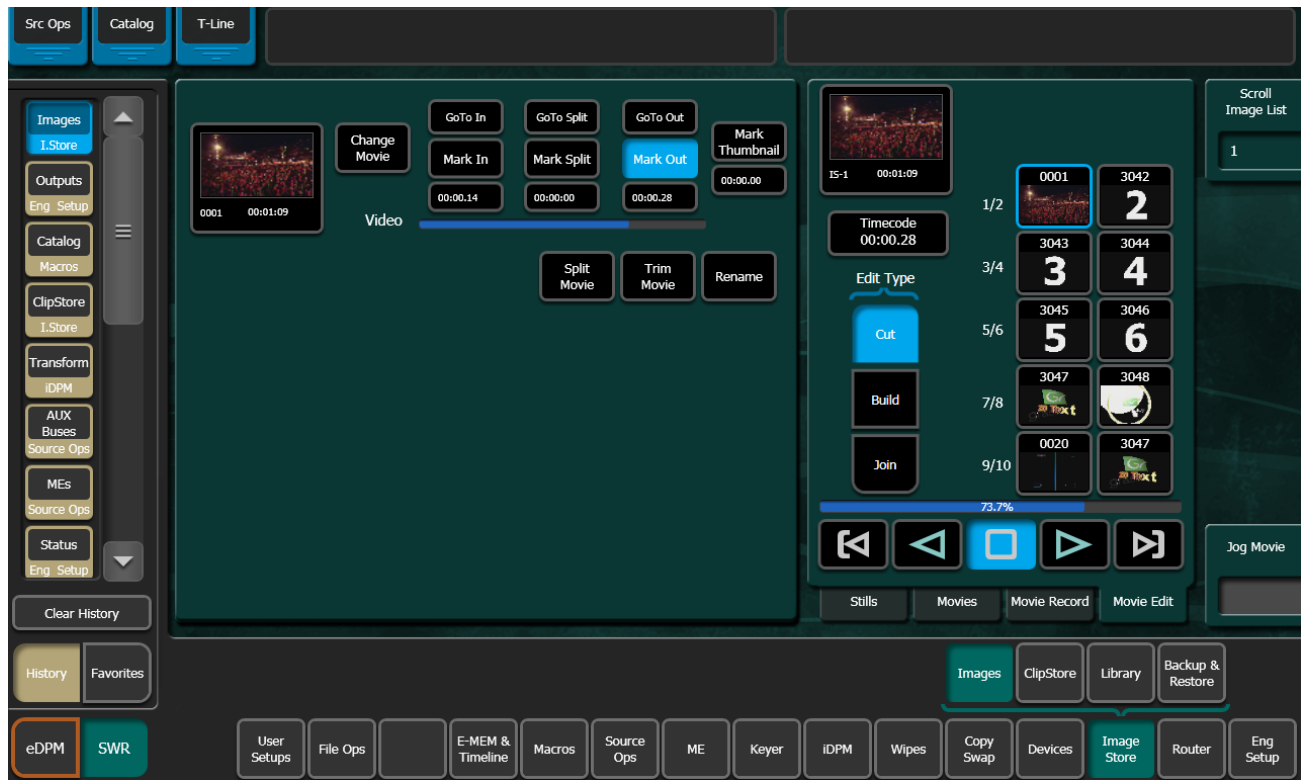
Insert movie edit info here

## Trim a Movie

The Cut Edit, Trim mode allows you to trim unwanted video from the start and/or end of a movie. Doing so deletes that video, conserves space in the cache, and ensures that unwanted material will not be aired.

1. In the Image Store, Images, Movie Edit menu, select the Image Store, Images, Movie Edit menu.

Figure 240. Image Store Images, Movie Edit Menu



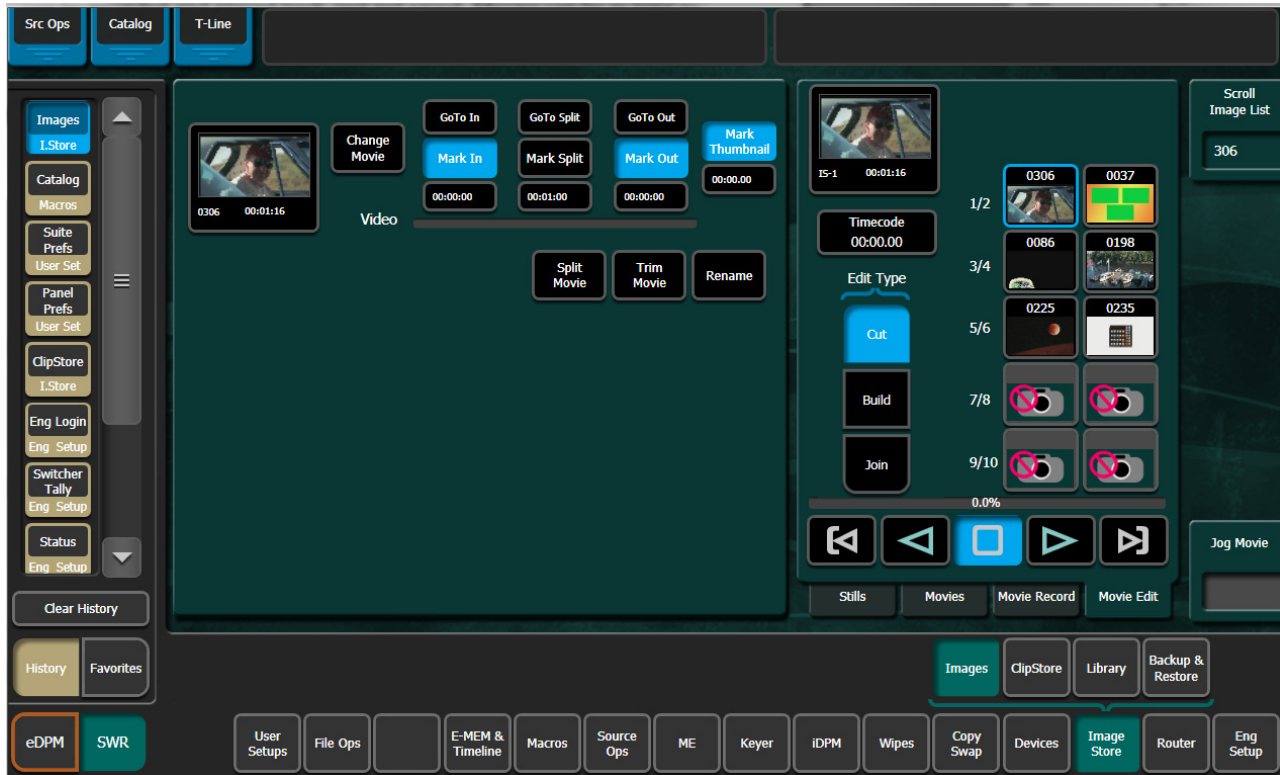
2. Select an Image Store channel with the movie to be trimmed.
3. Cue the movie to the first desired frame.
4. Select **Mark In** to set that in point. The timecode of that location will be displayed.
5. Cue the movie to the last desired frame.
6. Select **Mark Out** to set that out point.
7. You can use the **GoTo In** and **GoTo Out** buttons to cue the movie, and play it to ensure those points are correct.
8. When satisfied, select **Trim Move**. A prompt will appear indicating the operation is not reversible. Select **Yes**. The extra video will be discarded.



## Split an Image Store Movie

The Cut Edit, Split Movie mode allows the operator to cut a movie in Image Store Cache into two new movies; the original movie is not retained in cache so the cache memory used before and after the cut are the same.

Figure 241. Image Store, Images—Cut Edit



1. In the Image Store, Images, Movie Edit menu, select the **Cut** Edit Type button.
2. Insert the movie split point by:
  - a. Either jogging, shuttling, or playing to the point in the movie where you want to split the movie and selecting the **Mark Split** button, or
  - b. Selecting the **Mark Split** data pad (below **Mark Split** button) and entering the value for the split point in the Mark Split Point pop-up keypad, and select **Enter**.

**Note** Mark In and Mark Out are not used for Trim.

3. Select the **Split Movie** button.  
The New Image 1 pop-up keyboard is displayed.
4. Enter a name (select **Name**) or accept the default (the existing ID) for the first movie and select **Enter**.



5. Enter a name (select **Name**) or accept the default for New Image 2 (the existing ID plus 1) and select **Enter**.

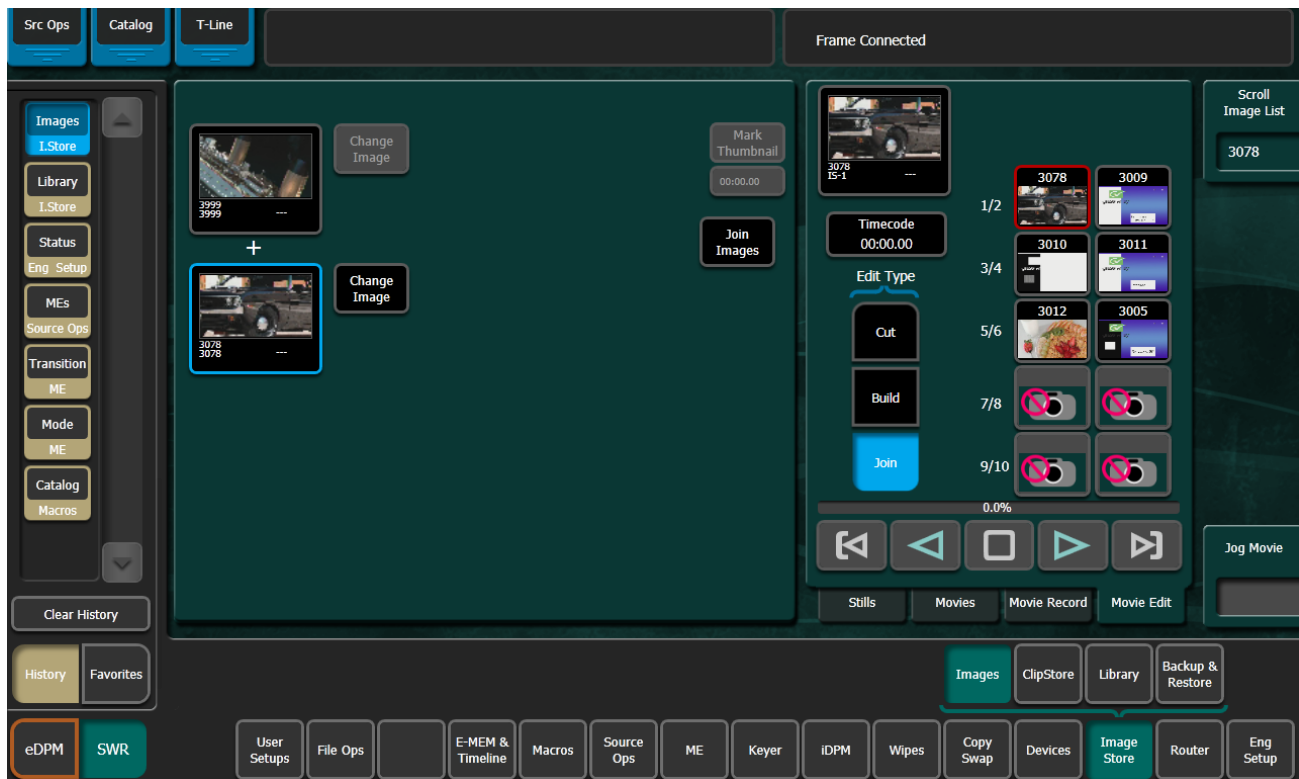
The two new movies are created and original removed.

## Join Image Store Movies and Stills

The Join Edit mode allows the operator to merge two clips into one. The original clips are no longer in cache so no additional cache is used. Movie and still images are joined to create a new movie.

1. In the Image Store, Images, Movie Edit menu, select the **Join Edit Type** button.
2. Select the **Change Image** button for the first movie (top thumbnail) and select the desired movie.

Figure 242. Join Edit Mode



3. Select the **Change Image** button for the second movie (bottom thumbnail) to be appended to the tail end of the first, and select the desired movie.
4. Select the **Join Images** button.

The new movie is created and appears in the movie lists in the Movies menus.

5. Mark a thumbnail if desired (optional).
  - a. Determine where you want to mark thumbnail and select the **Mark Thumbnail** data pad, or
  - b. Enter the mark-thumbnail point in the pop-up keypad and select **Enter**.

## Image Store Build Edit

Image Store Build Edit allows you to mix and match Video (or Fill), Audio, and Key (or Cut) signals that are elements of up to three different movies. Each movie is loaded into a separate Image Store channel. When built, the elements from each channel are composited into a new Image Store movie. Each element can be edited, including independent offsets for the Audio and Key/Cut.

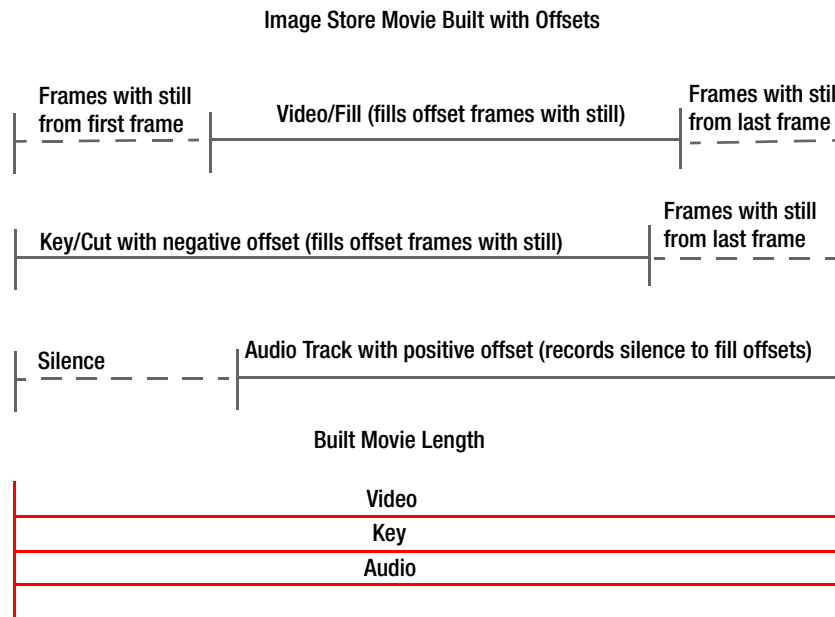
Playback controls are provided so you can preview the composited image prior to building a new movie.

Audio and Key/Cut Image Store movie elements can be offset in relation to the Video/Fill element. A *negative* offset means the audio or key signal begins before the video and a *positive* offset means the audio or key signal starts after the video. Both audio and key can be offset independently in the Image Store Build Edit menu.

## Built Movie Length

When built, the movie length is the total of the composited elements, including offsets. The Video/Fill and Key/Cut elements add frames with a duplicate still to extend the recorded length to match the longest element. The Audio element adds recorded silence to extend the recorded track to match the longest element.

Figure 243. Image Store Movie Length



## Build Edit Default Settings

The Image Store Build Edit menu default has the Video/Fill element with any embedded audio or associated key/cut signal selected. Meaning if you selected the Build Movie button in the menu, a duplicate of the Video/Fill movie would be created. In this default state, the **Audio from Video** button in the Audio element area and **Key from Video** button in the Key/Cut element area are enabled (highlighted).

## Build Edit Menu Button Descriptions

The left-hand Build Edit Type menu pane is divided into three elemental areas: Video/Fill, Audio, and Key/Cut. In addition to common channel and timecode editing buttons, the Audio and Key/Cut element areas provide independent function for movie building and playback control.

Figure 244. Movie Edit, Build Edit Menu



Table 18. Build Edit Menu Buttons

Element Area	Button	State	Description
All (Video/Fill, Audio, Key/Cut)	Thumbnail Viewer	Image Store Channel selected/Movie loaded	Thumbnail of the currently loaded clip
	Change Movie		Change Image Store channel movie
	GoTo In		Go to mark-in point in the movie
	GoTo Out		Go to mark-out point in the movie
	Mark In		Set mark-in point in the movie
	Mark Out		Set mark-out point in the movie
	Mark In/Mark Out Timecode Data Pads		Enter mark-in/mark-out timecode for the element
	Mark Thumbnail		Select thumbnail image from the Video/Fill element's current position
	Build Movie		Builds a movie from the composite elements
Video/Fill	Mark Thumbnail Timecode Data Pad		Enter mark point for thumbnail image in timecode
Audio	Audio from Video	On	Audio track comes from movie in Video/Fill Image Store element
		Off	<ul style="list-style-type: none"> <li>Audio track from Audio element</li> <li>If no audio track is loaded into channel, audio track is removed when Build Movie operation is performed</li> </ul>
	Lock Audio	On	<ul style="list-style-type: none"> <li>Audio element track locked with Video/Fill</li> <li>Playback motion control enabled</li> </ul>
		Off	Playback motion control of Audio channel only

Table 18. Build Edit Menu Buttons

Element Area	Button	State	Description
Key/Cut	Key from Video	On	Key comes from movie in Video/Fill
		Off	<ul style="list-style-type: none"> <li>Key comes from movie in Key/Cut</li> <li>If no key is loaded in channel, key is removed and full raster white is used when Build Movie is performed</li> </ul>
	Video Key	On	Key comes from movie in Video/Fill channel (default when Key from Video button is off)
		Off	<ul style="list-style-type: none"> <li>Cut comes from movie in Key/Cut channel</li> <li>If no cut is loaded in channel, cut is removed and full raster white is used when Build Movie is performed</li> </ul>
	Lock Key	On	<ul style="list-style-type: none"> <li>Key/Cut signal locked with Video/Fill channel timeline</li> <li>Playback motion control enabled</li> </ul>
		Off	Playback motion control of Key/Cut channel only

Table 19. Build Edit Menu Buttons

Element Area	Button	State	Description
All (Video/Fill, Audio, Key/Cut)	Thumbnail Viewer	Image Store Channel selected/Movie loaded	Thumbnail of the currently loaded clip
	Change Movie		Change Image Store channel movie
	GoTo In		Go to mark-in point in the movie
	GoTo Out		Go to mark-out point in the movie
	Mark In		Set mark-in point in the movie
	Mark Out		Set mark-out point in the movie
	Mark In/Mark Out Timecode Data Pads		Enter mark-in/mark-out timecode for the element
	Mark Thumbnail		Select thumbnail image from the Video/Fill element's current position
	Build Movie		Builds a movie from the composite elements
Video/Fill	Mark Thumbnail Timecode Data Pad		Enter mark point for thumbnail image in timecode
Audio	Audio from Video	On	Audio track comes from movie in Video/Fill Image Store element
		Off	<ul style="list-style-type: none"> <li>Audio track from Audio element</li> <li>If no audio track is loaded into channel, audio track is removed when Build Movie operation is performed</li> </ul>
	Lock Audio	On	<ul style="list-style-type: none"> <li>Audio element track locked with Video/Fill</li> <li>Playback motion control enabled</li> </ul>
		Off	Playback motion control of Audio channel only

Table 19. Build Edit Menu Buttons

Element Area	Button	State	Description
Key/Cut	Key from Video	On	Key comes from movie in Video/Fill
		Off	<ul style="list-style-type: none"> <li>Key comes from movie in Key/Cut</li> <li>If no key is loaded in channel, key is removed and full raster white is used when Build Movie is performed</li> </ul>
	Video Key	On	Key comes from movie in Video/Fill channel (default when Key from Video button is off)
		Off	<ul style="list-style-type: none"> <li>Cut comes from movie in Key/Cut channel</li> <li>If no cut is loaded in channel, cut is removed and full raster white is used when Build Movie is performed</li> </ul>
	Lock Key	On	<ul style="list-style-type: none"> <li>Key/Cut signal locked with Video/Fill channel timeline</li> <li>Playback motion control enabled</li> </ul>
		Off	Playback motion control of Key/Cut channel only

## Copy a Movie with Build Edit

With the Build Edit menu, you can create a duplicate of an existing Image Store movie including audio and key. This allows you to retain the original movie and edit the copy.

1. In the Image Store, Images, Movie Edit menu, select **Build** as the Edit Type.
2. Select an Image Store channel for the Video/Fill element (right).
3. If desired, select the **Change Movie** button to select a different movie.
4. With the **Audio from Video** and **Key from Video** buttons enabled, select the **Build Movie** button and create a name for the Image Store movie using the pop-up keyboard.

## Build a Movie Using a Key and Video from Different Movies

The key of the Key/Cut channel can be paired with the video in the Video/Fill channel to create a new movie using the Build Edit feature.

1. In the Image Store, Images, Movie Edit menu, select **Build** as the Edit Type.
2. Select an Image Store channel for the Video/Fill element (right).
3. If desired, select the **Change Movie** button to select a different movie.
4. Repeat for the Key/Cut movie.
5. Turn off the **Key from Video** button in the Key/Cut element area.

6. Turn off the **Video Key** button (when highlighted) in the Key/Cut element area.

Result: The key from the Key/Cut channel is paired with the video from the Video/Fill channel.

7. Position the movie for each element at the first synchronized frame.
8. Optionally, with the **Lock** button enabled, the composite elements can be previewed using the Image Store movie controls before building the new movie.
9. Select the **Build Movie** button and create a name for the Image Store movie using the pop-up keyboard.

## Build a Movie With Video from One Channel as the Key for Another

The video of the Key/Cut channel can be paired with the video in the Video/Fill channel as its key to create a new movie using the Build Edit feature.

1. In the Image Store, Images, Movie Edit menu, select **Build** as the Edit Type.
2. Select an Image Store channel for the Video/Fill element (right).
3. If desired, select the **Change Movie** button to select a different movie.
4. Repeat for the Key/Cut movie.
5. Turn off the **Key from Video** button in the Key/Cut element area.

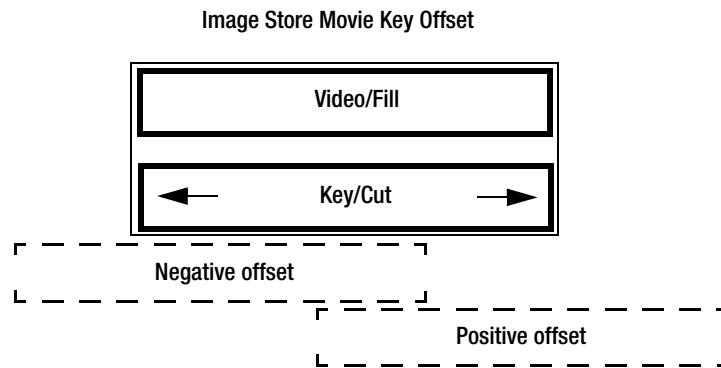
Result: The **Video Key** button is highlighted (and must remain on) meaning the video from the Key/Cut channel is the key for the video in the Video/Fill channel.

6. Position the movie for each element at the first synchronized frame.
7. Optionally, with the **Lock** button enabled, the composite elements can be previewed using the Image Store movie controls before building the new movie.
8. Select the **Build Movie** button and create a name for the Image Store movie using the pop-up keyboard.

## Offset an Image Store Key/Cut Signal with Build Edit

A *negative* offset sets the Key/Cut signal to start before the Video/Fill; if the key is shorter than the video, the last frame will record as a still to the end of the movie. A *Positive* offset sets the key signal to start after the Video/Fill and records a still of the first frame of the key until the key starts.

Figure 245. Image Store Key/Cut Offset



Prerequisite: Image Store audio output groups are configured and enabled (see the K-Frame User Manual for your switcher model for more information).

1. Select **Image Store, Images, Movie Edit** tab in the menu.
2. Select the Key/Cut element movie and assign an Image Store channel by selecting it (right).
3. Enter the offset value in the **Key Offset** data pad (a negative (-) value means the audio is set to begin before the video):
  - a. Turn the Menu Panel soft knob to select a value or,
  - b. Select the **Key Offset** data pad, enter a value in the pop-up keypad, and select **Enter**.

## Build a Movie Using Audio and Video/Key from Different Movies

Audio from an Image Store channel can be paired with the video/key in the Video/Fill channel (or Video/Fill and Key/Cut elements) to create a new movie using the Build Edit feature.

1. In the Image Store, Images, Movie Edit menu, select **Build** as the Edit Type.
2. Select the Audio element movie and assign an Image Store channel by selecting it (right).
3. If desired, select the **Change Movie** button to select a different movie.
4. Repeat as necessary for the Video/Fill and Key/Cut movies.
5. Turn off the **Audio from Video** button in the Audio element area.

Result: The audio from the Audio element channel is paired with the video from the Video/Fill channel.

6. Position the movie for each element at the first synchronized frame.



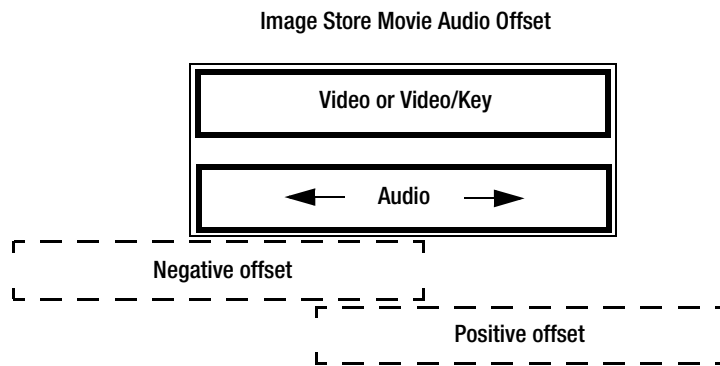
7. Optionally, with the **Lock** button enabled, the composite elements can be previewed using the Image Store movie controls before building the new movie.
8. Select the **Build Movie** button and create a name for the Image Store movie using the pop-up keyboard.

## Offset Image Store Audio with Build Edit

A *negative* offset sets the Audio to start before the Video/Fill; if the audio track is shorter than the video, silence is recorded to the end of the video. A *Positive* offset sets the Audio to start after the Video/Fill and records silence until the start of the audio track.

Frames are added to the video with a still of the first frame if a negative audio offset is used, or a still of the last frame if a positive audio offset is used so when built, the audio and video are the same length.

Figure 246. Image Store Audio Offset



Prerequisite: Image Store audio output groups are configured and enabled (see the K-Frame User Manual for your switcher model for more information).

1. Select **Image Store, Images, Movie Edit** tab in the menu.
2. Select the Audio element movie and assign an Image Store channel by selecting it (right).
3. Select an Image Store movie recorded with audio using the **Change Movie** button; the **Audio Offset** data pad will be displayed on the far right of the menu.
4. Enter the offset value in the Offset data pad (a negative (-) value means the audio is set to begin before the video):
  - a. Turn the Menu Panel soft knob to select a value or,

- b. Select the **Audio Offset** data pad, enter a value in the pop-up keypad, and select **Enter**.

## Creating a Sequenced Movie

A series of suitable related still images can be sequenced into a movie, using the Library menu Sequence Image Operation.

### Prerequisites

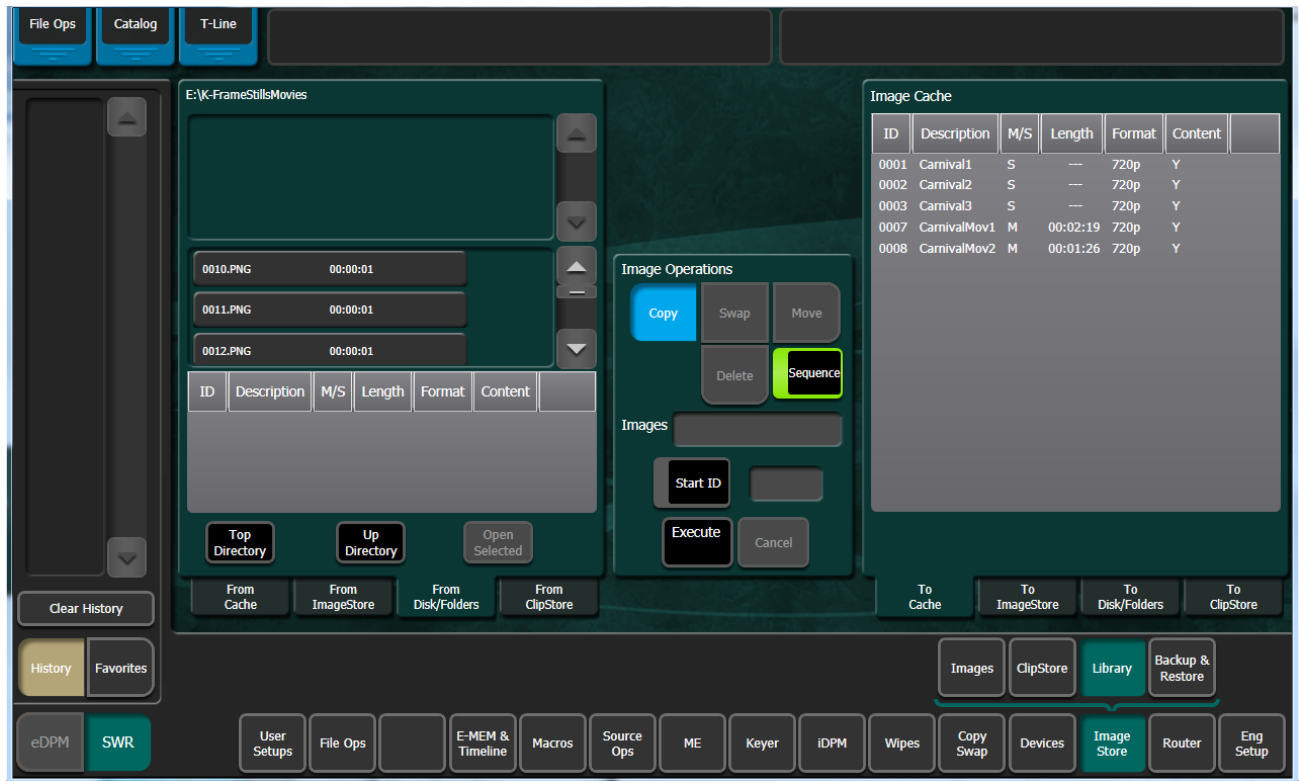
- Images must be PNG or TGA (Targa) format.
- All images must be in an accessible Disk/Folder.
- Each still image file needs to be named as a four digit number (i.e. 0001.png, 1092.tga).
- The sequence of files must be in ascending numerical order, matching their relative position in the movie. The lowest numbered file will be the first movie frame, and the highest numbered file the last. Numbers can be skipped (i.e, 0001, 0002, 0101, 0102, 0103 is valid), but the presentation order is always ascending.

### Create a Still Sequenced Movie

1. Go to the Image Store/Library menu.
2. Select **From Disk/Folders** on the left and navigate to the folder holding the stills.

3. Select **To Cache** on the right. The Sequence Image Operations button will appear. Select **Sequence** so it highlights.

Figure 247. Movie Sequence Selected.



4. Click **Images** in the center and enter the sequence of stills in the pop up menu.

- Click **Start ID** and enter the file name number for the resulting movie. If that file name already exists it will be overwritten.

Figure 248. Movie Sequence Start ID Entered.



- Select **Execute**. A confirmation prompt appears.

Figure 249. Movie Sequence Confirmation Prompt.



- Select Yes. The stills will be converted into a movie, and when done that movie will be available in the Cache for immediate loading and playing from the Image Store.

## Image Store Record Modes

### Normal Record Mode

Record a movie continuously until it is stopped or the Image Store cache is full.

### Timed Record Mode

Record a movie of a set duration.

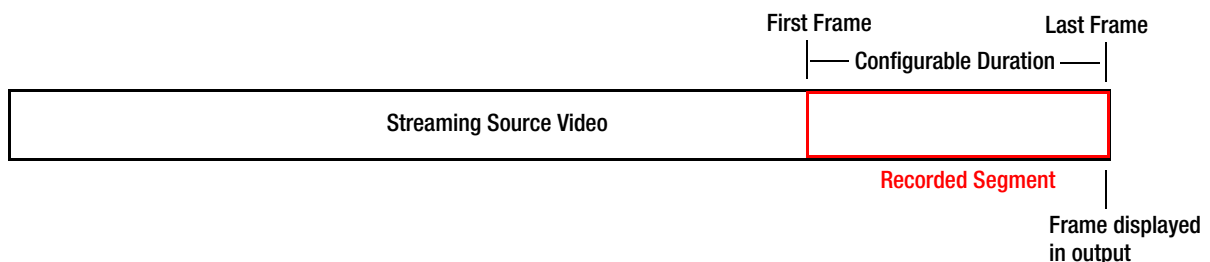
### Loop Record Mode

Record a video segment of a set duration (MM:SS.FF) from the last seconds of a continuously streaming video. In Loop record mode, the *last* frame of the buffer is displayed in output.

When recording in Loop mode, Image Store buffers video from the currently recording frame, back to the first frame of the defined duration; previously recorded frames are discarded as new ones are recorded.

When recording is stopped, the buffered video is available as an Image Store movie.

Figure 250. Image Store Loop Record Mode Definition



### Delay Line Record Mode

Record a video segment of a set duration (MM:SS.FF) from the last seconds of a continuously streaming video with a delay. In Delay Line record mode, the *first* frame of the continuously recording video in buffer is displayed in output, therefore the recorded frames up to the end of the recording are delayed.

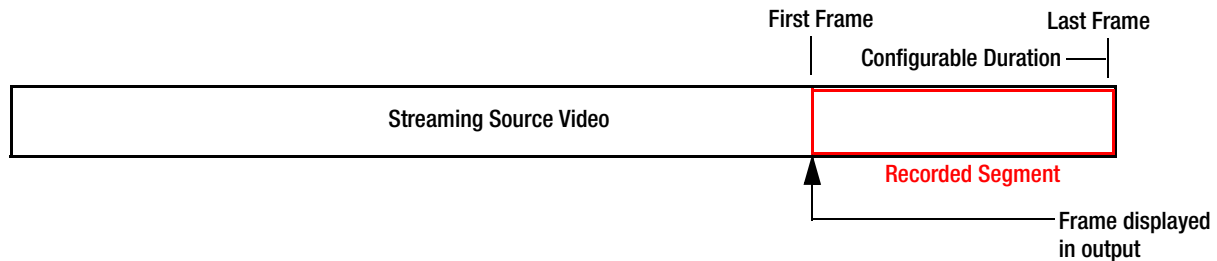
**Note** When recording is first started in Delay Line record mode, after one second the first frame will freeze until the remaining frames of the defined duration have been recorded into the buffer.

When recording in Delay Line mode, Image Store buffers video of a set duration. The buffered video is captured from the currently recording

frame back to the first frame of the defined duration; previously recorded frames are discarded as new ones are recorded.

When recording is stopped, the buffered video is available as an Image Store movie.

Figure 251. Image Store Delay Line Record Mode Definition



## Audio Offset with Delay Line Record Mode

In Delay Line record mode, audio can be offset for up to one second plus/minus to correct for any audio/video syncing issues that may occur in the delayed recording.

**Note** A recorded negative audio offset will result in audio muting for the duration of the offset at the end of the video, upon playback.

## Synchronizing Video and Audio with Delay Line Mode

Often, the amount of processing done on audio and video can cause one to be delayed relative to the other. Most often, the video is delayed more than the audio. The Delay Line Record mode functionality allows you to synchronize the audio and video so that they match in time.

## Using Delay Line Mode for Censorship

There are times when you will want to cut away from an objectionable video feed before it makes it to air. Using Delay Line Record mode, you can cut the show using the delayed output of the Image Store and view the Image Store input as a way to "look ahead".

## Image Store Audio Levels in Loop Mode

When playing a movie with audio in loop mode, the Image Store will play the audio from the first frame of video immediately after the audio from the last frame of the movie. If the audio waveform at the end of the movie does not match the audio waveform at the beginning of the movie, there will be a discontinuity in the waveform at the loop point that can cause disturbances in the audio output. This can be avoided by careful matching of the audio waveform at the beginning and end of the movie; one method of

doing this is to ramp from silence to the desired level at the beginning of the movie and fade from the desired level to silence at the end of the movie.

## Create a Movie from Continuously Streaming Video with Loop Mode

Create a movie of a set duration from the last seconds of a continuously streaming video. In Image Store Loop record mode, the *last* frame of the buffer is displayed in the output.

1. In the Image Store, Images, Movie Record menu, select an Image Store channel (1/2 through 9/10).
2. Select a source for the video stream on the Image Store channel.
3. Set the record mode by selecting the **Record** (mode) data pad and choosing **Loop** in the pop-up Record Mode Button pane.
4. Select the **Record Mode Duration** data pad, enter a duration (MM:SS:FF) in the pop-up keypad, and select **Enter**.
5. Optionally, select the **Record Elements** data pad and select from Video, Key, and Audio as part of the recording, then select **Done**.
6. Select the **Timecode** data pad and enter a duration in the pop-up keypad for the movie length you wish to record, and select **Enter**.
7. Select **Show E-E** (changes to Record) then **Record**.
8. Select the **Record** button again to stop recording.
9. To save the recorded movie, select **Keep** then **Enter** in the pop-up keypad (optionally you can change the image number using the keypad).

Result: An Image Store movie is created and the thumbnail is displayed in the scrolling images list.

## Create a Movie including a Delay with Delay Line Mode

Create a movie of a set duration from the last seconds of a continuously streaming video with a delay. In Delay Line record mode, the *first* frame of the video in buffer is displayed in output, therefore the frames up to the end of the recording are delayed.

1. In the Image Store, Images, Movie Record menu, select an Image Store channel (1/2 through 9/10).
2. Select a source for the video stream on the Image Store channel.
3. Set the record mode by selecting the **Record** (mode) data pad and choosing **Delay Line** in the pop-up Record Mode Button pane.

4. Select the **Record Mode Duration** data pad, enter a duration (MM:SS:FF) in the pop-up keypad, and select **Enter**.
5. Optionally, select the **Record Elements** data pad and select from Video, Key, and Audio as part of the recording, then select **Done**.
6. Select the **Timecode** data pad and enter a duration in the pop-up keypad for the movie length you wish to record, and select **Enter**.
7. Select **Show E-E** (changes to Record) then **Record**.
8. Select the **Record** button again to stop recording.
9. Select **Keep** then **Enter** in the pop-up keypad (optionally you can change the image number using the keypad).

Result: An Image Store movie is created and the thumbnail is displayed in the scrolling images list.

## Image Store Audio Support

The K-FRM-LIC-RAMREC license option is required for all K-Frame systems including the S-series to support Image Store audio. Standard and Compact K-Frame systems also require the K-FRM-IMG Image Store board.

Image Store Audio supported functionality includes:

- Record embedded audio,
- Configure inputs and outputs,
- Offset the audio from the video/key; positive (audio starts after video) and negative offset (audio starts before video),
- Mute audio,
- Loop audio with the video/key playback,
- Backup and recovery,
- File management including copy, save, load, and
- Editing, including Cut, Join, Trim, split, Mark in and Mark out, and Delete Audio.
- Offset Audio from Video



## Video Standards Supporting Image Store Audio

Table 20. Standards Supporting Image Store Audio

Standard	Refresh Rates
720p	50Hz, 59.94Hz, 60Hz
1080i	25Hz, 29.97Hz, 30Hz
1080p-A	50Hz, 59.9Hz, 60Hz
1080sf	23.98Hz, 25Hz, 29.97Hz, 30Hz

### Image Store Supports Audio for SD

Image Store supports audio for Standard Definition formats of 525 and 625 at both 4x3 and 16:9 aspect ratios.

## Image Store Audio

### Image Store Audio Requirements

The K-FRM-LIC-RAMREC license option is required for all K-Frame systems including the S-series to support Image Store audio. Standard and Compact K-Frame systems also require the K-FRM-IMG Image Store board.

### Importing Movies with Audio to Image Store

K-Frame systems with Image Store, including S-series, can import .AVI and .MOV files with audio. The Image Store imports up to four channels of audio per stream (even if the .AVI or MOV file contains more than four channels of audio). The Import Facility will find and select the first two stereo pairs of audio, starting with the first audio stream. The Import Facility then searches in order, audio streams 2, 3, and 4 in the import file, and will only select the first four audio channels it locates for import. Empty audio channels are silent if the import file does not contain at least four audio channels.

**Note** Image Store will not import corrupted Audio channels but will instead replace them with silence.

### Import Formatting for Image Store Audio

Grass Valley uses Version 8.10.2015 of the open source FF MPEG utility with the 7.13.2013 library to convert imported movies and audio to the EIF/EAF format used by Image Store. Information is widely available on the Internet for the .AVI and .MOV file formats supported for import and conversion.

## Image Store Supports Audio for SD

Image Store now supports audio for Standard Definition formats of 525 and 625 at both 4x3 and 16:9 aspect ratios.

## Image Store Audio Levels in Loop Mode

When playing a movie with audio in loop mode, the Image Store will play the audio from the first frame of video immediately after the audio from the last frame of the movie. If the audio waveform at the end of the movie does not match the audio waveform at the beginning of the movie, there will be a discontinuity in the waveform at the loop point that can cause disturbances in the audio output. This can be avoided by careful matching of the audio waveform at the beginning and end of the movie; one method of doing this is to ramp from silence to the desired level at the beginning of the movie and fade from the desired level to silence at the end of the movie.

## Configure Image Store Audio Outputs

Any of the four Image Store Output Audio Groups (four audio channels in two stereo pairs, per group) can be configured as the output group for any licensed Image Store channel. The **All** button allows you to assign the same Output Audio Group to all Image Store channels.

1. Select **User Setups, Suite Prefs, Image Store** in the menu.
2. Select the **Audio Enable** button to turn it on (highlights green).

**Note** The **Audio Enable** button must be on for any Image Store channel to pass audio with video.

3. Select an Image Store channel (IS 1 through IS 10) or the **All** button and select Output Audio Group **1, 2, 3, or 4**.

Result: Four channels of recorded audio from the selected group are streamed with the Image Store video.

## Record Image Store Movies with Audio

Any of the four Image Store Input Audio Groups (four audio channels with two stereo pairs, per group) can be recorded with Image Store movies.

Prerequisite: Image Store audio output groups are configured and enabled, see [Configure Image Store Audio Outputs](#).

1. Select **Image Store, Images**, then the **Movie Record** tab in the menu.
2. Select the **Input Source** button and choose a source with audio.

3. Select the **Audio Group** button and select one of the four groups containing the audio you wish to record with video; select the **Audio Group** button again to close the Audio Group window.
4. Select the **Record Elements** button and enable the **Audio** button; select the **Record Elements** button again to close the Record Elements window.
5. Select the **Show E-E** button: the button changes to **Record**.
6. Select **Record**.
7. To stop the recording, select **Record** again.
8. Select **Keep** if you are satisfied with the recording, then name the file in the pop-up keypad and select **Enter**.

Result: Image Store movies with audio will have an “A” on the thumbnail in the Image Store, Images, Movies menu: V-K-A (Video/Key/Audio).

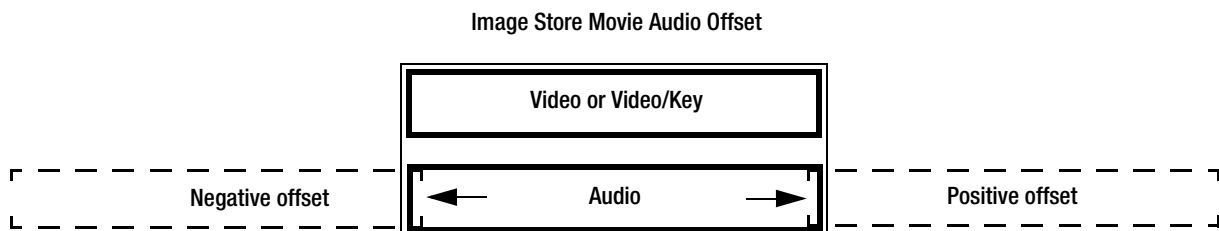
## Set the Image Store Movie Audio Offset

Image Store Movie audio can be offset from the video. The offset is limited by the length of the movie before editing; video and audio are the same length when recorded in Image Store. A *negative* offset means the audio begins before the video and a *positive* offset means the audio starts after the video.

Prerequisite: Image Store audio output groups are configured and enabled; see [Configure Image Store Audio Outputs](#).

1. Select **Image Store, Images, Movies** tab in the menu.
2. Select an Image Store movie recorded with audio; the **Offset** data pad will be displayed on the far right of the menu.

Figure 252. Image Store Audio Offset



3. Enter the offset value in the Offset data pad (a negative (-) value means the audio is set to begin before the video):
  - a. Turn the Menu Panel soft knob to select a value or,
  - b. Select the **Offset** data pad, enter a value in the pop-up keypad, and select **Enter**.

## Delete Audio from an Image Store Movie

Audio can be deleted from an Image Store movie without deleting the video.

In the Image Store, Images, Movie Edit tab in the menu, select the **Cut Edit Type** button.

4. Select the **Change Movie** button and select a movie.
5. Select the **Delete Audio** button.

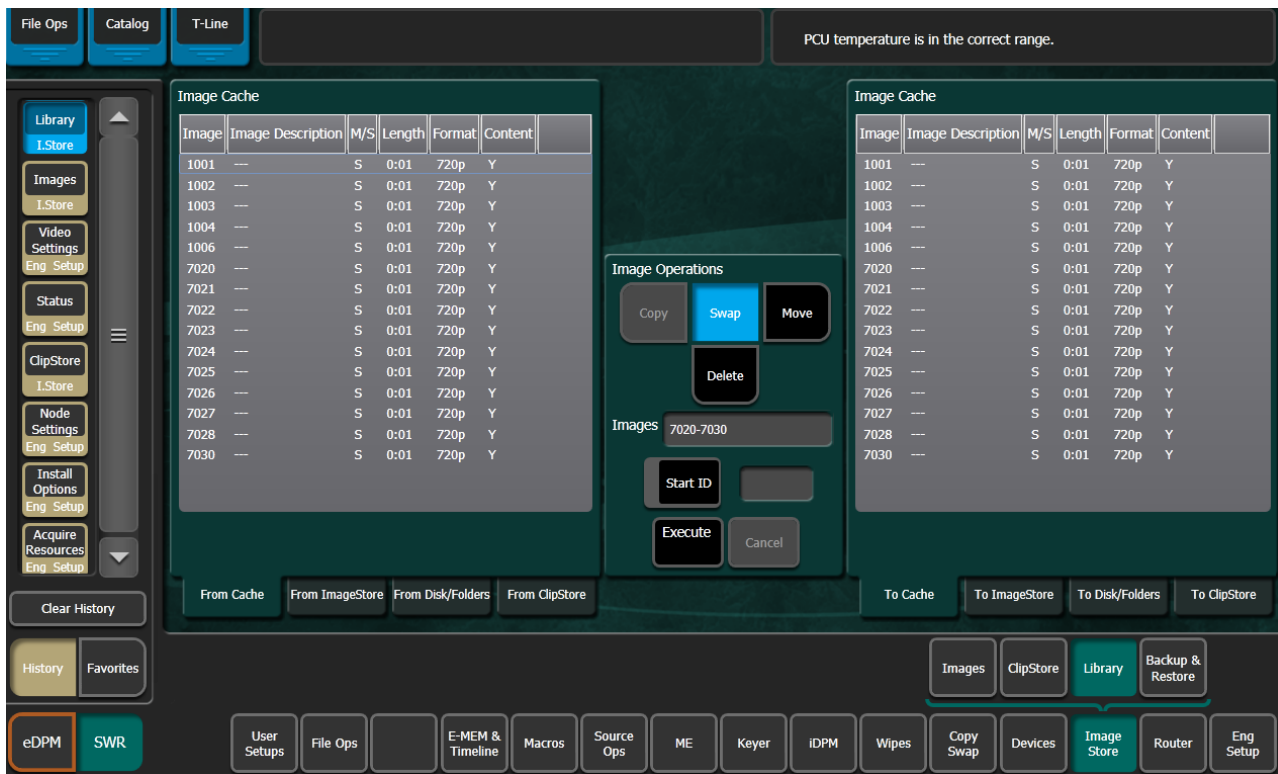
## Image Store Library

The Image Store Library menu allows you to perform file operations. Save image files from Image Store Cache to the internal Image Store Disk or from external Menu disk/folders or Network and USB Memory Stick drives, to Image Store.

The output files are native K-Frame (.eif).

**Copy, Swap, Move, and Delete** buttons are available in the Image Store Library menu. Different Image Operations buttons are available based on the file transfer type.

Figure 253. From/To File Operation



## Swap Images

Swap images between Image Store IDs, for example if you have an effect that recalls ID 0022 but you 'd like a different image to be recalled during certain shows, and you do not want to replace the image, you can swap images between the IDs.

## Move Images

Move images to a new Image Store ID number, for example IDs 0001-0010 could be moved to 0050-0060.

## Conversion Requirements for Transferring External Image Files

Importing files into K-Frame either from a folder on the network or USB Memory Stick, requires that certain conditions be met for proper conversion.

**CAUTION** When importing files into Image Store cache, existing files with the same ID can be overwritten so check if the ID already exists in the cache.

For the following file types, the file name must be a number between 0001 and 8999:.kif (Kayenne/Karrera/GV Korona),

### Image Store Still File Formats Supported

- GIF
- JPEG
- TIFF
- BMP
- PNG
- TGA

### Image Store Movie File Formats Supported

- AVI
- MOV
- Mp4
- KayakHD (xtendd)
- Kalypso (gvi, gva)
- PNG sequences (load a series of still images and create a single ID movie from them)
- TGA (Targa) sequences (create as above)

## Importing Kalypso File Types

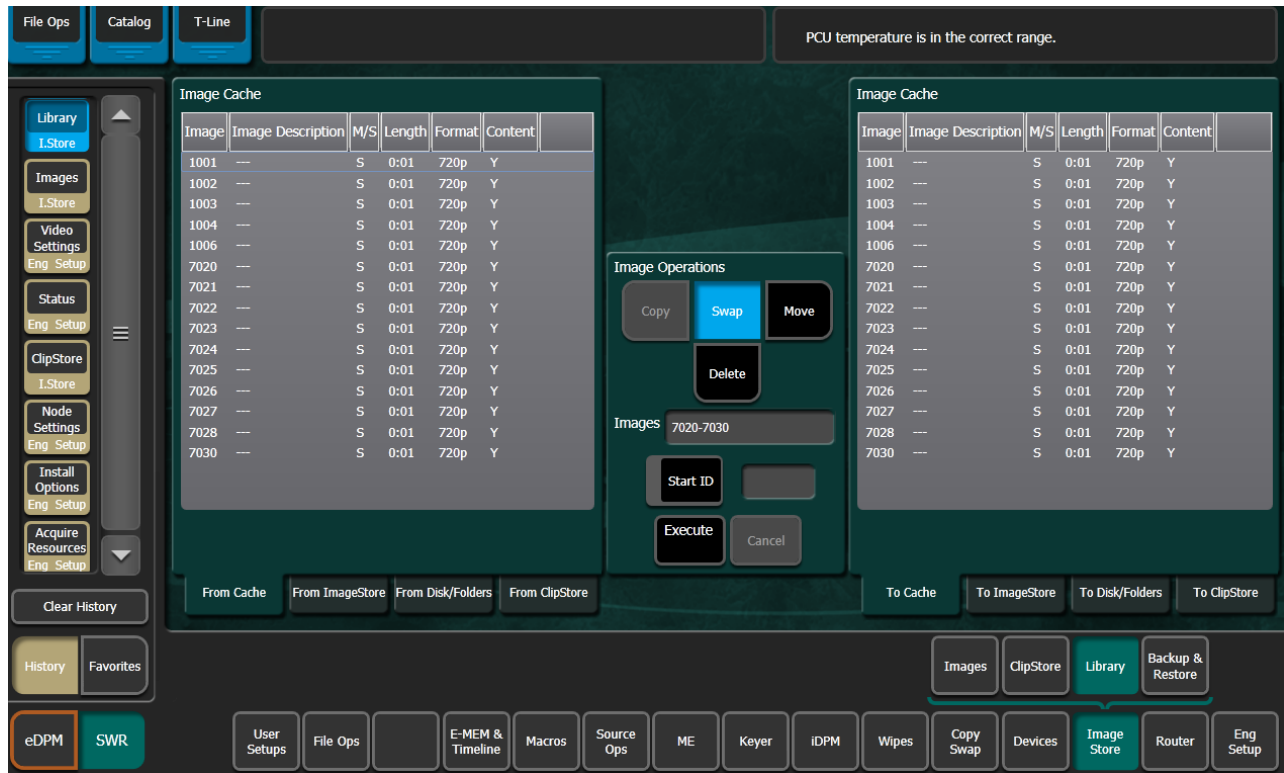
- The still files must be named using the default Kalypso numbering format (I000000.gvi/.gva, but not greater than I008999.gvi/.gva). If a Kalypso still has been renamed, change it back to this naming format using the Kalypso system, or by renaming both the .gva and .gvi files to matching file names directly in the computer directory.
- Both of the Kalypso still .gvi and .gva file components must be present for each image.
- Thumbnail.bmp images are not supported (the K-Frame system generates its own thumbnails). Kalypso image .bmp files can be ignored, and can safely be deleted from the directory to keep them from appearing on the Image Store Library menu screen.

**Note** Kalypso NTSC Still Store images contain 486 lines, while the K-Frame Image Store supports 487 lines. A K-Frame system will display one black line at the bottom of the image raster of converted Kalypso NTSC stills.

## Transfer Files

Transfer files from one location to another in the Image Store, Library menu.

Figure 254. From Cache/To Cache, Move Operation



1. Select a tab to execute a file operation “from” (left side of menu).
  2. Select a tab to execute a file operation “to” (right side of menu).
  3. Select an active Image Operations button; **Copy**, **Swap**, **Move** (or **Delete**) from the center of the menu.
  4. Select the **Images** range data pad in the center of the menu to display the pop-up keypad.
  5. Enter an Image ID number or a range of images:
    - a. Enter a start ID.
    - b. Select the **Thru-** button.
    - c. Enter an ending range.
- Note** Alternatively, use the **Next**, button in the pop-up keypad to enter non-sequential Image IDs.
6. Select **Enter**.

7. Optionally, a starting ID can be defined for the image files in the target (To) directory when the operation is executed:
  - a. Turn on the **Start ID** button.
  - b. Select the **Start ID** data pad.
  - c. Enter an image ID in the pop-up keypad, and select **Enter**.
8. Select **Execute**.

## Backup & Restore

The Image Store Backup & Restore menu tab provides control of manual and scheduled backups to local disk and restore from local disk. To access the Backup & Restore menu, select Image Store, Backup & Restore.

Figure 255. Backup & Restore Menu



### Manual Backup

To manually backup the Image Store Cache locally:

1. Select the **Local Backup Path** data pad.



2. Select to select a target folder by navigating to an existing folder in the navigation pane (left), or by creating a new target folder:
  - a. Navigate to the desired directory in the navigation pane.
  - b. Select the **Create Folder** button.
  - c. Enter a folder name in the pop-up keyboard.
- Note**      Verify the path in the Local Backup Path data button; the target folder must be open to see the complete path.
- d. Select the **Accept** button.
3. Select the **Backup Cache Start** toggle button to begin the backup operation (border highlights green).

### **Scheduled Backup**

Use the scheduling controls in the Backup & Restore menu to schedule backups for one, several, or all days, including the time of day. To access the Backup & Restore menu scheduling controls, select Image Store, Backup & Restore.

**Note**      The backup schedule is based on the Current Date & Time of the K-Frame system.

Figure 256. Backup &amp; Restore menu, Backup Scheduling



1. In the Scheduled Backup Setting pane, select the day(s) you wish to schedule the backup (also **All Days** button can be selected).
2. Select the Scheduled Backup Time data pad.
3. Either by selecting the **Hours/Minutes** data pads and entering values in the pop-up keypads or using the soft knobs on the Menu Panel, enter a time of day.
4. The default is AM unless you select the **PM** toggle button to turn it on (highlights green, shows am/pm in the **Scheduled Backup Time** data pad at the end of the time).
5. Select the **Scheduled Backup Path** data pad and select to select a target folder by navigating to an existing folder in the Navigation pane (left), or by creating a new target folder:
  - a. Navigate to the desired directory in the navigation pane.
  - b. Select the **Create Folder** button.
  - c. Enter a folder name in the pop-up keyboard.
  - d. Select the **Accept** button.
6. Select to toggle on the **Enable Schedule** button (highlights green).

## Restore

To restore the Image Store Cache from the local drive:

**CAUTION** A restore clears and replaces all files in cache.

1. Select the **Local Backup Path** data pad.
2. Select to select a source folder by navigating to an existing folder in the navigation pane (left).
3. Select the **Restore Cache Start** toggle button to begin the restore operation (border highlights green).
  - a. If restoring from a scheduled backup, verify that the Local Backup Path shows the correct path.

## Configure a Networked PC for Image Store File Sharing Windows

For Windows 7 and Windows 10, you can transfer properly labeled image files of a supported format from a networked PC to the Image Store Cache. However, the PC network security must be configured for access.

**Note** Alternatively, you can transfer image files to cache using a USB Memory Stick.

**CAUTION** If the network is part of a domain or you are unable to access shared folders across a network, contact your local Systems Administrator.

## Create an Images Directory and Configure it for Sharing

1. Create a folder in C:\ and name it Images.
2. Right-click on the Images folder and choose **Share with**, and select **Specific people...** from the pull-down menu.
3. Click on **Everyone** and verify that the Owner pull-down is set to Read/Write.
4. Click on the **Share** button.

## Set Network and Sharing Settings

1. Click on the Windows **Start** menu and select **Control Panel**.
2. Click **Network and Sharing Center**.
3. Click **Choose homegroup and sharing options**.
4. Click **Change advanced sharing settings...**
5. Click the radio button next to **Turn off network discovery**.

6. Click the radio button next to **Turn off password protected sharing**.

Click **Save Changes**.

## ClipStore

With the seamless integration of the K2 Summit/Solo technology into the Image Store menus, you can record and play clips with audio. The Summit provides four Video/Key channels while the Solo provides two.

**Note** See the *Installation & Service Manual* for your switcher model for engineering configuration information.

- The ClipStore is supplied to record and playback with AVC-Intra 100 or DVCPRO HD compression format. Clips imported in DVCPRO HD, DVCPRO 25/50, DV, and MPEG-2 will play natively.
- The ClipStore supports embedded audio only. The AES inputs and outputs are not used.

The ClipStore is completely configured and controlled from the GV Switcher menu and control panel. There is no need to use the built-in AppCenter Elite software. In fact, if changes are made to the ClipStore using AppCenter, they will be overwritten by the switcher the next time it sends a configuration to the ClipStore.

**Note** To change the Summit IP address, see the *Installation & Service Manual* for your switcher model.

This highly integrated solution provides several powerful features, including:

- Fast access to clips and folders,
- Large storage capacity,
- Non-volatile memory—no loss of images due to power failure,
- Clip control from the GV Switcher Menu Panel and clip stack control from the GV Switcher Control Panel,
- ClipStore device controls (including macros and cues) are E-MEMable, and
- Make sub-clips from clips and build composite clips with audio.

## Summit/Solo Software Version

The latest version of the AppCenter Elite software is available on the GV Switcher Software Download site.

**CAUTION** Do not use AppCenter Elite software for ClipStore from the Summit/Solo server web site as it may not be compatible.

For more information about installing and updating AppCenter Elite software, see the Summit/Solo manuals.

## ClipStore as an External Device

**Note** ClipStores 1-4 as devices can only be enabled in the Eng Setup, Devices, Node Settings menu in the Frame Suite Nodes & ID menu tab.

ClipStores 1-4 will appear as the first four external devices in the Device Enables scrolling list, in the Devices, Enables menu (and other Devices menus). External Device 1 will now be in the 5th position in the Device Enables list. Enable/Disable buttons in the Devices menu do not function for ClipStore.

**Note** For a two-channel K2 Solo, only ClipStores 1 and 2 are reserved and External Device 1 will be in the 3rd position.

ClipStore can be used in a gang like any other external device. For more information about ganging devices, see *Router Interface Operation* on page 229.

Figure 257. ClipStore in Device Menu



## Control Panel Operation

As with other external devices, device control is possible through the Multi-Function and the System Bar. Engineering names (CS-1, CS-2, etc.) appear in the control panel displays and all motion controls provided from the server are available.

ClipStore motion controls can be learned as part of an E-MEM.

## ClipStore Menu Operations

### Clip Replay

The selected ClipStore output channel will be outlined in blue or red if on-air.

**Note** ClipStore channel represents a permanent Video/Key pair.

Clip replay is performed in the Image Store, ClipStore, Clips menu. A *Record Time Remaining* indicator in HH:MM:SS format is provided in ClipStore as a reminder to maintain enough storage space for recording or adding clips. The indicator displays the available storage remaining in the ClipStore Summit/Solo server.

Figure 258. Clips Menu



## Folder Selection

Select the **Current Folder** data pad located just above the scrolling clip list to change the current folder. The Folders/Clips menu is displayed.

Select the folder you wish to be the current folder and either select a clip on the right or press the **Cancel** button (bottom right of menu, to close and return to the Clips menu (if the **Cancel** button is selected, the folder will still be changed but it will not result in a clip load).

Figure 259. Folders/Clips Menu Selection



## Menu Clip Selection

Clips can be selected in three ways in the menu:

- Selecting a clip in the scrolling clip list,
- Selecting the **Scroll Image List** data pad, and entering the Image ID for the clip (ascending numeric value in the current folder).
- Selecting the Current Folders data pad and then selecting a clip in the Current Clip scrolling list.

With the **Auto Load** button selected (highlighted green), the clip will be loaded into the selected ClipStore channel.

## Load a ClipStore Clip

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

**Note** Auto Load must be on to load a clip.

2. Select a ClipStore channel.
3. Select a clip in the scrolling clip list.

The clip loads to the selected channel.

The Current Thumbnail Viewer displays the currently loaded clip in the selected channel.

Figure 260. Current Thumbnail Viewer



**Note** When a ClipStore channel is selected and a clip is loaded, that clip will be highlighted in *blue* in the scrolling clip list and the list will automatically scroll to display the selected clip.

### Clip Search

You can search for clips using the **Search Clip** button. Selecting the button displays the Search Clip keyboard. Type letters and/or numbers (minimum 1 character) and select **Enter** to execute the search. The found clips will be listed in the scrolling clip list.



If Auto Load is on, the first clip in the resulting list will be loaded into the selected channel. If Auto Load is off, or the search finds no clips, then no clips will be loaded.

## Playback

The Playback pane in the Image Store, Clips menu provides playback and playback parameter controls for clips.

You can play a clip by loading it into a ClipStore channel and selecting the Play button, or by turning on the **Auto Start** button and taking the channel on-air. For example, if you take the CS-1 channel on-air, either as a background or keyer, the clip loaded into the CS-1 channel will play automatically when the **Auto Start** button is on.

You can loop a clip by selecting the **Loop** button (highlights green) or mute the audio of each channel individually with the **Audio Mute** button.

Other controls include:

- **Timecode** data pad—Select the **Timecode** data pad to enter a timecode.
- **Mark In/Mark Out** buttons and data pads—Select the **Mark In/Mark Out** buttons to set the mark-in/mark-out to the current clip position, select the data pads to enter a Mark In or Mark Out point on a numeric keypad.
- **Cue to In** button data pad—Select the **Cue to In** data pad and enter the value.
- **Var Play Speed** button and data pad—**Var Play Speed** button on, enables variable speed play. Select the data pad to enter the playback speed value.

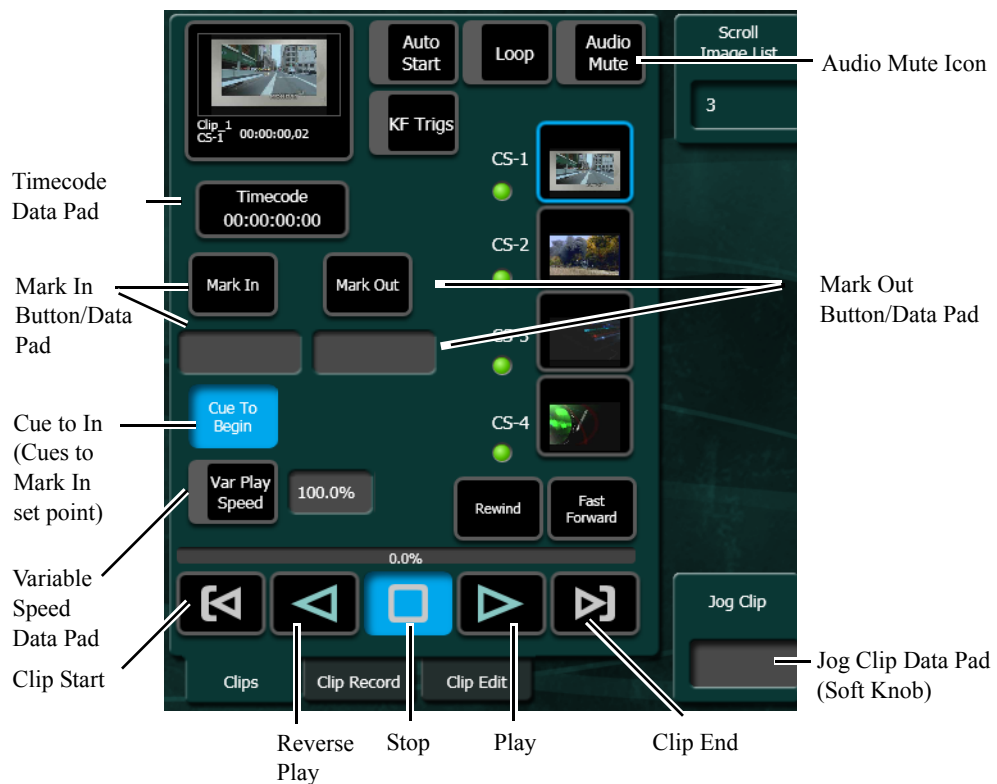
Device control buttons:

- **Rewind**
- **Fast Forward**
- **Start of Clip**
- **Reverse Play**
- **Stop**
- **Play**
- **End of Clip**

(The **KF Trigs** button is described in [E-MEM Keyframe Triggers for ClipStore.](#))

**Note** All the functions listed above can be controlled by macros.

Figure 261. Playback Controls



## Clip Cueing and Playback Controls

Once a movie is loaded and selected for control, the Cue to Start, Play Reverse, Stop, Play Forward, and Cue to End buttons are available. Additional menu playback controls include:

**Loop**—Sets the movie to run continuously, jumping from its last frame to the first.

**Bounce**—Sets the movie to run to its end, reverse playback to its beginning, then play forward, and repeat (only available when Loop is active).

**Auto Start**—Sets the movie to play when taken On-Air.

**KF Trigs**— Enables EMEM KF triggering (see *E-MEM Keyframe Triggers for Image Store Movies* on page 421).

**Timecode**—Opens a keypad allowing entry of a time code value to cue the movie to. This control is also available on the Movie Record and Movie Edit menus.

**Mark In**—Sets the current cued location of the movie as its playback start point.

**Mark Out**— Sets the current location of the movie as its playback end point.

**Cue to Begin**— Cues to the Mark In point, if set.

**Var Play Speed**— When On, plays the clip at the percentage speed displayed on the right. Clicking on the percentage allows entry of the desired speed. Supported range is from 0.1% to 5000%.

**Jog Movie**—The knob on the Menu Panel can be used to jog the movie forwards and backwards. This control is also available on the Movie Record and Movie Edit menus.

## E-MEM Keyframe Triggers for ClipStore

ClipStore replay can be controlled with E-MEMs. Keyframe triggers that are E-MEMable are:

- Load (Clip),
- Loop Enable/Disable,
- Cue (to in).

All Motion Controls:

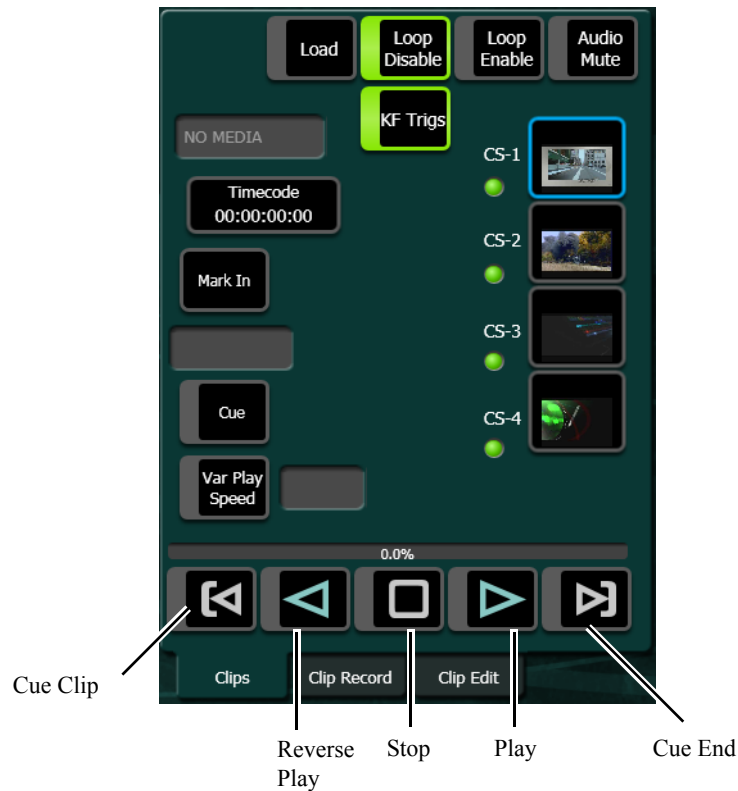
- Clip Start,
- Reverse Play,
- Stop,
- Play,
- Clip End, and
- Variable Speed Play (**Var Play Speed** button).

**Note** The Master E-MEM has CS-1, CS-2, CS-3, and CS-4 assigned by default to MISC 1-4.

## Create a ClipStore E-MEM Keyframe Trigger

1. In the Devices menu, select the **Clear All Events** button, ensuring unwanted keyframe triggers are not included in your E-MEM.
2. In the Image Store, ClipStore, Clips tab in the menu, select a ClipStore channel then select a clip.
3. Select the **KF Trigs** button. The motion control buttons become jeweled toggle buttons, and **Loop Enable**, **Loop Disable** and **Cue** buttons are displayed.

Figure 262. Image Store, ClipStore, Clips Menu Tab with KF Triggering On

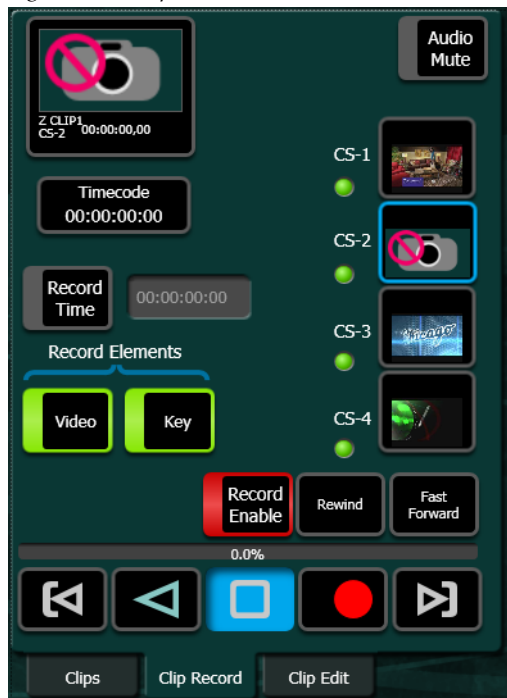


4. Select the controls that you want as part of the keyframe trigger (see [Clip Cueing and Playback Controls on page 464](#)).
5. Learn the keyframe trigger to an E-MEM on the Control Panel ([Learning E-MEM Registers from the Control Panel on page 154](#)) or from the E-MEM & Timeline, Recall Run menu.

## Recording Clips

Clips are recorded with embedded audio in the Image Store, ClipStore, Clip Record menu.

Figure 263. Clip Record



When the **Record Enable** button is selected, ClipStore ejects the clip from the selected channel, places the ClipStore channels in E/E mode, and displays a pop-up keyboard. Type in the name of the new clip. Once the name is typed, **Enter** is pressed, and the keyboard closes, the **Record Enable** button is highlighted red and the menu has changed to display recording controls and parameters in readiness for recording. The **Play** device control button is replaced by a **Record** button.

Clips can be overwritten by entering an existing clip name into the pop-up keyboard or by selecting the **Cancel** button in the pop-up keyboard and selecting a clip (or folder then clip) in the Folders/Clips menu. Once either operation is completed, you are returned to the Record mode menu and the **Record** button is present and highlighted in red.

**Note** Thumbnails do not display in the Current Thumbnail Viewer in Record Enable mode except when overwriting an existing clip.

The **Video** and **Key** Record Elements buttons allow you to route the Aux Bus selections:

- Video Only—Video + Full Raster White,
- Key Only—Key + Key, and
- Video/Key—Video + Key.
- Set a Record Time using the Record Time button.

**Note** If an Aux Bus is not configured for the ClipStore output, the **Video** and **Key** buttons will always be on.

These elements are also very useful for editing when you want to *build* or *join* clips (see *Editing Clips on page 468*). To set a record time, select the **Record Time** button and a pop-up keypad will appear to enter the desired value. Select **Enter** when finished.

## Record a ClipStore Clip

1. Select to select the ClipStore channel for recording.
2. Select the **Record** mode button.
3. Define the Record Elements you wish to apply to the clip to be recorded.
4. Select the **Record Enable** button.
5. Enter a new clip name or an existing clip name if you wish to overwrite that clip.
6. Select **Enter**.
7. Select the **Record** device control button.
8. Select the **Stop** device control button when the desired length of the clip is reached.

## Editing Clips

Clips can be edited in the Image Store, ClipStore, Clip Edit menu. There are three types of clip editing provided:

- Cut Edit,
- Build Edit, and
- Join Edit.

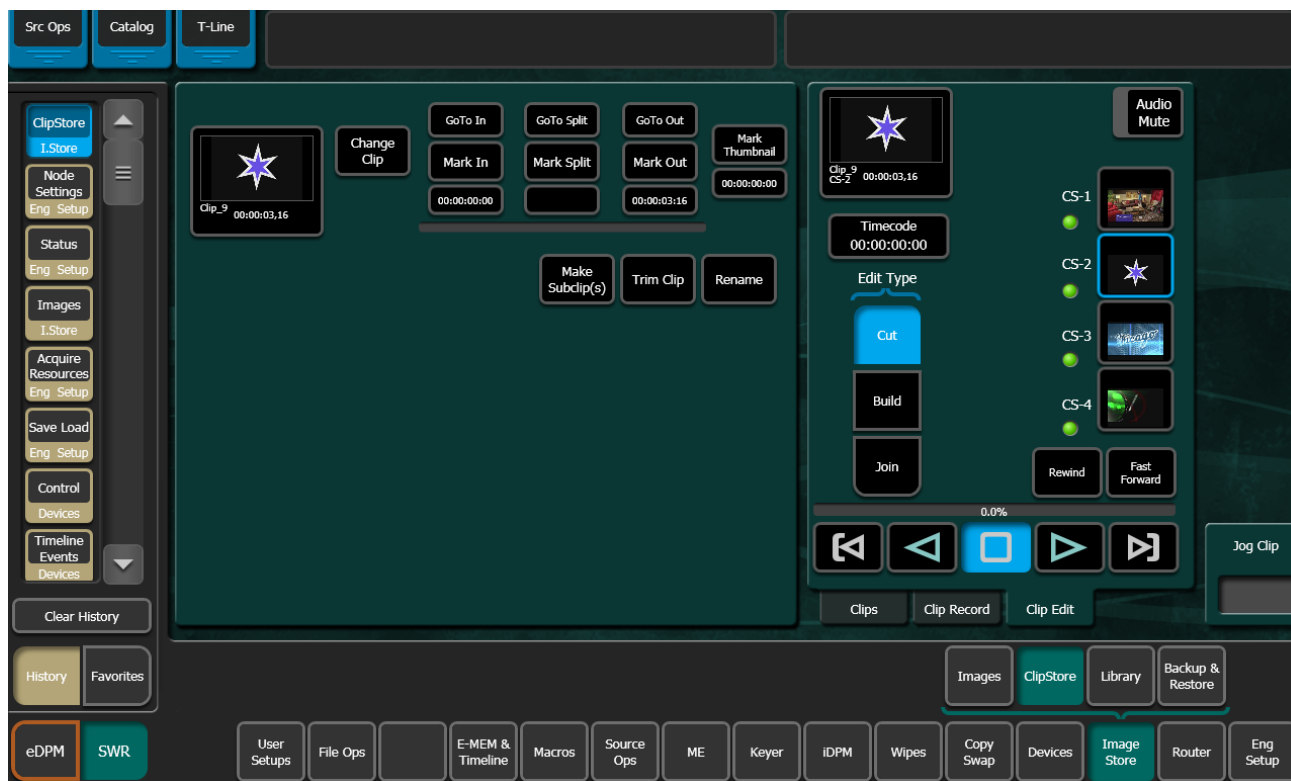
### Cut Edit

Cut Editing allows you to edit a clip in the following ways:

- Rename Clips (use the **Rename** button).
- Mark a thumbnail, see *Cut Edit on page 468*),
- Trim and remove from the head of the clip to the Mark In point (*ClipStore Trim and Remove on page 470*),
- Trim and remove from Mark Out point to the end of the clip (*ClipStore Trim and Remove on page 470*),
- Make sub-clips (including splitting one clip into two) from the current clip (*Make Sub-clips from the Current ClipStore Clip on page 471*), and
- Cut Edit while recording a clip (*Cut Editing while Recording on page 472*).

For Cut Edit, select **Image Store**, **ClipStore**, **Clip Edit** and select the **Cut** button in the Edit Type mode group.

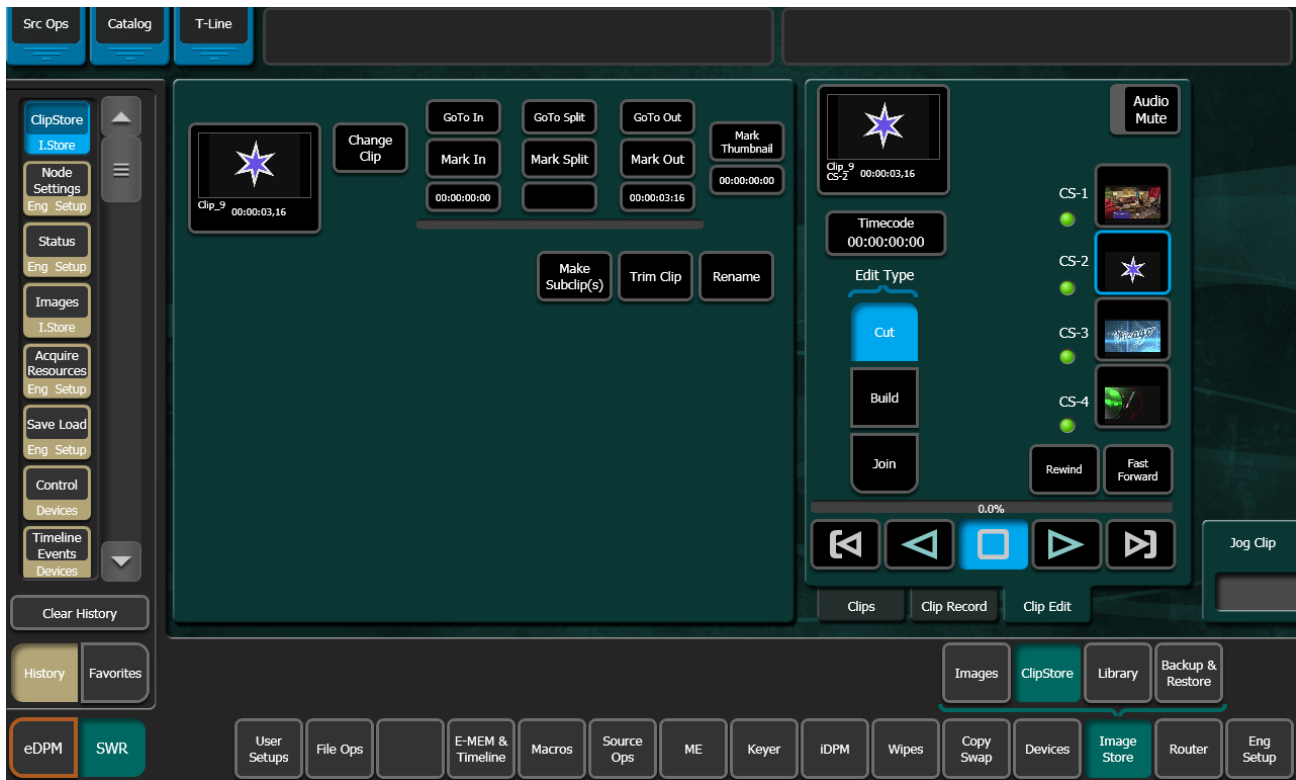
Figure 264. Cut Edit Mode



## Mark a ClipStore thumbnail

The Cut Edit menu displays the currently loaded clip in the thumbnail view. If you wish to change the clip, select the **Change Clip** button before editing.

Figure 265. Mark Thumbnail Point



1. Select the **Change Clip** button to select a clip to edit (unless previously loaded).
2. Either jog, shuttle, or play to the desired frame and select the **Mark Thumbnail** button or,
3. Select the **Mark Thumbnail** data pad and enter the mark point in the pop-up Mark Thumbnail Point keypad, and select **Enter**.
4. Select the **Mark Thumbnail** button.

The new thumbnail replaces the old in all views.

## ClipStore Trim and Remove

Material can be removed from the head of a clip to a mark-in point and from a mark-out point to the end of a clip. Both operations can be performed on a single clip.



Trim Clip operations include:

- Setting only the mark-in point, and selecting the **Trim Clip** button—the clip will be trimmed from the beginning of the clip to the mark-in point.
- Setting only the mark-out point, and selecting the **Trim Clip** button—the clip will be trimmed from the mark-out point to the end of the clip.
- Setting both a mark-in and mark-out point, and selecting the **Trim Clip** button—the clip will be trimmed on both ends (beginning of clip to mark-in and mark-out to end of clip).

To enter the mark-in/mark out points, either jog, shuttle, or play to the desired frame and select the **Mark In/Out** button or select the **Mark In/Out** data pad and enter the mark-in/out point in the pop-up keypad, and select **Enter**.

**Note** Trim Clip to mark-in, trims up to the mark point in the clip so the marked frame is the first frame of the new sub-clip.

**CAUTION** Trim Clip from the mark-out point, trims (removes) the marked frame and trims to the end of the clip so the frame at the mark point will not be part of the new sub-clip.

## Make Sub-clips from the Current ClipStore Clip

A sub-clip can be created from the current clip with mark-in and mark-out values (or without and the clip length will be the same as the original) or split into two sub-clips.

1. To enter the mark-in/mark out points, either jog, shuttle, or play to the desired frame and select the **Mark In/Out** button or select the **Mark In/Out** data pad and enter the mark-in/out point in the pop-up keypad, and select **Enter**.
2. Select the **Make Subclip(s)** button.
3. Enter a clip name or accept the provided name (appends \_a) and select **Enter**.

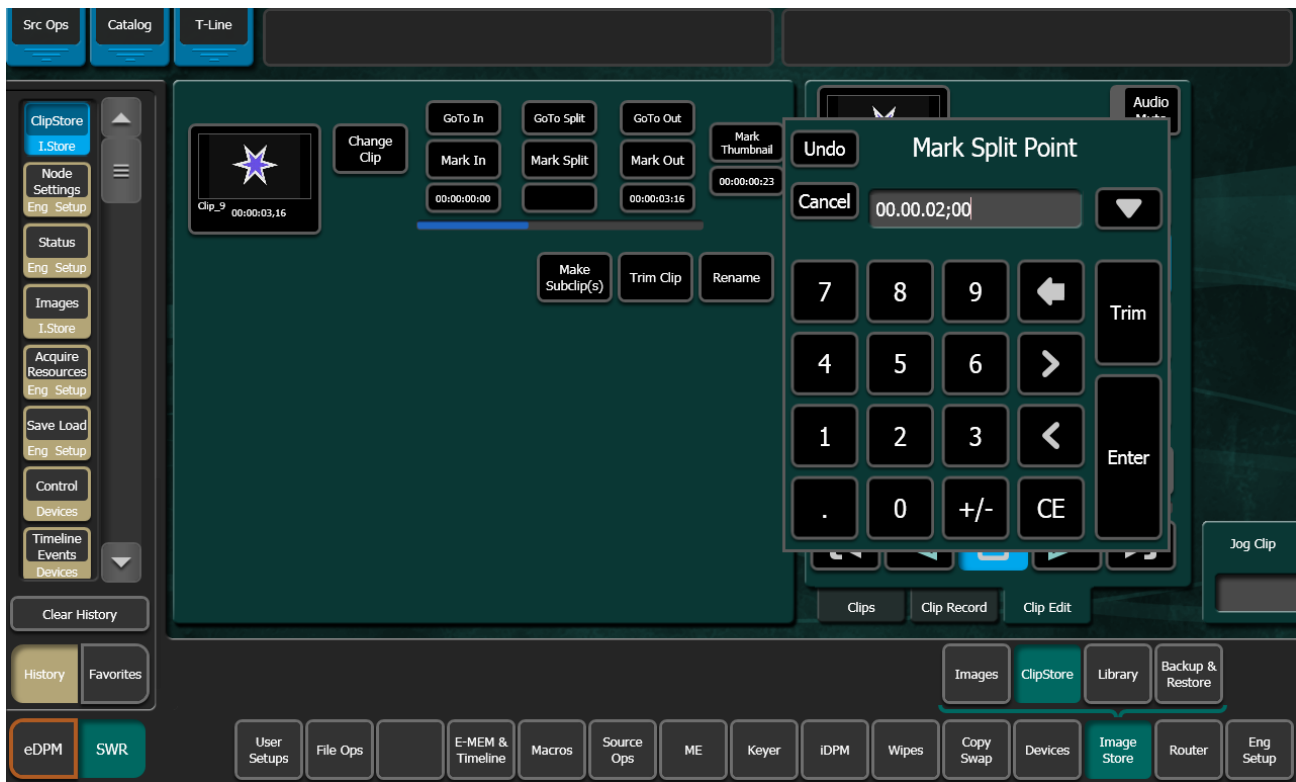
A new sub-clip with the trimmed length is created.

When making a split clip, the first clip is created from the current clip head to the split mark point, the second from the split point to the clip end.

To split one clip into two sub-clips:

1. Either jog, shuttle, or play to the point in the clip where you want to split the clip and select the **Mark Split** button (Figure 266), or
2. Select the **Mark Split** data pad (below **Mark Split** button) and enter the value for the split point in the Mark Split Point pop-up keypad, and select **Enter** (Figure 266).

Figure 266. Mark Split (One Clip Split into Two)



3. Select the **Make Subclip(s)** button.

The Name First sub-clip pop-up keyboard is displayed.

4. Enter a name or accept the default name for the *first* sub-clip in the Name First sub-clip pop-up keyboard (for the default, *\_a* is appended to the clip name).
5. Select **Enter**.
6. Enter a name or accept the default name for the *second* sub-clip in the Name Second sub-clip pop-up keyboard (for the default, *\_b* is appended to the clip name).
7. Select **Enter**.

The two new sub-clips are created.

## Cut Editing while Recording

A key advantage to using a ClipStore server is you can record and replay simultaneously. This allows you to create sub-clips from the currently recording clip.

The following rules apply to performing a Cut Edit operation during recording:

- Making sub-clips is the only available operation.
- Only the Cut Edit type will be available.
- Changing the clip will not be possible from the menu during this operation.

Once recording has begun, you can select the **Edit** mode button, set mark-in/mark-out points, and create a sub-clip (see *Make Sub-clips from the Current ClipStore Clip* [on page 471](#)).

A currently recording clip can also be loaded into another channel of ClipStore. From the other channel, sub-clips can be made from any part of the recording without interrupting the record.

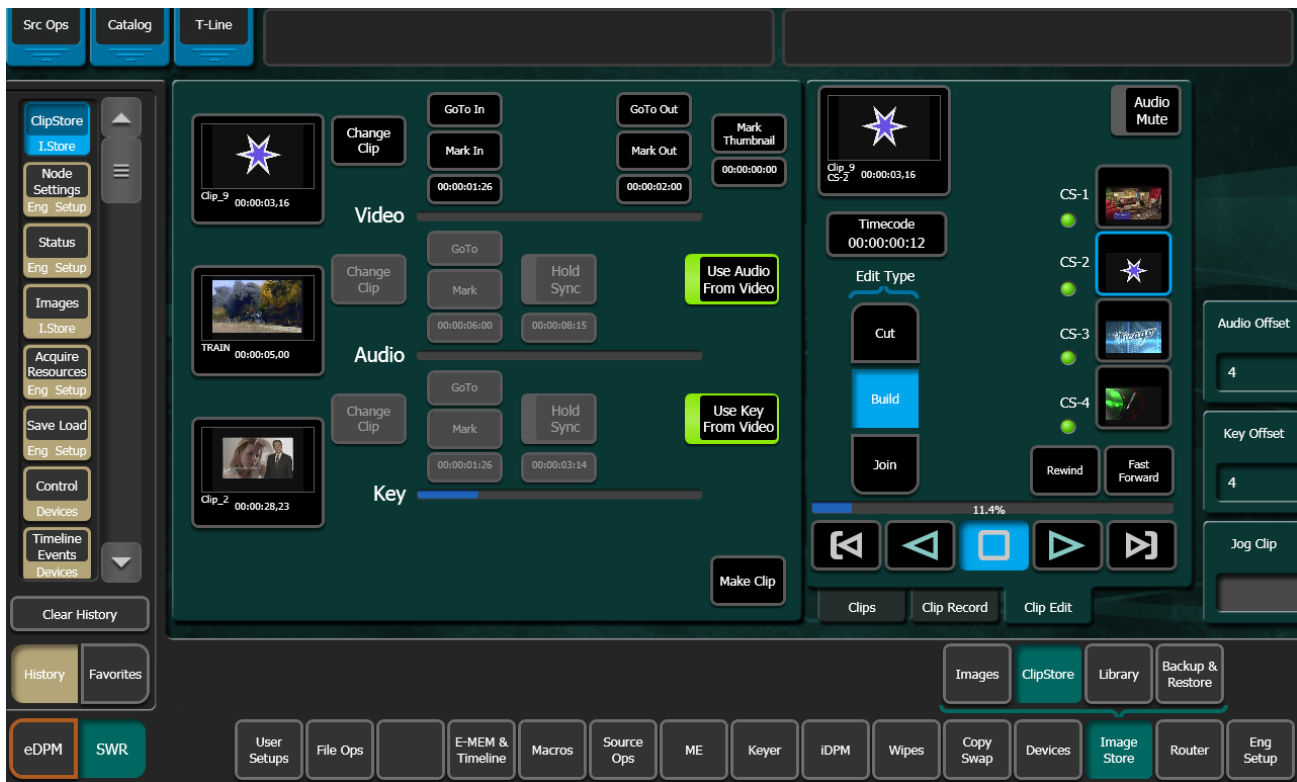
## Build Editing

Build Editing allows you to take elements from one long clip or from multiple clips and make a sub-clip, including:

- Video and Audio (audio from a clip or .WAV file),
- Video (with embedded audio) and Key, or
- Video, Audio (audio from a clip or .WAV file), and Key.

**CAUTION** Audio files must be 48kHz/.WAV file format, other file types will not be recognized by ClipStore.

Figure 267. Build Edit Mode



The clip created with the Make Clip operation will be a sub-clip that has its head to tail length defined by the mark-in and mark-out points of the Video track (if there are no marks, the sub-clip created will be the same length as the original). Both Audio and Key tracks of the new clip will only exist between the Video track's marks.

Video is the controlling track in the scratch clip, i.e. the Audio, Key, and motion control is slave to the Video track when selected.

**Audio Offset**, **Key Offset**, and **Jog** soft knobs are provided for editing (1/4 turn equals 1 frame).

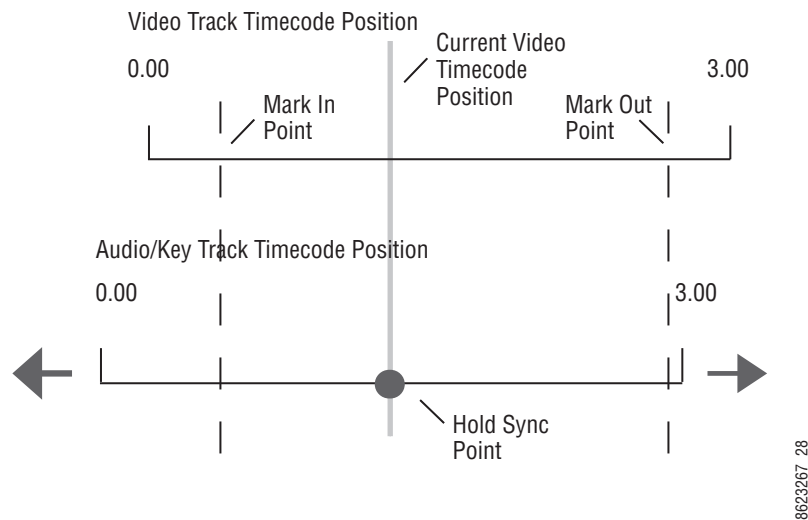
**Hold Sync**—Hold Sync sets the position of the Audio/Key track in relation to the Video track's current timecode position. The Audio/Key track's timecode can be offset in relation to the video track timecode by changing the Hold Sync Mark Point (using the **Hold Sync** data pad pop-up keypad or the **Audio/Key Offset** soft knobs). In this way, the Audio/Key tracks can be synchronized with the Video track. Different Hold Sync Points can be set for the Audio and Key tracks in relation to the Video.

**Note** If a key track from another clip is used, and starts past the mark-in point of the video track, full raster white will be used for the key until the key timecode begins when the composite clip is played. If an audio element from another clip is used, and starts past the mark-in point of the video track, there will be no audio until the start of the audio timecode when the composite clip is played.

Once the **Hold Sync** button is selected for either the Audio or Key, the Hold Sync point will be set and their positions in relation to the current video track timecode position become part of the scratch clip, and subsequently the new sub-clip when the **Make Clip** button is selected.

**Note** You can still change any of the current timecode values, including the video timecode by changing the mark-in/mark-out points and the Audio/Key timecode using the **Hold Sync** data pad or **Audio/Key Offset** soft knobs, before the **Make Clip** button is selected. Each change updates the scratch clip.

Figure 268. Hold Sync Point



The following provides examples and procedures of how to combine elements of Video, Audio, and Key. These composited elements become part of the new sub-clip.

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

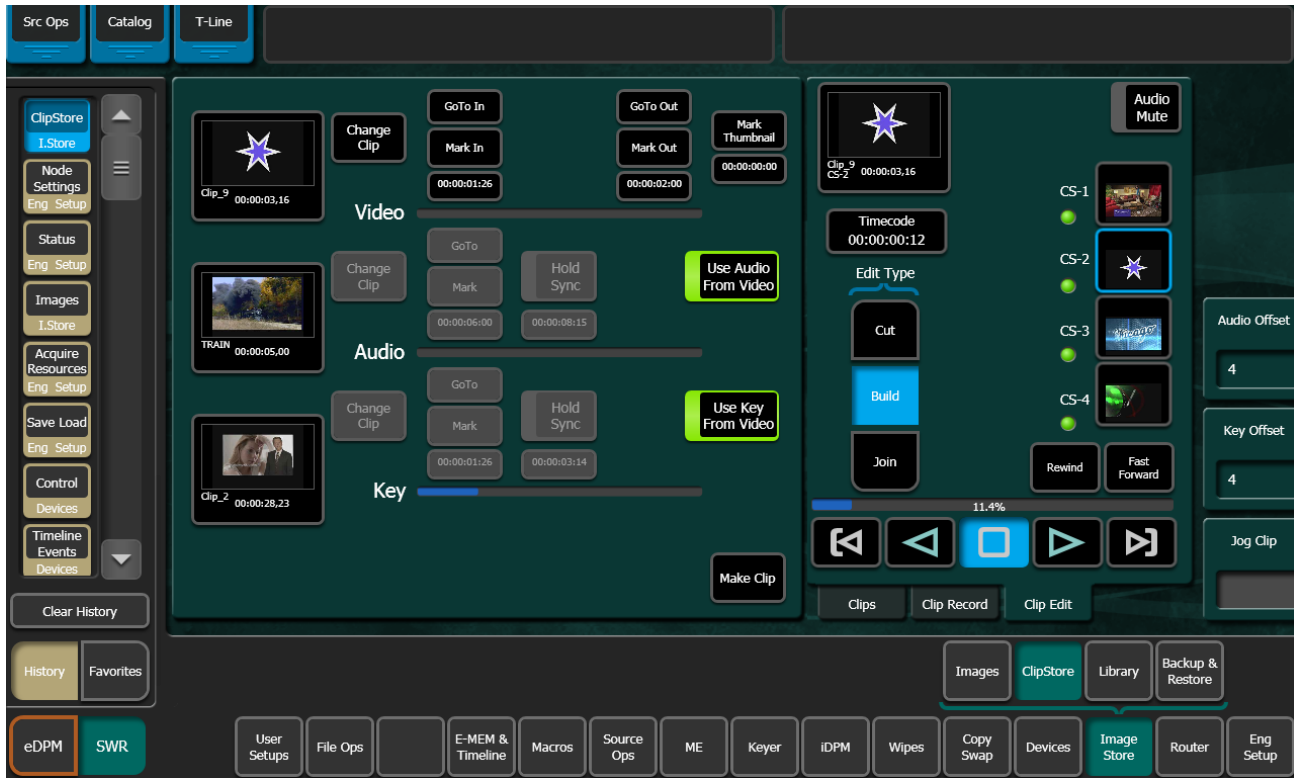
As with other ClipStore editing operations, if you enter the name of an existing clip, that clip will be overwritten when creating a sub-clip using the Make Clip operation.

**Editing a Video Clip with Build Edit**—The following example is of how to mark-in, mark-out, mark a thumbnail, and make a sub-clip. The **Use Audio From Video** and **Use Key From Video** buttons are enabled (highlighted green) which means only the video track will be edited and a new clip made with those changes:

## Mark In/Out

Select **Image Store**, **ClipStore**, **Clip Edit** and select the **Build** button in the Edit Type mode button group.

Figure 269. Build Edit Mode—Video Only Edit



1. Unless the desired clip is loaded, select the **Video Thumbnail Viewer**.
2. Select the **Change Clip** button for the Video and select the desired clip.
3. Determine where you want a mark-in point for the Video track by either playing/jogging to the mark while viewing the clip on a monitor and selecting the **Mark In** button or if you know the timecode, select the **Mark In** data pad and enter the timecode into the pop-up keypad, and select **Enter**.
4. Determine the mark-out point for the Video track and enter it as described for Mark In.

## Mark a Thumbnail

1. Jog, shuttle, or play to where you want to mark thumbnail and select the **Mark Thumbnail** data pad, or

2. Select the **Mark Thumbnail** data pad and enter the mark-thumbnail point in the pop-up keypad, and select **Enter**.

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

## Make the Sub-Clip

1. Select the **Make Clip** button.
2. Enter the name of the new clip and select **Enter**.

The new clip is created and appears in the clip lists in the ClipStore menus.

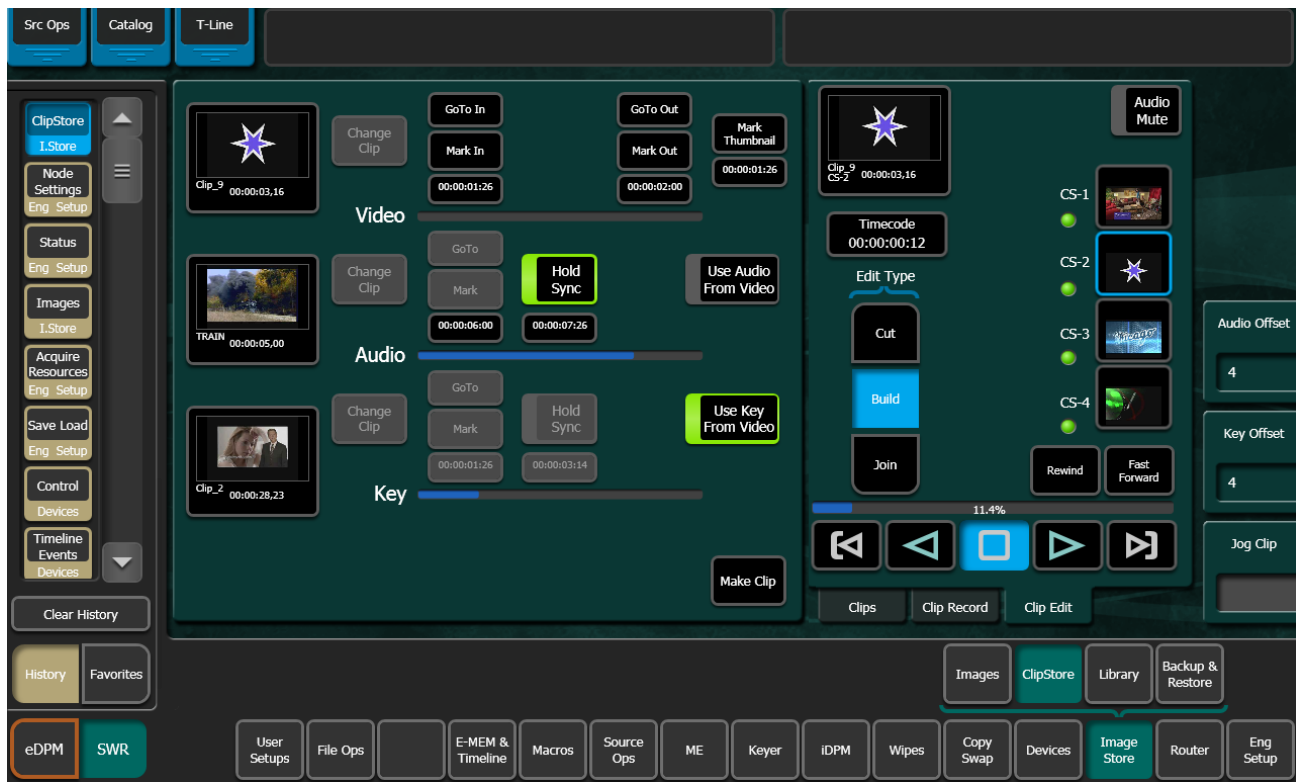
**Note** If Multiple sub-clips are desired from a built clip, use Build Edit to make the whole clip and then use the Cut Edit to make multiple sub-clips.

**Adding a New Audio Element with Build Edit**—If you require audio before or after video, a video track (for example of black) is needed so a mark can be made (this can be added with Join Edit, see *Join Edit on page 480*).

In this case, use the Video and Key of the loaded Video track but add/replace the Audio track and make a sub-clip. The **Use Key From Video** button is enabled (highlighted green):

1. Unless the desired clip is loaded, select the **Video Thumbnail Viewer**.

Figure 270. Build Edit Mode—Audio Track Edit



2. Select the **Change Clip** button for the Video and select the desired clip.
3. Determine where you want a mark-in point for the Video track by either playing/jogging to the mark while viewing the clip on a monitor and selecting the **Mark In** button or if you know the timecode, select the **Mark In** data pad and enter the timecode into the pop-up keypad, and select **Enter**.
4. Determine the mark-out point for the Video track and enter it as described for Mark In.
5. Turn off the **Use Audio From Video** button (Audio section) by selecting it.
6. Select the **Audio Thumbnail Viewer**.
7. Select the **Change Clip** button and select the desired clip/.WAV file with the desired Audio track.
8. Synchronize the Audio track in relation to the current video track timecode position, if needed, using the **Hold Sync** data pad or the **Audio Offset** soft knob (see [page 474](#) for more about Hold Sync).

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



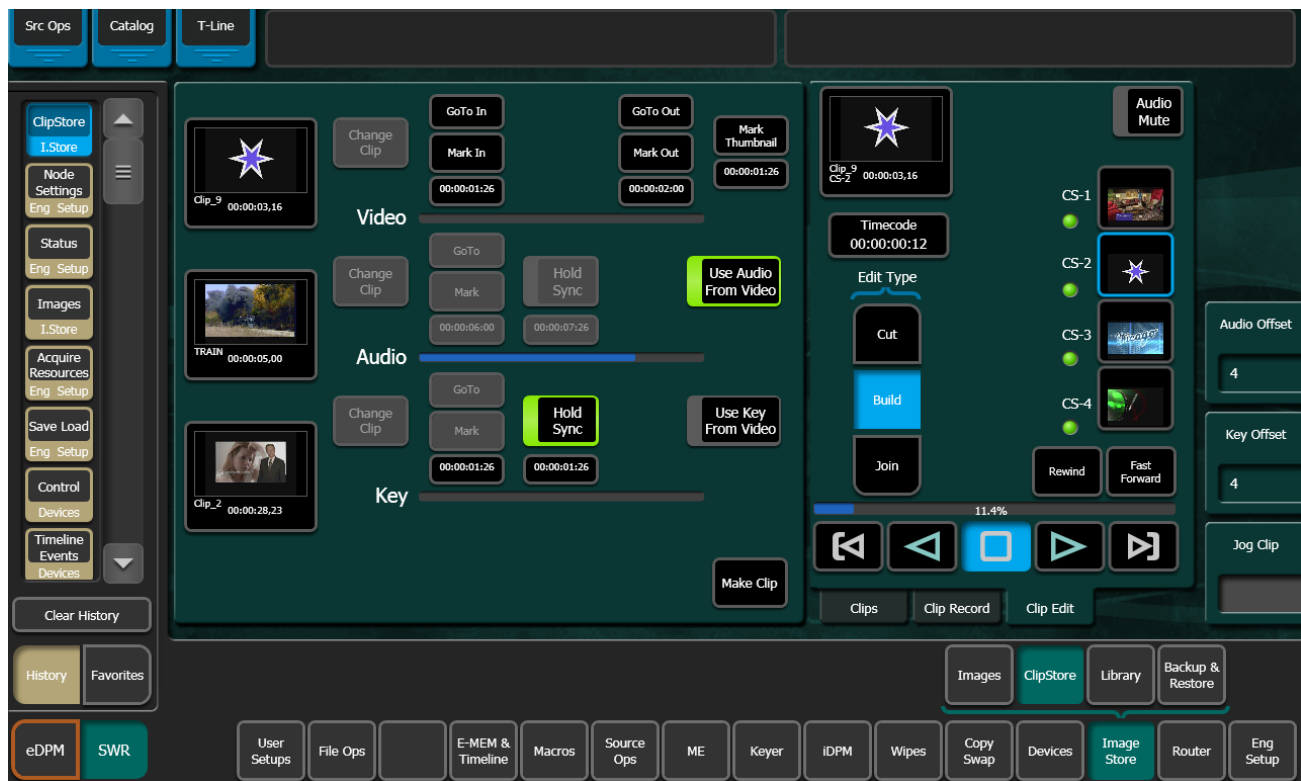
## Make the Sub-Clip

1. Select the **Make Clip** button.
2. Enter the name of the new clip and select **Enter**.

**Add/Replace a Key Element with Build Edit**—In this case, you want to use the video and audio of the loaded video element but add/replace the key track and make a sub-clip. The **Use Audio From Video** button is enabled (highlighted green):

1. Unless the desired clip is loaded, select the **Video** thumbnail viewer.

Figure 271. Build Edit Mode—Key Track Edit



2. Select the **Change Clip** button for the Video and select the desired clip.
3. Determine where you want a mark-in point for the Video track by either playing/jogging to the mark while viewing the clip on a monitor and selecting the **Mark In** button or if you know the timecode, select the **Mark In** data pad and enter the timecode into the pop-up keypad, and select **Enter**.
4. Determine the mark-out point for the Video track and enter it as described for Mark In.

5. Synchronize the Key track in relation to the current video track timecode position, if needed, using the **Hold Sync** data pad or the **Key Offset** soft knob (see [page 474](#) for more about Hold Sync).

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

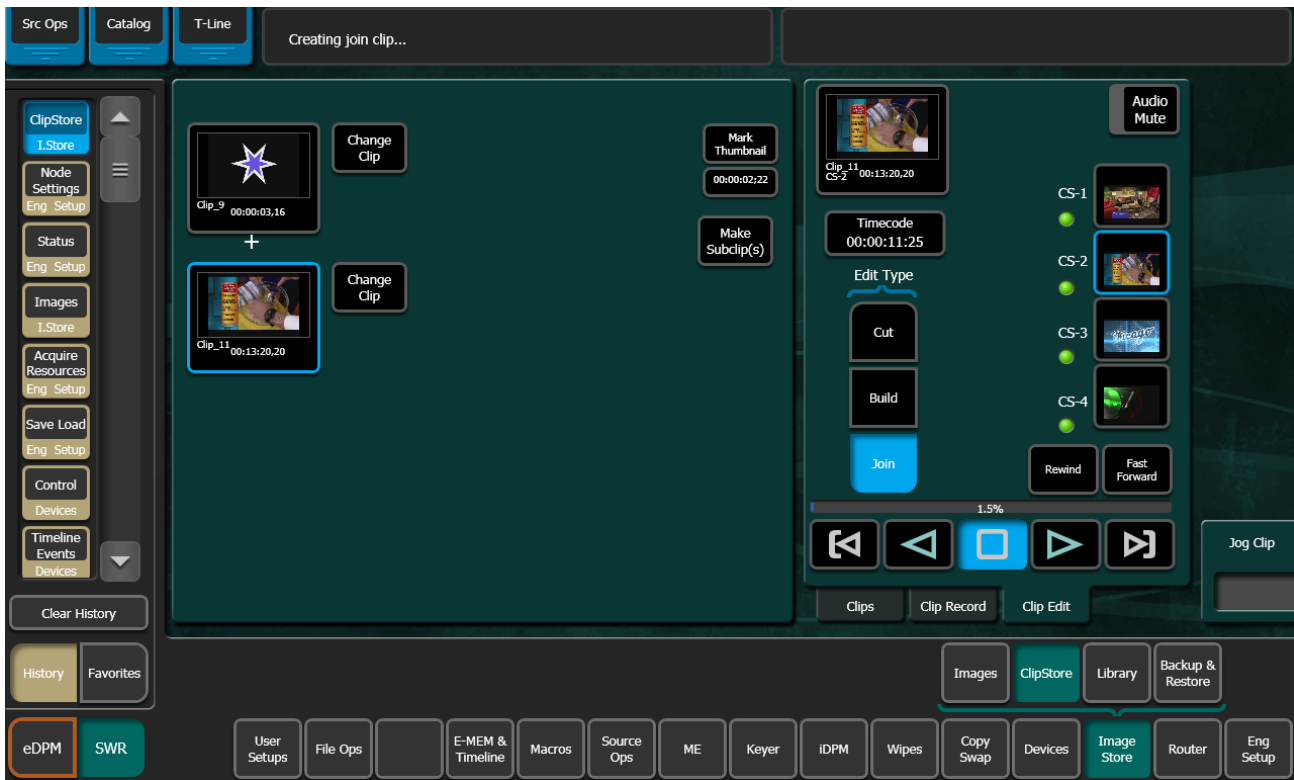
6. Select the **Make Clip** button.
7. Enter the name of the new clip and select **Enter**.

## Join Edit

Join Edit allows you to append one clip to another, and mark a thumbnail if desired.

To go to the Join Edit mode menu, select **Image Store**, **ClipStore**, **Clip Edit** and select the **Join** button in the Edit Type mode group.

Figure 272. Join Edit Mode



1. Select the **Change Clip** button for the first clip (top thumbnail) and select the desired clip.
2. Select the **Change Clip** button for the second clip (bottom thumbnail) to be appended to the tail end of the first, and select the desired clip.

3. Mark a thumbnail if desired (optional).
  - a. Determine where you want to mark thumbnail and select the **Mark Thumbnail** data pad, or
  - b. Enter the mark-thumbnail point in the pop-up keypad and select **Enter**.
4. Select the **Make Subclip(s)** button.

The new clip is created and appears in the clip lists in the ClipStore menus.

## File Operations

ClipStore file transfers are performed in the ClipStore Library menu. Select **Image Store, Library**. Files can be imported or exported using the **Copy/Paste** (or **Cut/Paste** in the case of ClipStore to ClipStore folder transfers) buttons in the To and From ClipStore and Disk/Folder menu tabs.

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

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

- ClipStore Server,
- Image folder on the GV Switcher Menu Panel,
- USB Storage Devices (seen as Removable Disks) and
- External USB Disk Drives (seen as Hard Disk Drives).

USB storage devices can be inserted into the USB ports on both the ClipStore server and on the GV Switcher Menu Panel. Memory Sticks will be seen as Removable Disks and will be displayed in the From Disk/Folders and To Disk/Folders menu tabs. External USB Disk Drives will also be seen in the From and To Disk/Folders menu tabs however first a shared folder is needed on the device (see *Creating a Shared Folder for External USB Disk Drives* [on page 482](#)).

Figure 273. ClipStore Library Menu—File Transfer



Both files and folders containing files can be copied from disk to the ClipStore server. However, folders can only be copied to the top directory of the ClipStore server, “nested” folders are not permitted.

Files can be exported in multiple formats, by selecting the mode buttons in the **Export Format** modes pane (Figure 273). This operation is only supported when the files selected for export are in the From ClipStore pane. *Files in Video/Key format can only be exported in GXF format.*

**Note** If a folder is selected for export, all files within the folder will be exported with the same format.

## Creating a Shared Folder for External USB Disk Drives

To exchange files with an external USB disk drive, you will need to create a shared folder in the device, in Windows:

1. Insert the USB connector for the external USB drive in the Menu Panel.
2. Minimize the GV Switcher menu.
3. Open **My Computer** from the Desktop.
4. Open the disk drive from the Hard Disk Drives list.

5. Create a new folder using the File menu, name the folder (for example “GV Switcher Clips”).
6. Right-Click on the folder, and choose **Sharing and Security** from the pull-down menu.
7. In the **Sharing** tab, select the **Share this folder** radio button.
8. Press the **Permissions** button.
9. Allow full control for Everyone.
10. Click **Apply**.

The folder is now shared. The new folder will be available in the Image Store, Library, From/To Disk Folders menu tabs.

## Device Control

Images can be controlled from the System Bar on the Control Panel, see *Device Control* [on page 197](#).



# Glossary

## Auto Transition

A transition having a predefined duration generally initiated by pressing a control panel button.

## Aspect

The ratio of a picture's horizontal and vertical dimensions when correctly displayed (4:3, 16:9).

## Background Bus

A row of buttons on an ME used to select background video signals. Typically labeled A and B, with A representing the current output, and B representing the next output.

## Background Transition

A transition between the background video signals selected on an ME.

## Background Video

Video that forms a background scene into which a key may be inserted.

## Backing Color

The color in a chroma key scene that will be replaced with another video signal.

## Bit Rate

The number of bits per second passed from one point to another.

## Black

A black video signal generated within the switcher.

## Box Wipe

A rectangular wipe pattern. For masking, the GV Switcher system provides a special box wipe pattern generator allowing independent control of the placement of each side of the box.

## Chroma

The depth or saturation of color. Chroma, hue, and luminance make up the three characteristics of television color.

## Chroma Key

A video key effect in which one video signal is inserted in place of areas of a particular color in another video signal. Blue and green are the chroma key colors most frequently used.

## Clean Feed

A final output of the switcher that does not include downstream key effects or fade to black. Also see *Programmable Clean Feed*.

## Clip

A threshold level adjustment to which the keying attribute (luminance, chrominance) is compared for generating the internal key control signal. Clip, in conjunction with gain, sets the switching point between the background and the key fill. Also see *Gain*.

## Clip High, Clip Low

An alternative to Clip and gain keying, providing independent control of the points where the background video and the key fill video are each fully visible.

## Complex Wipe Pattern Generator

A wipe pattern generator with additional capabilities (for example, matrix wipes).

## Component Video

A video signal that keeps color and luminance information separate. RGB; Y, R-Y, B-Y; and Y, Cr, Cb are examples of component video.

## Composite Video

An encoded video signal that combines color information with luminance information. NTSC, PAL, and D-2 are examples of composite video.

## Compositing

Combining two or more video signals together into one output signal.

## Control Signal

A signal used to perform an alteration or transition of video signals. For example, control signals are used for keying, masking, and wipe transitions.

## Control Surface

The set of controls available to a single operator. These controls may reside on separate but related control panels.

## Cross Fade

See *Mix*.

## Crosspoint

An electronic switch, usually controlled by a button on the panel, that allows video or audio to pass when the switch is closed.

## Cut

An instantaneous switch from one picture to another. Switching circuitry allows cuts only during the vertical interval of the video signal to prevent disruption of the picture.

## VDR (Video Disk Recorder)

A video recorder and playback device using hard disk storage in place of video tape.

## Delegate

To assign panel controls to a particular operating function. Some panel controls (buttons, knobs, joystick) can affect more than one function. The operator can choose an alternative function by delegating the panel controls to that function (typically by pressing or holding down a panel button).

## Deserializer

A device that converts serial digital information to parallel.

## Dissolve

See *Mix*.

## DPOP (Double Press Open)

Pressing a control panel button twice rapidly to open a related menu. Buttons supporting DPOP are labeled with a graphical indicator.

## Effect

A setup of panel controls specifying the sources involved and any processing applied to those sources. Effects can be learned (saved) and recalled by the E-MEM effects memory system.

## Effect Transition

Recalling an E-MEM effect so that a transition is automatically performed at the start of the recall.

## Effects Processor

The portion of a switcher that performs mixes, wipes and cuts between background and/or effects key video signals.

## E-MEM Effects Memory

A feature that permits control panel setups to be stored for later recall.

## Engineering Setups

On the GV Switcher system, a collection of configuration settings that establishes an essential baseline for system operation and integrates the system into a facility.



**Ethernet**

A form of high speed data transport between devices on a network.

**Fade To Black**

A mix transition to black.

**Field**

One scan of an interlaced video image. In interlace systems, two fields are required to make a complete picture (video frame) because alternate lines are scanned.

**Fill Video**

A video signal which fills a hole cut in background video by a key control signal.

**Fixed Linear Key**

A linear key that uses predetermined Clip and gain settings that are not adjustable.

**Flip-Flop**

A transition where the sources selected on the background buses (for example, preset and program) of an ME are exchanged at the end of a transition. The original preset bus source becomes selected on the program bus, and the original program bus source becomes selected on the preset bus.

**FPGA**

Field Programmable Gate Array.

**Frame**

One complete scan of a video image. For interlace video, alternate lines are scanned, and so a frame containing all the picture information consists of two fields.

**Frame Rate**

The number of frames presented per second. For interlace systems the frame rate is half the field presentation rate.

**Gain**

An amplification factor applied to a key control signal by a keyer that determines how much, if any, of the background and key fill video will be mixed together at the key edge areas. Low gain (1, or unity) generally results in a linear key.

**General Purpose Interface (GPI)**

An interface that allows limited remote control of some of a device's functions.

**House Sync**

Sync generated within a facility that is used as a reference for generating and/or timing other signals.

**Hue**

The location of a color on the color spectrum (i.e. red, yellow, green, blue). Chroma, hue, and luminance make up the three characteristics of television color.

**Image Store**

A device that captures, saves, and outputs a still video image.

**Interlace**

A system of video scanning where the odd and even numbered lines of a picture are presented consecutively as two separate interlaced fields. The two fields required to make a complete picture are called a frame.

**Jitter**

An undesirable variation in the timing of transitions in a digital signal.

**Joystick**

A hardware positioner with control of multiple axes.

## Key

An effect where a portion of a background scene is replaced by a new video. Key cut and key fill signals are involved, though in some cases the same signal may be used for both (self key).

## Key Cut

In key effects, the key cut signal is used to specify where to cut a hole in the background that will be filled with the key fill video. The key cut signal determines the shape of the key effect.

## Key Fill

In key effects, the video signal which fills the hole cut in the background video.

## Key Invert

Reversing the polarity of a key, such that material formerly keyed out will be keyed in, and vice versa.

## Key Mask

A key mode which allows use of a wipe pattern generator to prevent some undesirable portions of the key cut signal from cutting holes in the background video.

## Key Priority

The stacking order of multiple keys. The keyed signal with the highest priority appears in front of all the others. Keyed signals appear below higher priority keys and in front of lower priority keys, in a stack. A key priority transition changes the order of the keys without changing the background output.

## Key Frame

A complete definition of an effect at a single point in time. Default keyframe values can be set for a suite.

## Learn

To save a panel setup using E-MEM.

## Linear Key

A key in which the keyer signal is faithfully reproduced in the final key effect. Linear keying preserves soft key edges, and generally has a gain of 1, or unity.

## Look Ahead Preview

Video that shows the result of the currently setup next transition.

## Looping, Loop-Through

An input that includes two connectors. One connector accepts the input signal, and the other connector is used as an output for connecting the input signal to another piece of equipment. On GV switchers, only the analog reference input is loop through.

## Luminance

The brightness of the picture or area of the screen being considered. Chroma, hue, and luminance make up the three characteristics of television color.

## Luminance Key

A key effect in which the portions of the key cut signal that are greater in luminance than the clip level cuts the hole in the background scene. Generally used when the key cut and key fill signals originate from the same source. Luminance key clip and gain is adjustable.

## Mask

See [Key Mask](#).

## Matte

Internally-generated color video which can be adjusted for luminance, hue, and chroma. Matte can be used to fill areas of keys and borders.

## Matte Fill

Using matte video to fill the hole of a key effect.

**Matte Generator**

A video generator that produces matte signals.

**ME**

Abbreviation of mix/effects, pertaining to the circuitry and controls involved in compositing video signals.

**Mix**

A transition between two video signals in which one signal is faded down as the other is faded up.

**Multiplier**

A control circuit in which a control signal is multiplied with one or more input video signals. The resulting video output level varies from full on to full off according to the state of the control signal.

**Object**

An individual functional area of a system, typically one of several having similar capabilities.

**Pattern Border**

A variable width border that occurs at the edges of a wipe pattern.

**Pixel**

A picture element. A pixel is a digital sample of the luminance and color values of a picture at a single point.

**Preference**

See [Suite Preference](#) and [User Preference](#).

**Profile**

Model name of a Video Disk Recorder.

**Point of Use**

A location in the system where a resource is used. A resource is generally used at different locations at different times. However, with some resources it is possible to use the same resource at different locations at the same time.

**Preset Bus**

A row of source buttons used to select the source that will be output by that ME during the next background transition. Also called the B bus.

**Preset Pattern**

A key effect in which a wipe pattern that has been preset to a desired size and location is used to cut the key hole. The characteristics of the pattern are set using pattern controls.

**Preview**

A video signal that is viewed before it is output by the switcher. See also [Look Ahead Preview](#) and [Switched Preview](#).

**Program Bus**

A row of source buttons used to select the source for the current output of that ME. Also called the A bus.

**Programmable Clean Feed**

A type of clean feed where different keys can be selected for inclusion or exclusion from the clean feed.

**Recall**

To restore a previous panel setup that has been learned using E-MEM.

**Reclocking**

The process of clocking the data with a re-generated clock to remove jitter.

**Resource**

A capability of the system, typically consisting of a set of circuitry.

## Register

A place to store an effect.

## Saturation

The degree of purity of a color. Adding white to a color reduces its degree of saturation.

## Self Key

A key effect in which a single video signal serves as both the key cut and key fill.

## Sequence

On the GV Switcher system, a feature allowing a series of E-MEMs to be recalled in a specific order with a single command.

## Serial Digital Video

Passing video data bits in serial form (one bit after another), along a single wire. Standard Definition serial digital video (SMPTE 259M) operates at 270 MBits/sec (2 x 13.5 MHz x 10 bits).

## Serial Interface

An interface which allows the switcher to be controlled remotely by a computer editor or other serial controller. Data is passed serially between the editor and the switcher at selectable baud (transmission) rates.

## Serializer

A device that converts parallel digital information to serial.

## Soft Border

A wipe pattern border which is mixed on the edges to give a soft effect.

## Soft Edge

A pattern edge between two video signals in which the signals are mixed for a soft effect.

## Source

1) An external device providing video. A source may provide only one video signal, or it may provide two signals (key fill and key cut).

2) The video signal(s) from a source, along with the source definition information associated with that source. See [Source Definition](#).

## Source Definition

A definition of the video signals making up a source, the device type and name of source, and the default processing and other parameters to be used for that source. The GV Switcher system is based on source selection, rather than choosing crosspoints.

## Source Memory

A feature where the last keying and video processing settings for a source are retained and re-imposed when that source is re-selected. Default source memory values can be set for each source on each bus.

## SPOP (Single Press Open)

Automatically opening a related menu when a control panel button is pressed. On the GV Switcher system, buttons supporting SPOP are labeled with a graphical indicator.

## Stack

See [Key Priority](#).

## Suite

One or more control surfaces configured for use on the same project.

## Suite Preference

A collection of settings used to configure a suite to create a consistent working environment for all involved.

**Switched Preview**

An special output of the system connected to a dedicated monitor. The operator can select and switch various system video signals to that output to preview them.

**Sync**

(1) General term for a synchronizing signal or signal component. Digital systems generally employ an analog external timing reference signal (such as color black or tri-level sync) to synchronize different pieces of equipment. Within the digital signal itself, however, synchronizing information is carried by special digital codes inserted at the beginning and end of each active line.

(2) In analog television systems, sync is the portion of the video signal which occurs during blanking and is used to synchronize the operation of cameras, monitors, and other equipment. Horizontal sync occurs within the blanking period in each horizontal scanning line, and vertical sync occurs within the vertical blanking period. A color black signal is often used for synchronizing different pieces of analog equipment.

**Tally**

A light which lights up to indicate that the associated button has been selected or to indicate that the associated input to the switcher is on-air.

**Terminate, Termination**

To complete a circuit by connecting a resistive load to it.

**Transition**

A change from one picture to another. Cut, mix, and wipe are transitions.

**User Preference**

A collection of control surface configuration settings available to a user that allows customizing of the working environment.

**Vertical Interval**

The portion of the video signal that occurs between the end of one field or frame and the beginning of the next.

**Video Fill**

A video signal used to fill the hole made by a key cut signal.

**Video Path**

The path that video takes through the switcher.

**Wash Matte**

A type of matte that contains two elements rather than a single flat color. For example, a wash matte can have one color that mixes gradually across the screen to another color.

**Wipe**

A transition between two video signals that occurs in the shape of a selected pattern.

**Wipe Pattern Generator**

Circuitry that creates patterns that can be used to create wipe transitions, preset patterns, key masks, and matte washes.

**Work Buffer**

An active area of memory where the current effect parameters are stored, allowing the operator to use and modify the effect without changing the data stored in E-MEM.



# Index

## Numerics

- 2D DPM
  - eDPM [147](#)
- 4K [370](#)
- 4K Video Operating Mode [365](#)
  - Enable 2SI 2D-DPM [368](#)
  - Enable Quad Mode 2D-DPM [370](#)
- 4-ME Control Panel [249](#)

## A

- accelerate knobs
  - newton [248](#)
- additive keyer
  - from the control panel [333](#)
- advanced E-MEM operations
  - define E-MEM [324](#)
  - partial keyframes [321](#)
- All Files menu
  - file operations [71](#)
- alphanumeric keypad
  - on Menu Panel [286](#)
- alternative name [48](#)
- AMP protocol
  - clip directory [199](#)
- appending a macro [166, 170, 175](#)
- articulated arm
  - used with Menu Panel [27, 30](#)
- assigning partitions to keyers
  - DPM [359](#)
- Att Enable (Attach Enable macro) button [168, 171](#)
- Attach Enable (macro) button [164](#)
- attached macro playback [175](#)
- attaching a macro [174](#)
- attachment (macro)
  - removing [166, 170](#)
- auto run [159](#)
- auto setup
  - chroma key [90, 94](#)
- Auto Start button [420, 467](#)

- auto transition
  - performing [293](#)
- aux bus
  - mix and wipe transitions [298](#)
  - router control [233](#)
- aux bus transitions
  - mix and wipe transitions [298](#)
- Aux Deleg Mapping menu [46](#)
- aux delegate mapping
  - image store [405](#)

## B

- Bounce button [420, 467](#)
- break
  - sequence [159](#)
- bus linking
  - cascading bus linking procedure [193](#)
  - link management [194](#)
  - linking busses one-to-one procedure [190](#)
  - restrictions [194](#)
  - source substitution tables [187](#)
- Bus Linking menu [185](#)
- button
  - Att Enable (Attach Enable macro) [168, 171](#)
  - Attach Enable (macro) [164](#)
  - Choose Load [65](#)
  - Create Show [64](#)
  - Definable [324](#)
  - Delete [302](#)
  - Delete (macro) [164, 168](#)
  - Exchange ME [273](#)
  - Grab [406](#)
  - History [281, 282](#)
  - Ins Delay (Insert Delay macro) [168](#)
  - Insert Delay (macro) [164](#)
  - Keep [406](#)
  - keyer delegation [274](#)
  - KF Dur [303](#)
  - Load Show [65](#)
  - Macro Deleg [163, 168](#)
  - Post (Attach macro) [168](#)
  - Post Attach (macro) [164](#)

- Pre (Attach macro) 168
- Pre Attach (macro) 164
- Rec (macro) 164
- Record (macro) 168, 171
- Repl Attach (macro) 164
- Replace (Attach macro) 168
- Show (Attach macro) 168, 171
- Show Attach (macro) 164
- Undo (Copy/Swap) 399
- Update Show 65
- button mapping 37
- Button Mapping menu 43

## C

- Cache Remaining data field 401
- camera control with ethernet camera tally
  - description 241
- camera control with ethernet tally
  - creating and loading scene files 243
  - ethernet tally operations 243
  - live ops menu 242
  - operation 242
- capturing stills
  - image store 406
- cascading bus links 192
  - procedure 193
- channel
  - newton 248
- Choose Load button 65
- chroma key
  - auto setup 90
  - auto setup procedure 94
  - clipping procedure 95
  - coring 93
  - flare suppression 92
  - fringe 93
  - key controls 95
  - manual adjustments 95
  - primary color suppression 91
  - reshape 97
  - shadow controls 93
- clip directory (AMP protocol) 199
- clip store
  - build edit
    - hold sync 432, 476, 477
  - clip editing
    - cut edit 471
    - explained 471
    - join edit 483
    - make sub-clip from current clip procedure 474
    - mark thumbnail procedure 472
    - trim and remove explained 473
  - clip playback explained 465
  - E-MEM clip replay control 468
  - recording clip procedure 469
- clipping procedure
  - chroma key 95
- common macro 334
- complex macro 334
- constant duration
  - affect on delete 302
- Control Panel
  - source colors 43
- control protocols 35
- control surface
  - Karrera 29
  - Kayenne 24
  - K-Frame system 24
  - overview 249
- copy files procedure 62
- Copy/Swap menu 388
- copy/swap with a macro 176
- coring
  - chroma key 93
- corner pinning
  - corner pinning procedure 376, 383, 384
  - explained 373
- Create Show button 64
- crosshair preview 56
- Cue to Begin button 421, 467
- curve path control tips 311
- curve path windup
  - controlling 311

## D

- data pad
  - explained 277
- Default Keyframe menu 54
- Definable button 324
- define E-MEM 324
- delegation



- data group in Menu Panel 285
  - Double Press Open (DPOP) button 274
  - explained 273
  - Single Press Open (SPOP) button 275
  - delegation button mapping
    - remote aux panel 46
  - delegation pvw bus
    - newton 248
  - Delete
    - button 302
  - Delete (macro) button 164, 168
  - deleting keyframe 302
    - constant duration on 302
  - device control
    - clip directory on Menu Panel 199
    - Device Control Module 220
    - Local Aux Module 212
    - Multi-Function Module 214
    - System Bar 212
    - with Menu Panel 197
  - Device Control Module
    - device control 220
    - overview 270
  - Device Enables menu 201
  - documentation
    - K-Frame system 5
  - documentation online 4
  - DoubleTake
    - E-MEM partition boundary 361
  - DPM
    - assigning partitions to keyers 359
    - global channel 118
    - menu control 118
  - DPOP (Double Press Open)
    - delegation button 274
  - duration
    - changing new keyframe 303
    - insert after 299
    - Insert Before 300
    - modifying keyframe 304
- E**
- Easy Cube
    - soft button 121
  - edge pinning
    - explained 382
  - eDPM
    - definable sub-level 146
    - option information 144
    - partitioning 145
    - swap procedure 399
  - eDPM 2DPM menu 147
  - effect
    - editing effect duration 305
    - learn 153
    - recall 153
    - reusing 317
    - running 158
    - with auto run on 159
  - effect duration
    - editing 305
    - editing individual levels 306
    - editing with Control Panel 305
    - editing with Menu panel 306
  - effect duration feature 305
  - E-MEM 153
    - building background transition 313
    - building keyer transition 314
    - changing R-MEM on register 240
    - changing transition length 315
    - clip store
      - clip replay 468
    - containing a macro 319
    - control of ext. device 205
    - control of R-MEM 238
    - ext. device auto start play procedure 204
    - ext. device sync play procedure 203
    - external device timecode entry 207
    - learn 153
    - macro sublevel assignment 319
    - partition boundary 361
    - partition boundary assignment 362
    - preventing transition 315
    - recall 153
    - recall with macro 176
    - return to normal 315
    - reusing effects 317
    - R-MEM assignment 239
    - transition 312
    - transition rules 312
    - used with macro 318
  - E-MEM sequence
    - break 159
    - learn 159
    - play 159

- engineering name [48](#)
- engineering source ID [48](#)
- event list
  - building [205](#)
  - editing [205](#)
- Exchange ME button [273](#)
- explanations
  - key [89](#)
- external device
  - control by E-MEM [205](#)
  - E-MEM auto start play procedure [204](#)
  - E-MEM control timecode entry [207](#)
  - E-MEM sync play procedure [203](#)

## F

- FAM (Full Additive Mix)
  - explained and illustrated [294](#)
- FAQ database [4](#)
- favorites mode [282](#)
- file browser [59](#)
  - features [60](#)
- file extensions [64](#)
- file operations
  - background information [60](#)
  - drive and folder access [60](#)
  - organization [60](#)
- file operations All Files menu [71](#)
- file translation
  - from an earlier frame system [84](#)
- flare suppression
  - chroma key [92](#)
- frame simulator
  - macro editor configuration [345, 346](#)
- frequently asked questions [4](#)
- fringe
  - chroma key [93](#)
- Full Additive Mix (FAM)
  - explained and illustrated [294](#)

## G

- gang control
  - Local Aux Module [212](#)
  - Multi-Function Module [218](#)
- Gecko modular product [245](#)

- global channel
  - DPM [118](#)
- Glow menu [124, 125](#)
- GPI macro [177](#)
- Grab button [406](#)
- Grass Valley web site [4](#)

## H

- history mode [281](#)
- hold sync [432, 476](#)

## I

- Image Store
  - general menu description [400](#)
  - input delegates [405](#)
  - local still file format [402](#)
  - memory description [400](#)
  - movie file formats [418](#)
  - movie storage capacity [418](#)
  - option licensing [420](#)
  - QuickTabs [401](#)
  - resource configuration [403](#)
  - still file formats [403](#)
- image store
  - aux delegate mapping [405](#)
  - backup and restore
    - description [454](#)
    - manual backup [454](#)
    - restore [457](#)
    - scheduled backup [455](#)
  - capturing stills
    - grab [406](#)
    - keep [406](#)
  - description [402](#)
  - device control [197](#)
    - DCM [415](#)
    - System Bar Module [416](#)
  - library description [450](#)
  - Library menu [450](#)
  - network XP security and remote file transfer [457](#)
  - transferrable file formats [403](#)
  - Windows 7 network security and remote file transfer [459](#)
- Image Store Movies
  - configuration [420](#)

- Image Store options 400
  - input selection
    - newton 248
  - Ins Delay (Insert Delay macro) button 168
  - insert after
    - duration 299
    - location of insert 299
    - on a keyframe 299
  - insert After or before
    - deciding which to use 301
  - insert before
    - duration 300
    - on a keyframe 300
  - insert between keyframes 301
    - duration 301
  - insert delay 164, 169
  - Insert Delay (macro) button 164
  - insert on path 301
    - definition 301
    - location of insert 301
  - interaction
    - menu and panel 287
- J**
- Jog Movie knob 421, 468
- K**
- Kalypso image store file
    - importing into K-Frame 87
  - Kameleon modular product 245
  - Karrera
    - control surface 29
    - multiple suite system 31
    - single suite system 31
  - Karrera Menu Panel
    - touch screen 30
  - Kayenne
    - control surface 24
    - multiple suite system 28
    - single suite system 28
  - Kayenne Control Panel
    - curved 26
    - flat 26
    - stripe 27
  - Kayenne Menu Panel
    - touch screen 27
  - Kayenne show files
    - loading into K-Frame 84
  - Kayenne system overview 37, 249
  - Keep button 406
  - key
    - chaining 349
    - explained 89
    - key store 104
    - transition chaining 348
  - key chaining
    - across MEs 352
    - explained 349
    - key chaining procedure 349
    - on a single ME 351
  - key store
    - applying key store image procedure 106
    - explained 104
    - image grab procedure 105
  - keyer
    - swap procedure 398
  - keyer delegation
    - multiple keyers 274
  - keyer delegation button 274
  - keyer priority
    - how to 101
  - keyframe
    - changing duration of new 303
    - deleting 302
    - insert after on a keyframe 299
    - insert before on a keyframe 300
    - insert on path 301
    - inserting 299
    - modify all 307
    - modify all procedure 308
    - modifying duration 304
    - showing duration 303
  - keyframe duration
    - changing new keyframe 303
    - modifying 304
    - restoring default to keypad 305
    - showing 303
  - keypad
    - Menu Panel alphanumeric 286
    - Menu Panel numeric 285
  - KF Dur button 303
  - KF Trigs button 421, 467

- K-Frame system
    - control surface [24](#)
    - documentation [5](#)
    - features [22](#)
  - K-Frame Video Processor
    - general description [24](#)
  - knob soft [276](#)
  - Kurl menu [125](#)
    - angle [128](#)
    - offset [128](#)
    - radius [128](#)
- L**
- learn
    - R-MEM register [237](#)
    - sequence [159](#)
  - learn effect [153](#)
  - lever arm transition [292](#)
  - Lighting menu [133](#)
  - load preference procedure [72](#)
  - Load Show button [65](#)
  - load source memory procedure [72](#)
  - loading macro registers [176](#)
  - Local Aux Module [266](#)
    - device control [212](#)
    - gang control [212](#)
  - Lock button
    - and scrolling lists [287](#)
  - logical id [48](#)
  - Loop button [420, 467](#)
- M**
- macro [165, 166, 170, 175](#)
    - appending using Control Panel [166, 170](#)
    - appending using Menu Panel [175](#)
    - attaching using menu [174](#)
    - attachment [162](#)
    - copy/swap [176](#)
    - E-MEM recall with [176](#)
    - E-MEM sublevel assignment [319](#)
    - general description [160](#)
    - GPI [177](#)
    - in an E-MEM [319](#)
    - inserting a delay [164, 169](#)
    - loading registers [176](#)
    - playback [161, 165](#)
    - recording using Menu Panel [172](#)
    - register [160](#)
    - saving register [175](#)
    - simultaneous use [177](#)
    - used with E-MEM [318](#)
  - macro builder
    - create common macros [337](#)
    - edit common macros [339](#)
    - part of macro editor [334](#)
  - Macro Copy/Swap menu [394](#)
  - Macro Deleg button [163, 168](#)
  - macro editor
    - common vs. complex macros [334](#)
    - configuring Frame Simulator for offline editing [345](#)
    - editable display parameters [334](#)
    - editing component values procedure [344](#)
    - line editing description [342](#)
    - new macro procedure [341](#)
    - offline editing [345, 346](#)
  - macros button group [163, 166](#)
  - manual transition [291](#)
  - mapping
    - buttons [37](#)
  - Mark In button [421, 467](#)
  - Mark Out button [421, 467](#)
  - Master E-MEM Module
    - overview [258](#)
  - ME
    - explained and illustrated [89](#)
    - keyer delegation buttons [274](#)
    - secondary assign [358](#)
    - split Control Panel controls [359](#)
    - split layered mode [363](#)
    - split mode [358](#)
    - swap procedure [398, 399](#)
  - ME partition
    - defined [357](#)
  - ME Stripe [27, 251](#)
  - menu
    - Aux Deleg mapping [46](#)
    - Bus Linking [185](#)
    - Button Mapping [43](#)
    - Copy/Swap [388](#)
    - Default Keyframe [54](#)
    - Device Enables [201](#)

- Glow [124, 125](#)
  - Kurl [125](#)
  - Lighting [133](#)
  - Macro Copy/Swap [394](#)
  - Newton [247](#)
  - Preview Prefs [55](#)
  - R-MEM [236](#)
  - Router Select [231](#)
  - Source Holds [316](#)
  - Source Rules [183](#)
  - Transform [118](#)
  - menu and panel interaction [287](#)
  - menu Library [450](#)
  - menu name [49](#)
  - Menu Panel [276](#)
    - alphanumeric keypad [286](#)
    - articulated arm [27, 30](#)
    - delegation group [285](#)
    - menu screen [279](#)
    - numeric keypad [285](#)
    - parameter control area [285](#)
    - soft knob [276](#)
    - touch screen [276](#)
  - menu screen
    - components and organization [279](#)
    - data pad [277](#)
    - Menu Panel [279](#)
    - top line [284](#)
    - touch button [277](#)
  - mix
    - Full Additive (FAM) [294](#)
    - Non Additive (NAM) [294](#)
  - mix and wipe transitions
    - aux bus [298](#)
  - mix through video transition
    - operation [293](#)
  - Mix/Effects
    - explained and illustrated [89](#)
  - modify all [307](#)
    - procedure [308](#)
  - modify all absolute
    - definition [308](#)
  - modify all relative
    - definition [308](#)
  - module
    - Device Control [270](#)
    - Master E-MEM [258](#)
    - Multi-Function [259](#)
    - Source Select [261](#)
    - System Bar [268](#)
    - Transition [251](#)
  - movie
    - cue with E-MEM [424](#)
    - cueing [420](#)
    - loading [423](#)
    - naming [428](#)
    - playback [420](#)
    - playback with system bar [421](#)
    - recording [425](#)
    - replay with E-MEM [421](#)
    - thumbnail selection [428](#)
  - Movie playback [420](#)
  - Multi-Function Module
    - device control [214](#)
    - gang control [218](#)
    - overview [259](#)
- ## N
- NAM (Non Additive Mix)
    - explained and illustrated [294](#)
  - name display hierarchy [49](#)
  - NetConfig installation [245](#)
  - Newton
    - configuration [246](#)
    - controls [248](#)
    - installation on Kayenne [245](#)
    - source selection via Kayenne [247](#)
  - newton
    - accelerate knobs [248](#)
    - channel [248](#)
    - delegation pvw bus [248](#)
    - input selection [248](#)
    - setup name [248](#)
    - setup selector [248](#)
  - Newton Configurator plug-in
    - installation [245](#)
  - newton configurator plug-in [246](#)
  - Newton menu
    - description [247](#)
  - newton modular control [245](#)
  - Non Additive Mix (NAM)
    - explained and illustrated [294](#)
  - Number of Images data field [401](#)
  - numeric keypad

on Menu Panel [285](#)

## O

OLED name [49](#)

online documentation [4](#)

Ops [183](#)

overview

module

Local Aux [266](#)

## P

panel

4-M/E Control [249](#)

panel and menu interaction [287](#)

panel name [49](#)

parallel bus links [191](#)

parameter control area [285](#)

partial keyframes [321](#)

partition

eDPM [145](#)

explained [357](#)

partition boundary

assignment [362](#)

definition [361](#)

detailed explanation [362](#)

path control

changing values [310](#)

curve tips [311](#)

cut and paste tips [311](#)

operation [122](#)

pattern mix

how to [106](#)

play

sequence [159](#)

playing a macro [165](#)

playing attached [175](#)

playing back [165](#)

Post (Attach macro) button [168](#)

Post Attach (macro) button [164](#)

Pre (Attach macro) button [168](#)

Pre Attach (macro) button [164](#)

preference file

load procedure [72](#)

save procedure [72](#)

preview

crosshair [56](#)

R-MEM [236](#)

safe area [56](#)

Preview Prefs menu [55](#)

Preview Prime Aux bus [269](#)

primary color suppression

chroma key [91](#)

primary partition [357](#)

profile file

save procedure [72](#)

protocols

supported [35](#)

Pvw PRI button [269](#)

## Q

Q-MEM [222](#)

explained [222](#)

learning devices to a register [224](#)

quick tabs [283](#)

QuickTabs

Image Store [401](#)

## R

Rec (macro) button [164](#)

recall

R-MEM register [237](#)

recall effect [153](#)

recalling register from same bank [156](#)

Record (macro) button [168, 171](#)

recording a macro [172](#)

recording a macro with delay [164, 169](#)

register

recalling from same bank [156](#)

register file

save procedure [76](#)

remote aux panel

delegation button mapping [46](#)

removing attachment [166, 170](#)

Repl Attach (macro) button [164](#)

Replace (Attach macro) button [168](#)

reshape

chroma key [97](#)

restoring

- default keyframe duration to keypad 305
  - reusing effects 317
  - R-MEM
    - Auto Recall 236
    - auto recall 238
    - changing on E-MEM register 240
    - controlled by E-MEM 238
    - disk storage 238
    - E-MEM prefs assignment 239
    - empty keyframes 241
    - enable control 238
    - features 235
    - general description 235
    - learn 239
    - learning a register 237
    - load register 241
    - preview 236
    - recall register 237
  - R-MEM menu 236
  - router control of aux buses
    - explained 233
  - router control of aux busses
    - procedure 234
  - router destination
    - definition 229
  - router interface
    - changing sources with menu 231
    - features 230
    - general description 229
    - menu operation 230
  - router levels
    - definition 229
  - router protect
    - definition 230
  - Router Select menu 231
  - router source
    - definition 229
  - running an effect 158
  - running an effect, auto run on 159
- S**
- safe area preview 56
  - save preference procedure 72
  - save profile procedure 72
  - save register file procedure 76
  - save source memory procedure 72
  - saving a macro register 175
  - screen
    - touch (Menu Panel) 276
  - Scroll Image List data pad 401
  - scroll lock 287
  - scrolling list
    - description 286
  - scrolling lists
    - Lock button 287
  - Sec PVW button 269
  - secondary assign pane 358
  - secondary partition 357
  - sequence
    - break 159
    - learn 159
    - play 159
  - setup name
    - newton 248
  - setup selector
    - newton 248
  - shadow
    - chroma key 93
  - Show (Attach macro) button 168, 171
  - Show Attach (macro) button 164
  - Single Press Open (SPOP)
    - delegation button 275
  - soft knob
    - Menu Panel 276
  - software download from web 4
  - source colors
    - Control Panel 43
  - Source Holds menu 316
  - source mapping
    - for Kayenne fixed sources 86
  - source memory
    - deleting 110
    - explained 108
    - learning 109
    - settings 108
  - Source Memory button 108
  - source memory file
    - load procedure 72
    - save procedure 72
  - source name
    - alternative 48
    - display hierarchy 49



- engineering 48
- menu 49
- multiple suites 49
- OLED 49
- panel 49
- source name display
  - setting color 38
- source patching 54
  - for effects portability 50
- source rules
  - applying source rules 184
  - creating source rules 183
  - description 182
  - rules holds 184
  - storing source rules 183
- Source Rules menu 183
- Source Select area
  - source colors 43
- Source Select Module
  - overview 261
- split key
  - explicit 100
  - implicit 100
- split layered mode 363
- split ME 357
  - E-MEM control 361
  - partition boundary 361
- split mode 358
  - Control Panel controls 359
  - defined 357
- SPOP (Single Press Open)
  - delegation button 275
- Stripe
  - ME 27, 251
- suite
  - multiple Kayenne 28
  - simultaneous use of macros 177
  - single Karrera 31
  - single Kayenne 28
  - source names 49
- swap e-DPM procedure 399
- swap keyer procedure 398
- swap ME procedure 398, 399
- Switched Preview 268
- sync playback
  - E-MEM 203
- System Bar

- device control 212
- macros button group 163, 166
- overview 268
- system overview 37, 249

## T

- time value entry 153
- Timecode button 421, 467
- top line 284
- touch button
  - explained 277
- touch screen 276
- touch screen Menu Panel
  - Karrera 30
  - Kayenne 27
- transform engine
  - crop controls 121
  - drop shadow controls 123
  - Easy Cube 121
  - kurl effects 125
  - page turn effect 127
  - path controls 122
  - reverse controls 121
  - shadow crop controls 123
  - slits effect 130
  - splits and mirrors effects 131
  - transform controls 121
- Transform Menu 118
- transition
  - building E-MEM background 313
  - building E-MEM keyer 314
  - changing length in E-MEM 315
  - E-MEM 312
  - E-MEM rules 312
  - Full Additive Mix (FAM) 294
  - manual 291
  - mix through video 293
  - Non Additive Mix (NAM) 294
  - performing auto transition 293
  - performing with lever arm 292
  - preventing in E-MEM 315
  - return to normal 315
- transition chaining
  - explained 348
- Transition Module
  - overview 251



## U

Undo button (Copy/Swap) [399](#)

Update Show button [65](#)

## V

Var Play Speed button [421](#), [468](#)

Video Operating Mode

4K [365](#), [368](#), [370](#)

## W

web site documentation [4](#)

web site FAQ database [4](#)

web site Grass Valley [4](#)

web site software download [4](#)