

MOSAIC

Ultrix Carbonite Mosaic User Manual

v2.0

Thank You For Choosing Ross

You've made a great choice. We expect you will be very happy with your purchase of Ross Technology.

Our mission is to:

1. Provide a Superior Customer Experience
 - offer the best product quality and support
2. Make Cool Practical Technology
 - develop great products that customers love

Ross has become well known for the Ross Video Code of Ethics. It guides our interactions and empowers our employees. I hope you enjoy reading it below.

If anything at all with your Ross experience does not live up to your expectations be sure to reach out to us at solutions@rossvideo.com.



David Ross
CEO, Ross Video
dross@rossvideo.com

Ross Video Code of Ethics

Any company is the sum total of the people that make things happen. At Ross, our employees are a special group. Our employees truly care about doing a great job and delivering a high quality customer experience every day. This code of ethics hangs on the wall of all Ross Video locations to guide our behavior:

1. We will always act in our customers' best interest.
2. We will do our best to understand our customers' requirements.
3. We will not ship crap.
4. We will be great to work with.
5. We will do something extra for our customers, as an apology, when something big goes wrong and it's our fault.
6. We will keep our promises.
7. We will treat the competition with respect.
8. We will cooperate with and help other friendly companies.
9. We will go above and beyond in times of crisis. *If there's no one to authorize the required action in times of company or customer crisis - do what you know in your heart is right. (You may rent helicopters if necessary.)*

Document Information

- Ross Part Number: **4848DR-110-02.0**
- Release Date: December, 2023.

Copyright

©2023 Ross Video Limited, Ross®, MiniME™, and any related marks are trademarks or registered trademarks of Ross Video Limited. All other trademarks are the property of their respective companies. PATENTS ISSUED and PENDING. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, mechanical, photocopying, recording or otherwise, without the prior written permission of Ross Video. While every precaution has been taken in the preparation of this document, Ross Video assumes no responsibility for errors or omissions. Neither is any liability assumed for damages resulting from the use of the information contained herein.

Microsoft®, Windows®, and Windows XP® are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

Macintosh®, and OS X® are trademarks of Apple Inc., registered in the U.S. and other countries.

Google Chrome™, Google®, and the Google logo are registered trademarks of Google Inc.

NDI® is a registered trademark of NewTek, Inc.

Patents

Patent numbers US 7,034,886; US 7,508,455; US 7,602,446; US 7,802,802 B2; US 7,834,886; US 7,914,332; US 8,307,284; US 8,407,374 B2; US 8,499,019 B2; US 8,519,949 B2; US 8,743,292 B2; US D752,530 S; GB 2,419,119 B; GB 2,447,380 B; and other patents pending.

Important Regulatory and Safety Notices to Service Personnel

Before using this product and any associated equipment, refer to the “**Important Safety Instructions**” listed in the front of this manual to avoid personnel injury and to prevent product damage.

Product may require specific equipment, and/or installation procedures to be carried out to satisfy certain regulatory compliance

requirements. Notices have been included in this publication to call attention to these specific requirements.

Symbol Meanings



Protective Earth: This symbol identifies a Protective Earth (PE) terminal, which is provided for connection of the supply system's protective earth (green or green/yellow) conductor.



Important: This symbol on the equipment refers you to important operating and maintenance (servicing) instructions within the Product Manual Documentation. Failure to heed this information may present a major risk of damage or injury to persons or equipment.



Warning: The symbol with the word “Warning” within the equipment manual indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION: The symbol with the word “Caution” within the equipment manual indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.




Warning Hazardous Voltages: This symbol is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product enclosure that may be of sufficient magnitude to constitute a risk of shock to persons.





ESD Susceptibility: This symbol is used to alert the user that an electrical or electronic device or assembly is susceptible to damage from an ESD event.

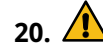
Important Safety Instructions

1.  **Warning:** Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any ventilation openings. Install in accordance with manufacturer's instructions.
8. Do not install near heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one

wider than the other. A grounding type plug has two blades and a third grounding prong. The third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

10. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Unplug this apparatus during lightning storms or when unused for long periods of time.
13. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as when the power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
14. Do not expose this apparatus to dripping or splashing, and ensure that no objects filled with liquids, such as vases, are placed on the apparatus.
15. To completely disconnect this apparatus from the AC Mains, disconnect the power supply cord plug from the AC receptacle.
16. The mains plug of the power supply cord shall remain readily operable.
17.  **Warning:** Indoor Use: To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.
18. The safe operation of this product requires that a protective earth connection be provided. A grounding conductor in the equipment's supply cord provides this protective earth. To reduce the risk of electrical shock to the operator and service personnel, this ground conductor must be connected to an earthed ground.

19.  **Warning:** This apparatus, when equipped with multiple power supplies, can generate high leakage currents. To reduce the risk of electric shock, ensure that each individual supply cord is connected to its own separate branch circuit with an earth connection.



20. **CAUTION:** These service instructions are for use by qualified service personnel only. To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

21. Service barriers within this product are intended to protect the operator and service personnel from hazardous voltages. For continued safety, replace all barriers after servicing.
22. Certain parts of this equipment still present a safety hazard with the power switch in the OFF position. To avoid electrical shock, disconnect all A/C power cords from the chassis' rear appliance connectors before servicing.
23. This product contains safety critical parts, which, if incorrectly replaced, may present a risk of fire or electrical shock. Components contained within the product's power supplies and power supply area are not intended to be customer-serviced and should be returned to the factory for repair.
24. To reduce the risk of fire, replacement fuses must be the same type and rating.
25. Use only power cords specified for this product and certified for the country of use.
26. The safe operation of this equipment requires that the user heed and adhere to all installation and servicing instruction contained within the equipment's Setup Manuals.

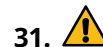


27. **Warning:** This product includes "Ethernet Ports" which allow this product to be connected to local area networks (LAN). Only connect to networks that remain inside the building. Do not connect to networks that go outside the building.



28. **CAUTION:** This apparatus contains a Lithium battery, which if replaced incorrectly, or with an incorrect type, may cause an explosion. Replace only with a CR2032 coin type lithium battery. Dispose of used batteries according to the manufacturer's instruction by qualified service personnel.

29. For use at altitude 2000m or lower.
30. For use in non-tropical locations.



31. **CAUTION:** Do not make mechanical or electrical modifications to the equipment or add metallic items, such as metallic foil labels, to the printed circuit boards. Modifications can impair regulatory compliance, or performance and may void your warranty.

EMC Notices

United States of America — FCC Part 15

This equipment has been tested and found to comply with the limits for a class A Digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.



Important: Changes or modifications to this equipment not expressly approved by Ross Video Limited could void the user's authority to operate this equipment.

Canada

This Class “A” digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe “A” est conforme à la norme NMB-003 du Canada.

Korea — Class A Statement

이 기기는 업무용 환경에서 사용할 목적으로 적합성 평가를 받은 기기로서 가정용 환경에서 사용하는 경우 전파간섭의 우려가 있습니다.

This device has been evaluated for conformity for use in a business environment. When used in a home environment, there is a danger of interference.

Europe

This equipment is in compliance with the essential requirements and other relevant provisions of **CE Directive 93/68/EEC**.

International

This equipment has been tested to **CISPR 22:1997** along with amendments **A1:2000** and **A2:2002**, and found to comply with the limits for a Class A Digital device.



Important: This is a Class A product. In domestic environments, this product may cause radio interference, in which case the user may have to take adequate measures.

General Handling Guidelines

- Careful handling, using proper ESD precautions, must be observed.
- Power down the system before PCB removal.

A Word About Static Discharge

Throughout the many procedures in this manual, please observe all static discharge precautions.



CAUTION: Avoid handling the switcher circuit boards in high static environments such as carpeted areas, and when synthetic fiber clothing is worn. Touch the frame to dissipate static charge before removing boards from the frame, and exercise proper grounding precautions when working on circuit boards. Exercise proper grounding precautions when working on circuit boards.

Warranty and Repair Policy

Ross Video Limited (Ross) warrants its switchers and related options, to be free from defects under normal use and service for a period of ONE YEAR from the date of shipment. Fader handle assemblies are warranted for the life of the product. If an item becomes defective within the warranty period Ross will repair or replace the defective item, as determined solely by Ross.

Warranty repairs will be conducted at Ross, with all shipping FOB Ross dock. If repairs are conducted at the customer site, reasonable out-of-pocket charges will apply. At the discretion of Ross, and on a temporary loan basis, plug in circuit boards or other replacement parts may be supplied free of charge while defective items undergo repair. Return packing, shipping, and special handling costs are the responsibility of the customer.

Software upgrades for switchers may occur from time to time, and are determined by Ross Video. The upgrades are posted on the Ross Video website, and are free of charge for the life of the switcher.

This warranty is void if products are subjected to misuse, neglect, accident, improper installation or application, or unauthorized modification.

In no event shall Ross Video Limited be liable for direct, indirect, special, incidental, or consequential damages (including loss of profit). Implied warranties, including that of merchantability and fitness for a particular

purpose, are expressly limited to the duration of this warranty.

This warranty is TRANSFERABLE to subsequent owners, subject to Ross Video's notification of change of ownership.

Environmental Information

Waste Electrical and Electronic Equipment Directive (WEEE Directive)

The equipment that you purchased required the extraction and use of natural resources for its production. It may contain hazardous substances that could impact health and the environment.

To avoid the potential release of those substances into the environment and to diminish the need for the extraction of natural resources, Ross Video encourages you to use the appropriate take-back systems. These systems will reuse or recycle most of the materials from your end-of-life equipment in an environmentally friendly and health conscious manner.

The crossed-out wheeled bin symbol invites you to use these systems.



If you need more information on the collection, reuse, and recycling systems, please contact your local or regional waste administration.

You can also contact Ross Video for more information on the environmental performances of our products.

Use of Hazardous Substances in Electrical and Electronic Products (China RoHS)

Ross Video Limited has reviewed all components and processes for compliance to:

“Management Methods for the Restriction of the Use of Hazardous Substances in Electrical and Electronic Products” also known as China RoHS.

The “Environmentally Friendly Use Period” (EFUP) and Hazardous Substance Tables have been established for all products. We are currently updating all of our Product Manuals.

The Hazardous substances tables are available on our website at: <http://www.rossvideo.com/about-ross/company-profile/green-practices/china-rohs.html>

电器电子产品中有毒物质的使用

Ross Video Limited 按照以下的标准对所有组件和流程进行了审查:

“电器电子产品有害物质限制使用管理办法” 也被称为中国RoHS。

所有产品都具有 “环保使用期限” (EFUP) 和有害物质表。目前, 我们正在 更新我们所有的产品手册。

有害物质表在我们的网站:

<http://www.rossvideo.com/about-ross/company-profile/green-practices/china-rohs.html>

Company Address

Ross Video Limited — 8 John Street Iroquois, Ontario, Canada, K0E 1K0

Ross Video Incorporated — P.O. Box 880, Ogdensburg, New York, USA, 13669-0880

General Business Office: (+1)613-652-4886

Fax: (+1)613-652-4425

Toll Free Technical Support (North America): 1-844-652-0645

Toll Free Technical Support (International): +800 1005 0100

Technical Support: (+1)613-652-4886

After Hours Emergency: (+1)613-349-0006

E-Mail (Support): techsupport@rossvideo.com

E-Mail (General): solutions@rossvideo.com

Website: www.rossvideo.com

Technical Support

At Ross Video, we take pride in the quality of our products, but if a problem does occur, help is as close as the nearest telephone.

Our 24-Hour Hot Line service ensures you have access to technical expertise around the clock. After-sales service and technical support are provided directly by Ross Video personnel. During business hours (eastern standard time),

technical support personnel are available by telephone. Outside of normal business hours and on weekends, a direct emergency technical support phone line is available. If the technical support personnel who is on call does not answer this line immediately, a voice message can be left and the call will be returned shortly. Our Technical support staff are available to react to any problem and to do whatever is necessary to ensure customer satisfaction.

Supporting Documentation

Ross Video provides a wide variety of helpful documentation for the setup and support of your equipment. Most of this documentation can be found either on the Product Resources disk that came with your equipment, on the Ross Video website (www.rossvideo.com), or on the Ross Video Community site (discussions.rossvideo.com/)

- **Carbonite webhelp** — visit help.rossvideo.com/carbonite.
- **Software Licenses (4841DR-502)** — third-party software licences.
- **Carbonite Multilingual Safety Information (4802DR-503)** — translated product safety information
- **Device Setup** (help.rossvideo.com/carbonite-device) — setup information for controlling external devices from the switcher.

Contents

Features.....12

Custom Controls.....	12
Sequencer.....	12
Device Control.....	12
DVE (Fly Key).....	12
Effects Dissolve.....	12
General Purpose Interface (GPI).....	12
LiveEDL.....	12
Matte Generator.....	12
Media-Store.....	13
MediaManager.....	13
MemoryAI Recall Mode.....	13
Memory System.....	13
MiniME™.....	13
High Dynamic Range (HDR) and Wide Color Gamut (WCG) Conversion.....	13
MultiScreen.....	13
MultiViewer.....	13
OverDrive® Caprica Support.....	14
Pattern and Matte Generators.....	14
Tally Outputs.....	14
XPression Live CG.....	14

DashBoard.....15

Switcher Status in DashBoard.....	15
Configuration.....	15
Devices.....	15
Live Assist.....	15
PanelINK.....	15
Custom Controls.....	16
MediaManager.....	16
Personality.....	16
Help.....	16
Menu Group Access.....	16
To Set the Menu Access.....	17

Role Based Access Control.....18

To Turn on Role Based Access Control for Ross Platform Manager.....	18
--	----

SoftPanel.....19

Menu Area.....	19
User Area.....	19
Control Area.....	19
Bus Area.....	20

Ultritouch.....21

Safe Power Down/Restart.....22

To Shut Down the Switcher.....	22
To Restart the Switcher.....	22

Audio and Video Processing.....23

Video Processing and Flow.....	23
--------------------------------	----

Video Sources.....24

To Select a Source on a Bus from DashBoard.....	24
---	----

Matte Source.....25

To Set Up a Matte Color.....	25
------------------------------	----

Copying.....26

ME Copy.....	26
To Copy an ME.....	26
Key Copy.....	26
To Copy a Key.....	26
Key Swap.....	26
To Perform a Key Swap.....	26

Transitions.....27

Performing Transitions.....	27
To Perform a Transition.....	27
To Perform a Transition on TouchDrive (Memory Area).....	28
To Perform a Transition on TouchDrive (No Memory Area).....	30
To Perform a Transition on Carbonite Black.....	31
Cut Transitions.....	31
Dissolve Transitions.....	32
To Set Up a Dissolve.....	32
DVE Transitions.....	32
To Set Up a DVE Transition.....	32

Keying.....33

Self Keys.....	33
To Set Up a Self Key.....	33
Auto Select Keys.....	33
To Set Up an Auto Select Key.....	33
DVE Keys.....	34
To Set Up a DVE Key.....	34
To Apply a DVE to a Key (Fly Key).....	35
To Apply a Border/Edge Softness to a DVE Key.....	35
To Apply Lighting to the DVE Border.....	36
Masks.....	37
To Box Mask a Key.....	37
Split Keys.....	37
To Set Up a Split Key.....	37

Memory Functions.....38

Storing Memories.....	38
To Store a Memory.....	38
Recalling Memories.....	38

Memory Attribute Color Coding.....	39
To Recall a Memory.....	39
Memory Attributes.....	40
To Set the Memory Attributes.....	40
Deleting a Memory.....	41
To Delete a Memory.....	41
Memory Names and Mnemonics (TouchDrive only).....	41
To Assign a Name to a Memory.....	41

Switcher Sets.....42

To Store a Set.....	42
To Load a Set.....	42

Media-Store.....44

Working With Media-Store Animations.....	44
Working With Media-Store Audio.....	44
Media-Store File Specifications.....	45
Loading Stills or Animations.....	45
To Load a Media Item.....	45
Deleting a Media Item.....	46
To Delete A Media Item.....	46
MediaManager Channel Control.....	46
Media-Store Attributes.....	46

Custom Controls.....48

Recording/Editing Custom Controls.....	48
To Record a Custom Control.....	48
To Edit a Custom Control.....	48
Custom Control Pause Mode.....	49
To Set the CC Pause Mode.....	49
Running a Custom Control.....	49
To Run a Custom Control.....	50
Custom Control Names and Mnemonics.....	50
To Name a Custom Control.....	50
Deleting a Custom Control.....	50
To Delete a Custom Control.....	50
Copying and Pasting a Custom Control.....	51
To Copy and Paste a Custom Control.....	51

Sequencer.....52

Creating/Editing Sequences.....	52
To Create/Edit a Sequence.....	52
Loading and Running a Sequence.....	53
To Load a Sequence.....	53
To Run a Sequence.....	53
Sequence Names and Mnemonics.....	53
To Name a Sequence.....	53
Deleting a Sequence.....	54
To Delete a Sequence.....	54
Copying and Pasting a Sequence.....	54
To Copy and Paste a Sequence.....	54

Network Connections.....55

Network Setup.....	55
To Connect DashBoard to the Frame.....	55

To Change the IP Address.....	55
Ross Platform Manager Connections.....	56
FTP Connection.....	56
To Create an SFTP Connection.....	56

Video Reference.....57

Supported Reference Formats.....	57
Switcher Modes.....	57
To Set the Switcher Mode.....	57
Switcher Mode Video Formats.....	58
Switcher Mode Resources.....	58
Switching Field (HD Only)	58
To Set the Switching Field.....	59

Video Inputs.....60

Video Input Setup.....	60
To Set up an External Video Input.....	60
To Set up an Internal Video Input.....	61
Source Names.....	61
To Set Up a Source Name.....	61
To Assign a TSL ID to a Video Input.....	62
Mnemonics.....	62
To Customize Mnemonics for TouchDrive.....	62
To Customize Mnemonics for Carbonite Black.....	63
Auto Key Setup.....	63
To Set Up an Auto Key Association.....	63
GPI Device Control.....	63
To Assign a GPI Output to a Video Source.....	64
Tallies Setup.....	64
To Assign a Tally to a Video Source.....	64
Custom Page Auto Follow.....	64
To Assign a Page to a Custom Page Button.....	65
To Assign a Custom Page to Follow an Input.....	65
Substitution Table.....	65
To Set Up a Pre-Tiled Source.....	66

Video Outputs.....67

UHDTV1 Outputs.....	67
Video Output Setup.....	67
To Set up a Video Output.....	67
Ancillary Data.....	68
To Strip or Pass Ancillary Data.....	68
ME Follows.....	68
To Set Up an ME Follow.....	69
On-Air Setting.....	69
To Set the On-Air Status for an Output.....	69

MultiScreen.....70

MultiScreen Video Processor Setup.....	70
DVE Units.....	71
MiniME™ Origin on the Canvas.....	71
To Set Up MultiScreen.....	71

To Set Up a Pre-Tiled Source.....	72
Splicers.....	74
To Set Up a Splicer.....	74
Frame Sync and Format Conversion.....	76
Supported FSFC Video Formats	76
Input FSFC.....	77
To Assign an FSFC to an Input (UHDTV1 Only).....	77
To Set Up an Input FSFC (HD Only)	77
To Set Up an Input FSFC (UHDTV1 Only).....	78
Frame Delays	79
To Apply a Frame Delay to an Input.....	79
Input Media-Stores.....	80
To Configure an Input as a Media-Store.....	80
System Real-Time Clock/Date.....	81
To Set the System Real-Time Time and Date.....	81
Color Correction.....	82
To Assign a Color Corrector to a Source (UHDTV1 Only).....	82
Proc Amp Color Correction.....	82
To Apply a Proc Amp to a Video Source.....	82
RGB Color Correction	82
To Apply RGB Color Correction to a Video Source.....	82
High Dynamic Range (HDR) and Wide Color Gamut (WCG) Conversion.....	83
Supported HDR and WCG Conversion.....	83
To Set the Switcher Dynamic Range and Color Gamut.....	84
To Set the Video Input Dynamic Range and Color Gamut.....	84
Personality.....	86
Personality Settings.....	86
General Settings.....	86
Transition Settings.....	87
Color Schemes.....	88
To Select a Color Scheme.....	88
To Create a Custom Color Scheme.....	88
Bus Maps.....	88
To Create a Bus Map.....	89
User Buttons.....	89
To Set A User Button.....	89

Licenses.....	90
To Add a License.....	90
GPI Control.....	91
GPI Trigger Types.....	91
GPI Setup.....	91
To Set Up a GPI Input.....	91
To Set Up a GPI Output.....	92
MultiPanel.....	93
To Set Up MultiPanel Permissions.....	93
SDPE Reconfiguration for Switcher Type.....	94
To Configure the SDPE for Carbonite.....	94
To Configure the SDPE for Acuity®	94
Diagnostics and Maintenance.....	95
Switcher Status.....	95
Switcher Information Text File.....	95
Switcher Logs.....	96
To Copy Logs To a USB.....	96
Diagnostic Tests.....	96
To Run the Tally Test.....	96
To Run the GPI Input Test.....	96
To Run the GPI Output Test.....	96
To Run the Control Panel Test.....	97
To Run the LED Test.....	97
To Run the Display Test.....	97
Error Messages.....	97
Switcher Reset.....	98
Custom Reset Settings (RState).....	98
Factory Default Settings.....	98
Frame DIP Switches.....	99
Software Upgrade.....	100
To Upgrade the Switcher OS.....	100
To Upgrade the Switcher Software.....	100
Specifications.....	101
Resources.....	101
Network Ports.....	101
Frame Ports.....	101
Serial Port.....	102
GPI Port.....	102
Tally Port.....	102
LTC Port.....	103
Custom Control Events.....	104
Operations Custom Controls.....	104

Canvas (BKGD DVE).....	104
Custom Control Events.....	105
Keyer.....	106
Media-Store.....	115
Matte.....	119
Sequencer.....	119
Special.....	120
Switcher Operation.....	120
Transitions.....	121
UltraScene.....	128
Personality Custom Controls.....	129
Personality.....	129
Installation Custom Controls.....	130
Switcher Installation.....	130
MultiViewer.....	135
Device Custom Controls.....	141
Audio Mixer (Device).....	141
Camera.....	141
GPI.....	142
PBus II.....	143
RossTalk.....	143
Video Server.....	150
Glossary.....	152
Index.....	155

Features

Thank you for buying a Ross Video Ultrix Carbonite Mosaic Multi-Definition Live Production Switcher. The Ultrix Carbonite Mosaic builds on the Ross Video reputation for designing switchers that fit the needs of any production environment.

Custom Controls

This feature brings the power of macros to the switcher operator. Button presses, menu selections, event commands, or even the switcher state can be recorded to a custom control with pauses or holds between the events. A simple button press can play these events back again. Step through complex show openings as easily as pressing Custom Control buttons 1, 2, then 3.

Sequencer

The switcher has 5 Sequencers that allow you to create a playlist or rundown of custom events, much like custom controls. Each Sequencers can be run independently or linked to other Sequencers so that they all advance together. The Sequencer uses sequences to store the rundown of events. These sequence files can be loaded into one or multiple Sequencers.

Tip: You can link multiple Sequencers together so that as you advance through one, the other Sequencers will advance.

Device Control

The switcher can control a number of external devices, such as video servers and robotic cameras. For a complete list of supported devices, and information on how to set up and control these devices, visit the Ross Video website

(rossvideo.com/production-switchers/carbonite/interface-list).

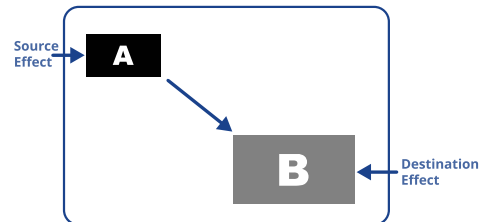
Device setup can be done through DashBoard.

DVE (Fly Key)

The advanced 2D DVE comes standard with each switcher, and can be used for performing over the shoulder, or picture in picture shots. This allows all key types to be zoomed, cropped, and repositioned horizontally and vertically to create the look you want, or you can use one of the useful pre-built 2D effects to perform 2D background transitions.

Effects Dissolve

The Effects Dissolve feature allows you to interpolate from one memory to another using a memory recall. The switcher will interpolate from the starting memory to the destination memory, creating a smooth, two key frame effect.



Only elements such as clip level and pattern position can be interpolated in the effects dissolve. Other elements, such as crosspoint selection, pattern, and next transition data are recalled first, and then the switcher will slew to the recalled memory.

An effects dissolve can be performed on as many elements and MEs as required, based on the memory that is being recalled.

General Purpose Interface (GPI)

The switcher is equipped with 24 GPI I/Os that can be assigned as either an input or output independently.

The GPI inputs allow the switcher to interface with peripheral equipment such as editors. Each GPI input can be used to perform simple editing and switcher functions such as fade to black or an auto transition.

LiveEDL

Edit Decision Lists (EDL) are files used by non-linear editing (NLE) suites to aid in post-production. Your switcher can capture EDL data in a file that you load into your NLE suite.

For information on using the LiveEDL feature, visit the Ross Video Website (rossvideo.com).

Matte Generator

A matte generator per ME comes standard. Any one of the color generators can be assigned to MATTE. An additional simple color generator is available for an Aux Bus.

Media-Store

Each channel of Media-Store provides a combined video with alpha for playout of stills and animations that are available switcher-wide, allowing for thousands of full screen stills and logos that can be cached and used on the switcher.

MediaManager

The MediaManager allows you to easily manage stills and animations on the switcher in a graphics interface.

MemoryAI Recall Mode

We take the guessing out of memory recalls by ensuring that a memory recall will not affect what is currently on-air. MemoryAI uses the content of the memory to configure the Next Transition area and Preview bus for the background and keyers so that the next transition takes the same sources on-air that were on-air in the memory.

For example, store a memory that has a key on-air with CAM1 and CAM2 selected on the background. When this memory is recalled normally, it pops the same key on-air with CAM1 and CAM2 on the background. When the memory is recalled with MemoryAI turned on, CAM1 is selected on the preset bus, and CAM2 is selected on a key that is not on-air. The transition area is then set up for a background transition to bring CAM2 onto the background, take any on-air keys off, and take a key on-air with CAM1.

Memory System

Storage for 100 complete switcher snapshots per ME, MiniME™, and Canvas comes standard with all switchers. All of these memories can be stored to a USB media drive, providing custom tailored memories for every operator and every show.

MiniME™

The MiniME™ is an additional ME that is provided with the switcher to perform basic dissolves and cuts. Each MiniME™ has keyer, background, and preset buses. Unlike a full ME, the MiniME™ only supports dissolves and cuts. The MiniME™ shares all the same sources as the ME.

High Dynamic Range (HDR) and Wide Color Gamut (WCG) Conversion

The RGB color correctors are used to convert between different SDR and HDR ranges and between color gamuts (WCG).

Note: You must have available color correctors to be able to perform the HDR/WCG conversion.

Supported Color Gamuts:

- **BT.709** — color gamut recommended for HD video signals.
- **BT.2020** — wide color gamut recommended for UHDTV1 video signals.

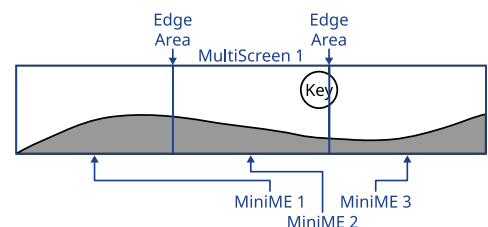
Supported Dynamic Ranges

- **SDR** — Standard Dynamic Range.
- **HLG** — Hybrid Log Gamma.
- **PQ** — Perceptual Quantizer.
- **S-Log3** — Sony® S-Log3.

MultiScreen

The MultiScreen is made up of a number of Canvas generators. Each Canvas breaks the scene up into separate outputs (MiniME™ outputs) that can be sent to independent projectors or displays to make a unified picture.

Each screen in the Canvas output uses a MiniME™ to create the background and keys of the output.



MultiViewer

The MultiViewer Shift features allows you to access a shifted set of sources for the MultiViewer by pressing the **SHIFT** button on a control panel or in ViewControl. The MultiViewer Shift functionality can only be assigned to a single panel at a time.

Each MultiViewer head supports an integrated clock that can display time of day, timecode, or a countdown timer. The position, size, and color of the clock can be adjusted.

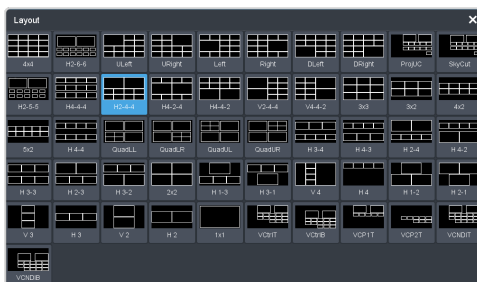


Figure 1: HD Layouts

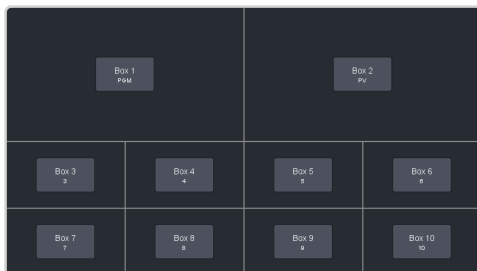


Figure 2: MultiViewer Grid

can be controlled from the XPression Software Client. This feature supports still images only. Each switcher comes with a single license of XPression. Additional licenses can be ordered.

OverDrive® Caprica Support

Ultrix Carbonite Mosaic can be controlled from OverDrive® using the Caprica interface. This interface allows OverDrive® to perform memory recalls, transitions, and run custom controls on the switcher. For information on setting up Caprica to interface with the switcher, refer to the documentation that came with your Caprica server.

Pattern and Matte Generators

A single pattern generator dedicated to wipes comes standard, and is equipped with 10 classic wipes. Most wipes can be rotated, bordered, multiplied, aspectized, and repositioned.

Tally Outputs

The switcher has 24 assignable tally transistors located in the rack frame. Each tally can be assigned to any number of combinations of input and output or bus.

XPression Live CG

Seamlessly combine the creative power of the Ross® XPression Designer software with the ease of use of your Ross® switcher. Create stunning still graphics using XPression Designer, and transfer them directly to an media-store channel on the switcher using the RossLinq interface. Up to four (4) channels with dedicated alpha

DashBoard

DashBoard provides the main menu system to the switcher.

Download and install the latest version of DashBoard from <http://www.opengear.tv/>. Review the documentation that comes with DashBoard for information on installing and launching DashBoard.

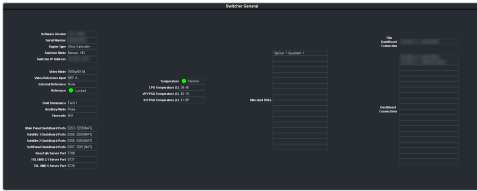
Note: Ultrix Carbonite Mosaic requires DashBoard v9.1, or higher.

Tip: You can also connect to the switcher from an Ultritouch using DashBoard. Refer to [Ultritouch](#) on page 21 for more information.

Tip: If DashBoard is having connection issues you can force DashBoard to reconnect to all devices from the 3-knob menu of TouchDrive or SoftPanel (Press **MENU** > **Reset** > **NEXT** > **NEXT** > **NEXT** > **NEXT** > **DashBoard Reboot**).

Switcher Status in DashBoard

The DashBoard control system allows you to connect to the switcher and view status information for various components of the frame.

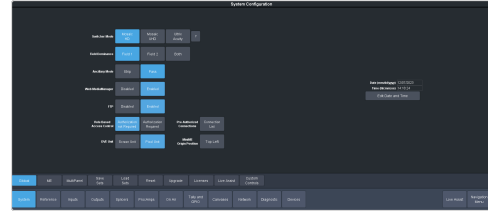


Tip: If the TouchDrive control panel is connected to the switcher, an additional tab for **Panel** is available that shows internal temperatures for that panel.

Tip: The status messages on the front panel menu, the status page, and the icons in the DashBoard Tree View will alert you if there is an alert condition. Green for normal, amber for alert, and red for alarm.

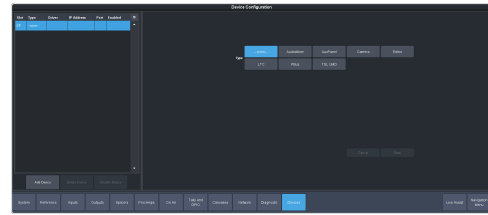
Configuration

The Configuration node provides access to switcher settings such as Reference, Inputs, Outputs, and MultiViewer. You can switch between the different configurations by selecting the pages at the bottom of the DashBoard window.



Devices

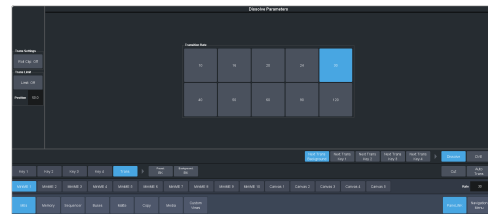
The Devices page on the Configuration node allows you to configure external devices to be controlled by the switcher.



Tip: Click **Disable Device** to disable the selected device (does not apply to Audio Mixers).

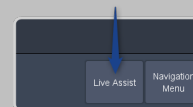
Live Assist

The Live Assist node provides access to operational functions such as keying, transition, and memory settings of the switcher. You can switch between the different settings by selecting the tabs at the bottom of the DashBoard window.



Tip: The **Custom View** button on the **Live Assist** page opens a separate page where you can set up custom DashBoard pages. These custom pages can also be set to auto follow specific video sources. This allows you to have Live Assist show a specific custom page when a video source is selected.

Tip: You can quickly jump to Live Assist from any other page using the **Live Assist** button next to the **Navigation Menu** button at the bottom right corner of all non-Live Assist pages.



PanelINK

PanelINK allows Live Assist to follow the button presses on the control panel and display the relevant tabs. For example, with **PanelINK**

turned on, press **SEL** for any keyer and Live Assist shows the settings for that keyer. Press the **WIPE** buttons and Live Assist shows the transitions settings for a wipe. With **PanelLINK** turned off, Live Assist does not switch between tabs.

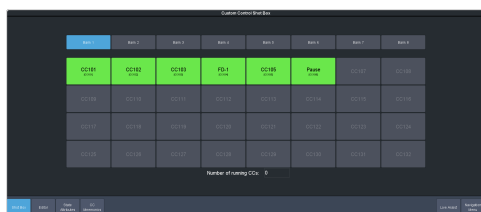
Note: The PanelLINK feature controls which DashBoard page or tab is shown. Turning PanelLINK off does not lock the DashBoard menu and the current settings will update as selections are made on DashBoard or the control panel. For example, with PanelLINK on selecting a keyer displays the Live Assist tab for that keyer. Select a different key type from the panel and the DashBoard menu changes to show the settings for that key type. If you turn PanelLINK off, the DashBoard menu will continue to change with the different key types, but will not change to the Trans tab if you press a transition type button on the panel.



Note: PanelLink only works on the Live Assist page.

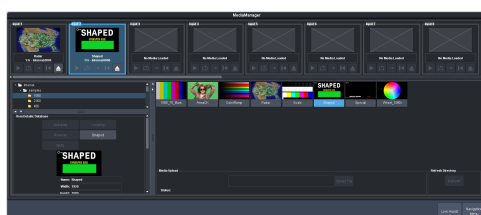
Custom Controls

The Custom Control provides access to recording, editing, and running custom controls, as well as setting up the mnemonics for custom control on the TouchDrive control panel.



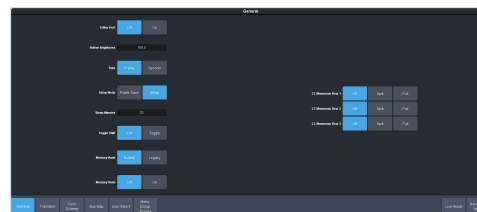
MediaManager

The MediaManager node allows you to control the Media-Store of the switcher. Upload media items, load media to channels, and set database elements.



Personality

The Personality node provides the switcher personality settings.



Help

The help node in DashBoard launches the integrated help system with full search capability.

Menu Group Access

Disable certain menu groups to improve DashBoard performance.

Menu group access disables certain DashBoard menu groups for the DashBoard port (5253, 5255, 5256, or 5257) that you are using. When a menu group is disabled, the data for those menus are not sent to that port. Without the data the menus are grayed out and the nodes do not appear in the DashBoard tree view.

Keep the following in mind:

Keep the following in mind when working with the menu group access:

- When you disable a menu group, the data for those menus are no longer sent to any DashBoard on the same port as you. This can greatly speed up DashBoard connection times.
- When you change a menu access setting, all DashBoard connections, on all ports, to that frame are reset and reconnect.
- If you disable a menu group, any controls on a CustomPanel that were added from that port will no longer function.
- If you are connecting to the switcher using Caprica or Lightning you should set all menu groups to **On** for the port they are connecting on.
- You cannot disable the Personality menu.
- The menu access settings are not stored with Personality in a switcher set.
- Menu access settings are persistent after a factory default.
- Any change to the menu access resets all DashBoard connections to the frame on all ports.

- A list of all DashBoard connection to the frame and the ports they are using is shown on the **Status** menu.

To Set the Menu Access

Set menu access for all DashBoard connections on the same port.

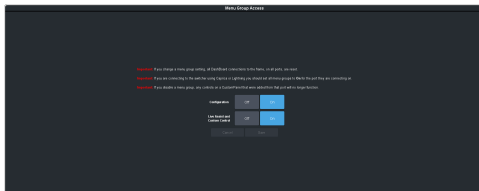


Important: Any change to the menu group access is applied to all DashBoard connections that are using that same port.



Important: If you change a menu group setting, all DashBoard connections to that frame, on all ports, are reset.

1. Click **Navigation Menu > Personality > Menu Group Access**.



2. Click a button next to the Menu Group item to enable (**On**) or disable (**Off**) that menu group.



Important: If you are connecting to the switcher using Caprica or Lightning you should set all menu groups to **On** for the port they are connecting on.

- **Configuration** — turn the **Configuration** menus on or off.
 - **Live Assist and Custom Control** — turn the **Live Assist** and **Custom Control** menus on or off.
3. Click **Save** to apply the changes to all DashBoard connections using the same port.
 4. Click **OK**.

Role Based Access Control

The Ross Platform Manager allows for user authentication and role based access through DashBoard. Once set up in DashBoard, Ross Platform Manager allows for control over who can control Ultrix Carbonite Mosaic based on the roles individual users are assigned to.

Note: Ross Platform Manager does not apply to operation of the switcher from a control panel.

Tip: For information on setting up a Ross Platform Manager server and creating user accounts, refer to the documentation that came with your Ross Platform Manager.

- **Authorization not Required** — RBAC is applied to the switcher, but not enforced. Anyone can control the switcher through DashBoard.
- **Authorization Required** — RBAC is applied to the switcher and enforced. Only users with permission can control the switcher through DashBoard.

4. Click **OK** to reboot the switcher using RBAC permissions from Ross Platform Manager.

Tip: You may have to close and re-launch DashBoard to apply the access control.

To Turn on Role Based Access Control for Ross Platform Manager

From DashBoard you can select whether the Role Based Access Control (RBAC) of Ross Platform Manager is applied to Ultrix Carbonite Mosaic.



Important: Changing the RBAC mode may restrict access to the switcher if your account is not assigned to a role that has the required permission.

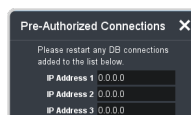
Note: RBAC settings are not stored in switcher sets or changed with a factory default.

1. Click **Navigation Menu > Configuration > System > Global**



2. Click the **Authorized Connections** button and enter the IP address of any trusted DashBoard systems that you want to allow access to the switcher without RBAC permissions.

Tip: A common trusted system would be a TouchDrive control panel. This allows the control panel with a DashBoard interface to continue to control the switcher without the need for a user to log in.



3. Click a **Role Based Access Control** button to apply access control to the switcher.

SoftPanel

SoftPanel provides you with a graphical interface to the menu system and control surfaces of the switcher. This allows you to setup and control the switcher without a control panel.



Important: SoftPanel is a separate panel connection to the frame. Refer to [MultiPanel](#) on page 93 for information on setting up SoftPanel.

The screen can be broken up into several different functional areas. Each of these areas allows you to interact with different aspects of the switcher interface.

Menu Area

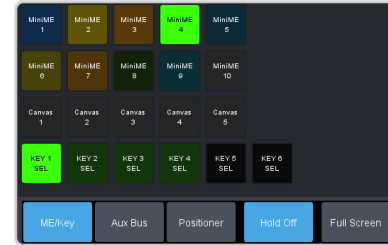
The menu area provides a graphic representation of the menu system on a Carbonite Black control panel. The **Select**, **Up**, and **Down** buttons represent the actions of turning and pressing the knobs on the panel. The buttons in the top right corner allow you to navigate around in the menu tree, and the stylized mnemonic buttons at the bottom allow you to access different menus.



User Area

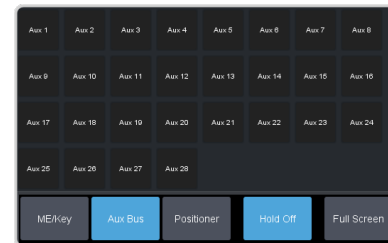
The user area allows you to select what the bus area is assigned to, or interact with a virtual positioner. Press the **ME/Key**, **Aux Bus**, or **Positioner** button to select how the user area appears.

The **ME/Key** button allows you to select what the bus area is assigned to. Click **ME X**, **MiniME X**, **Canvas X**, or **CK** (chroma key) to assign the bus area to that output. Click one of the **Key X Sel** buttons to assign the key bus in the bus area to that key.



The **Aux Bus** button allows you to select one of the aux buses that the key bus row in the bus area is assigned to.

Note: The selection of one of the aux bus or key select buttons indicated what the key bus in the bus area is assigned to. You may have to switch between the **ME/Key** and **Aux Bus** buttons to see where the bus is assigned.



The **Positioner** button provides a virtual interface to the positioner. The positioner is used in device bus, or to move keys or masks around. Click and hold the positioner and move it around to emulate moving the positioner around. The slider to the right of the positioner emulated twisting the positioner knob on the panel. The button to the left of the positioner emulates the button on the top of the positioner knob on the panel.



Control Area

The control area (the upper right of the screen) contains the main DashBoard interface to the switcher. Click **Navigation Menu** and select the menu you want to navigate to. When the **Live Assist** menu is selected, the sub-menus will follow actions in the bus area when **PanelINK** is on.

Bus Area

The bus area provides a graphic representation of the panel row on the switcher. Use the user area buttons to assign the bus area to an ME, key, and aux bus. Sources are then selected on the key, program, and preset buses, and transitions are set up and performed with the transition buttons to the right of the source selection buttons.

Tip: Use the **Hold On** or **2Press** buttons to emulate a press and hold of a button. This allows you to press and hold one button and then press another.

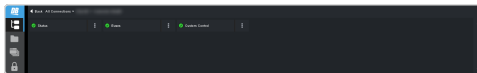


Ultritouch

The 2RU rack mountable Ultritouch adaptable system control panel allows you to control some aspects of switcher operation using a DashBoard interface.

The DashBoard interface on Ultritouch provides status, buses, and custom control tabs. You must connect to the switcher from Ultritouch to be able to control the switcher functions. Refer to the Ultritouch documentation for information on navigating the Ultritouch menu and manually connecting to a device.

Once you are connected to the switcher, tap the **Connected Devices** button and select the switcher you want to control from the list and tap **Carbonite**. The available tabs for the switcher are listed. Tap one of the available tabs to open it.

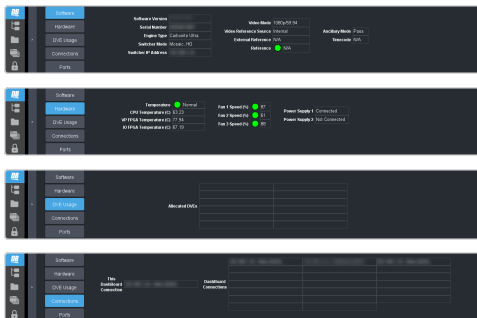


Navigation Menu



Status

This tab allows you to view status information for various switcher components. These tabs are the same as the **Switcher Status** tab from a DashBoard computer.



Buses

This tab allows you to select sources on any bus on the switcher. This tab is this same as the **Bus Assignments** page from a DashBoard computer.

1. Tap the area and bus that you want to select a source on.
2. Tap the source that you want to select or tap **Exit** to close the popup.

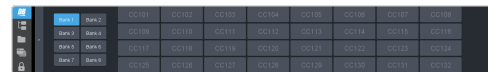
Tip: The currently selected bus is shown at the upper left of the popup.



Custom Control

This tab allows you to run custom controls on the switcher. This tab is this same as the **Custom Control ShotBox** tab from a DashBoard computer. You cannot edit a custom control from this tab.

1. Tap the bank for the custom control you want to run.
2. Tap the custom control on the selected bank that you want to run.



Safe Power Down/Restart

Safely shut down the switcher application so that it can be powered off or restarted.

The switcher application needs to be properly shut down before the hardware can be powered off.



Notice: Failure to properly shut down the application before powering off the hardware could corrupt the software.

To Shut Down the Switcher

Shutdown the switcher application in preparation for powering the system off.

1. Click **Navigation Menu > Configuration > System > Power**



2. Click **Prepare to Shutdown.**
3. Click **OK.**

The switcher will safely shut down the applications in preparation for powering off.

4. Wait for 20 seconds before powering the switcher off.

To Restart the Switcher

Restart the switcher application.

Note: Restarting the switcher application does not restart the hardware and is not the same as powering the system off and on again.

1. Click **Navigation Menu > Configuration > System > Power**



2. Click **Restart Switcher.**
3. Click **OK.**

The switcher application will restart.

Audio and Video Processing

Video and audio signals are processed and passed through the switcher in different ways, depending on how the switcher is being used or is set up. A better understanding of how the switcher is processing these signals help you to achieve the production you want.

Video Processing and Flow

Video is processed in a number of blocks in the switcher subsystem. After video comes into the switcher, the frame synchronizers / format converters are applied (depending on the frame you have). At this point any required color correction is also applied. After input the video signal is routed through the switcher crosspoint. The switcher crosspoint can route any input to any output for straight switching, or to the video processor and DVE and back for video manipulation. Just before the video signal is sent to the output, the processing of the ancillary data is performed.

Tip: Refer to [Ultrix Carbonite Mosaic Video Flow](#) for more information on how the router crosspoint and switcher crosspoint interact.

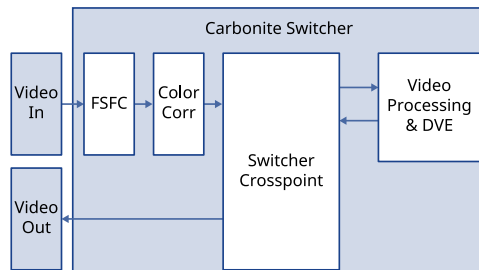


Figure 3: Video Flow Through the Switcher

Video Sources

The switcher has access to three basic types of video sources, external, internal, and follows.

All video sources can be assigned to video source buttons. By pressing a video source button on a bus, the video source assigned to that button is selected on that bus.

- **External** — External video sources come from cameras, video servers, character generators, or other external devices into the switcher.
- **Internal** — Internal video sources come from internally generated video, such as Media-Store channels, matte color, and black.
- **Follows** — Follow video sources allow you to have one bus follow what is selected on another bus. For example, you can assign an Aux Bus to follow an MiniME™ Background so that a source selected on the background bus of that MiniME™ is also selected on the Aux Bus.

4. Select the background, preset, or keyer bus that you want to select a source on. (MiniME™ and Canvas only)

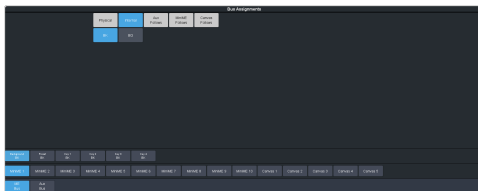
Note: Ensure that the source selected on the bus you want to enter is valid for that destination. For example, you cannot select **MM1Bg** as the source for **MiniME1 Background**. If the source is not valid, you will not be able to select it.

5. Select the type of source you want to assign to the bus and then select the source.
 - **Physical** — the sources on the physical input BNCs and from the router.
 - **Internal** — internally generated sources, including re-entries.
 - **Aux Follows** — use the source that is active on selected aux bus.
 - **MiniME Follows** — use the source that is active on selected MiniME™ bus.
 - **Canvas Follows** — use the source that is active on selected Canvas bus.

To Select a Source on a Bus from Dashboard

To select a video source on a bus, you must identify the bus you want to assign a video source to, and then press the source button you want to select on that bus.

1. Click **Navigation Menu > Live Assist > Buses**.



2. Click **ME Bus** or **Aux Bus** to select the area that you want to select a source on. As you select different areas, the buses for that area are listed on the row above.
3. Click **MiniMEX**, **CanvasX**, or **AuxX** to select the specific bus or area you want to select a source on. With a MiniME™ or Canvas there is an additional selection of the keyer, background, or preset bus that you want to select a source on. The aux buses do not have these selections.

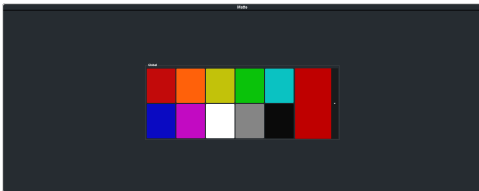
Matte Source

Matte color backgrounds (**BG**) are color signals that can be applied to backgrounds and keys. Color selection is done either by picking a preset color, or by adjusted hue, saturation, and luminance to create a custom color.

Select the matte generator (**BG**) on a background or key bus. The full region of the background or key is filled with the selected color.

To Set Up a Matte Color

1. Click **Navigation Menu > Live Assist > Matte**.



2. Select the matte generator that you want to set the color for.
 - **Global** — set the color for the global matte generator.
3. Click one of the preset colors to assign that color to the selected matte generator.

Tip: You can select a custom color by clicking the color box to the right of the preset colors and selecting a new custom color. Toggle **Live** on to show the color changes live on the matte generator source.

Copying

You can copy the content of an ME or keyer to another ME or keyer.

ME Copy

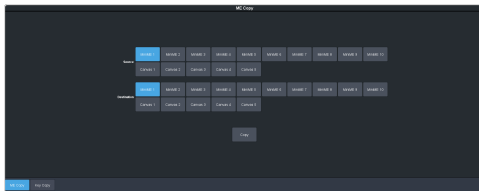
You can copy the entire contents of an MiniME™ or Canvas to another MiniME™ or Canvas. The entire contents of the destination is replaced with the contents of the source.

When you copy a MiniME™, the switcher tries to assign resources to the destination MiniME™ to match the source MiniME™. If these resources are not available, the switcher may need to steal resources.

To Copy an ME

Copy the contents of an ME to another.

1. Click **Navigation Menu** > **Live Assist** > **Copy** > **ME Copy**.



2. Click a **Destination** button to select the destination that you want to copy to.
3. Click a **Source** button to select the source you want to copy.
4. Click **Copy**.

Key Copy

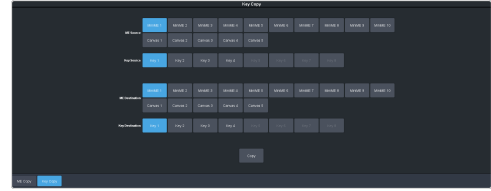
You can copy the entire contents of a keyer or layer to another keyer or layer in the same, or a different ME. The entire contents of the destination keyer are replaced with the contents of the source keyer.

When you copy a key or layer, the switcher tries to assign resources to the destination key to match the source key. If these resources are not available, the switcher steals resources from the highest numbered key that isn't on-air. If all the resources are used by on-air keys, the copy will not take the resource.

To Copy a Key

Copy the contents of a keyer or layer to another.

1. Click **Navigation Menu** > **Live Assist** > **Copy** > **Key Copy**.



2. Click an **ME Destination** and **Key Destination** button to select the destination that you want to copy to.
3. Click an **ME Source** and **Key Source** button to select the source you want to copy.
4. Click **Copy**.

Key Swap

You can swap the entire contents of any two keyers in the same, or different MEs. The video source, position, and key type are all swapped between keyers. This allows you to change the apparent key priority, or layering, of the keys in the video output. For example, key 3 appears over key 2. If you perform a swap between key 3 and key 2, it appears as if key 2 is now over key 3.

Keep the following in mind:

Keep the following in mind when performing a key swap:

- Key swap does not change the on-air status of a keyer.
- A key swap can be recorded as part of a custom control.

To Perform a Key Swap

This procedure swaps the contents of Key 2 and Key 3 as an example. Use the same procedure for any key combination.



Important: A control panel is required to perform this procedure. If you do not have access to a physical control panel, the SoftPanel can be used. The position of items on the menus on the SoftPanel may not match those of a physical panel.

1. Press and hold the **KEY 2 SEL** button.
2. Press the **KEY 3** button in the transition area.

Transitions

Transitions are used to change the background video and take keys on and off-air. A transition can include any combinations of background and keyers for an ME, MiniME™, or Canvas. The background and each keyer can be transitioned independently.

Performing Transitions

What you can include in the transition, and the type of transition you can perform, depend on the number of resources you have, and if you are performing a background and keyer transition at the same time.

Keep the following in mind:

Keep the following in mind when performing transitions:

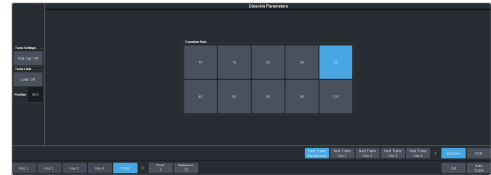
- If any of the sources going on-air have an assigned GPI output, the GPI output is triggered and the switcher then waits the configured pre-delay interval before performing the transition. If you perform a transition with the fader handle, the GPI output is triggered but the pre-delay interval is ignored.
- If any of the sources going on-air are assigned to a video server, you can have the video server play when the source is taken on-air by toggling **Roll Clip** on.
- If any of the sources going on-air are assigned to a video server, the switcher waits for the configured pre-delay interval before performing the transition. If you perform a transition with the fader handle, the pre-delay interval is ignored.
- If the fader is moved during an auto transition, control of the transition is passed to the fader. You must complete the transition with the fader. This allows you to override any auto transition in progress with the fader.
- The **Cut** and **Auto** buttons can be used to transition keys independently.
- You can pause an auto transition by pressing the **Auto Trans** button during the transition. Press the button again to continue the transition.
- If you turn the Transition Limit off when the transition has stopped at the transition limit point, the next transition starts from the

transition limit point and goes forward to complete the transition, instead of going back to the start.

To Perform a Transition

All transitions, with the exception of cuts on the background or key bus, have the same basic setup. The touchscreen menu system offers the touchscreen interface to setup and perform the transition.

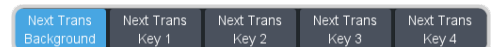
1. Click **Navigation Menu > Live Assist > MEs**.



2. Click the **MiniME X**, or **Canvas X** for the area you want to perform the transition on.
3. Select the video sources you want to take on-air on each bus. Background and keys are set up slightly differently but can be performed with the same transition.
 - **Background** — click **Trans > Preset** and select the new background source.
 - **Key On-Air** — click the **Key X > Key Fill** button for the key you want to take on-air and select the new source. Repeat this for each key you want to take on-air.
 - **Key Off-Air** — you don't need to select the keys at this point.

Tip: Refer to [To Select a Source on a Bus from DashBoard](#) on page 24 for information on selecting sources.

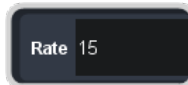
4. Click **Trans**.
5. In the Next Transition area, select the elements (Background and Keys) you want to include in the next transition. You can include any combination of background and keys, but at least one element must be selected.



6. In the **Rate** field, enter the rate that you want the transition performed at. This is the speed, in frames, that it takes for the transition to complete. A Cut or manual fader transitions do not use the transition rate.
 - **Background** — enter a new ME transition rate, in frames, in the **Trans Rate** field.

- **Key Only** — enter a new key transition rate, in frames, in the **Key X Rate** for the key you want to transition.

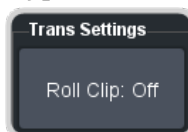
Note: The key rate is only used for key only transitions. Keys included in with the background are transitioned at the ME Rate.



7. In the Transition area, select the type of auto transition you want to perform. If you want to perform a cut you do not need to select a transition type and can move to the next step.

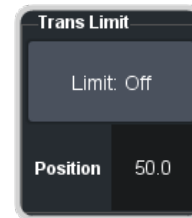


- **DISS** — perform a dissolve or WhiteFlash auto transition. Refer to [To Set Up a Dissolve](#) on page 32 or [To Set Up a WhiteFlash](#) for more information.
 - **DVE** — perform a DVE auto transition. Refer to [To Set Up a DVE Transition](#) on page 32 for more information.
8. Click a **Trans Settings** button to turn the setting on or off. The options available depend on the type of transition selected.



- **Roll Clip** — select whether you want any video server clips assigned to a source being taken on-air to play with the transition (**On**), or not (**Off**).
 - **Preview** — preview the transition on the preview output **On**. You cannot preview the independent key-only transitions or a MiniME™ transition.
 - **Flip Flop** — select whether the wipe runs forward during the first transition and then reverse during the second (**On**), or if it always runs in the same direction (**Off**).
 - **Direction** — select the direction that the wipe travels.
9. Click **Limit** to turn trans limit **On** or **Off**. Enter a value for the trans limit in the **Position** field to set the point in a transition

where an auto transition stops. When active, the point in the transition where the auto transition will stop is indicated by a flashing segment on the transition progress bar next to the fader handle on the control panel. The auto transition proceeds to this point and stops. The second auto transition starts from the transition limit point and goes back to where the first transition started.

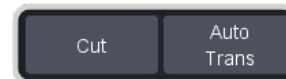


Tip: The **Limit Position** is a percentage with 0 being the starting point of the transition and 100 being the ending point of the transition.

10. Perform the transition.



Important: The **Cut** and **Auto** buttons trigger a transition on what has been selected. If **Trans** is selected a normal background transition is performed. If one of the keys is selected (**Key X**) a key-only transition is performed on the selected key.



- **Auto Trans** — click **Auto Trans**
- **Cut** — click **Cut**

Tip: During an auto trans, press **Auto Trans** again to hold the transition at the current position or press **Cut** to abort the transition and return to the original source.

11. If a pre-delay has been set, and **Roll Clip** is active, the switcher will apply the pre-delay interval before performing the transition.

To Perform a Transition on TouchDrive (Memory Area)

All transitions, with the exception of cuts on the background or key bus, have the same basic setup. The control panel offers physical buttons and mnemonics to setup and perform the transition. Some panels have a memory area that can be used to set the transition rates.

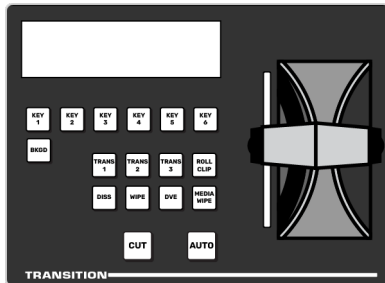
Note: Carbonite button configuration and menus shown.

1. Select the preset or key sources that you want to transition to on the buses.

Tip: You can perform a quick, or hot, cut on the background bus by simply selecting a different source.

2. In the **Transition** area, select the elements you want to include with the transition. If you are including multiple elements, press and hold the first button and press the other buttons to include them in the same transition.

Note: A key should be included in the transition if it is going on-air or off-air. The transition changes the on-air state of the keyer. If a key is on-air, a red indicator is visible on the display just above the key and the **CUT** button for that key is red in the **Keyer** area.



3. In the **Transition** area, select the type of auto transition you want to perform. Refer to the manual that came with your switcher for information on setting up these transitions.

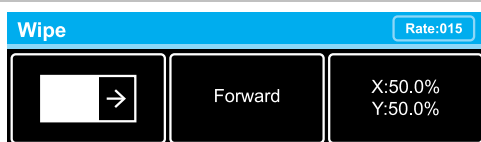
- **DISS** — perform a dissolve or WhiteFlash transition
- **WIPE** — perform a wipe transition
- **DVE** — perform a DVE transition
- **MEDIA WIPE** — perform a MediaWipe transition (Carbonite only)

Note: The **TRANS X** buttons are configurable and can be assigned different functions.

Tip: Press and hold **DISS** and press **Flash** on the row control menu to select a WhiteFlash transition.

4. The display in the **Transition** area shows the current setting for the transition type. Tap one of these settings to show additional options.

Tip: Live Assist follows the transition type selection and shows the settings for that transition type.

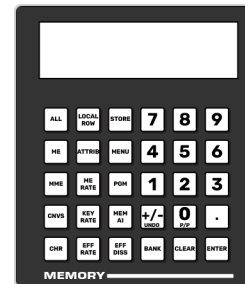


- **Left** — the left button shows the current pattern for the wipe or DVE transition. Tap the button and swipe left or right on

the display to select a different pattern. For a MediaWipe the button shows the name of the media item being used for the transition.

- **Center** — the center button shows the current direction for the wipe, DVE, or MediaWipe transition. Tap the button and select a different direction for the transition to be performed in.
- **Right** — the right button shows the current position of the pattern for the wipe transition or the settings for the MediaWipe transition. Tap the button to have the 3-knob display show the position setting of the pattern and use the positioner to move the pattern around.

5. In the **Memory** area, enter the rate that you want the transition performed at. This is the speed, in frames, that it takes for the transition to complete. A Cut or manual fader transition does not use the transition rate.



- **Background** — press **ME RATE** and use the keypad to enter a new rate, in frames, and press **ENTER**. The rate is shown on the display on the **Transition** area.
- **Key Only** — press **KEY RATE** and use the keypad to enter a new rate, in frames, and press **ENTER**. The rate is shown on the **Keyer** area for each individual key.

Note: The **KEY RATE** is only used for key only transitions. Keys included in with the background are transitioned at the **ME Rate**.

6. Perform the transition.

- **Auto Transition** — press **AUTO**. The transition is performed at the set transition rate.
- **Cut** — press **CUT**.
- **Fader** — move the fader from one limit to the other. The rate at which you push

the fader determines the speed of the transition.

7. If a pre-delay has been set, and the **ROLL CLIP** button is active, the switcher will apply the pre-delay interval before performing the transition.

To Perform a Transition on TouchDrive (No Memory Area)

All transitions, with the exception of cuts on the background or key bus, have the same basic setup. The control panel offers physical buttons and mnemonics to setup and perform the transition.

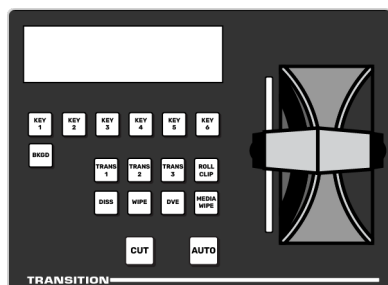
Note: Carbonite button configuration and menus shown.

1. Select the preset or key sources that you want to transition to on the buses.

Tip: You can perform a quick, or hot, cut on the background bus by simply selecting a different source.

2. In the **Transition** area, select the elements you want to include with the transition. If you are including multiple elements, press and hold the first button and press the other buttons to include them in the same transition.

Note: A key should be included in the transition if it is going on-air or off-air. The transition changes the on-air state of the keyer. If a key is on-air, a red indicator is visible on the display just above the key and the **CUT** button for that key is red in the **Keyer** area.



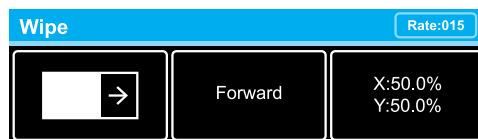
3. In the **Transition** area, select the type of auto transition you want to perform. Refer to the manual that came with your switcher for information on setting up these transitions.
 - **DISS** — perform a dissolve or WhiteFlash transition
 - **WIPE** — perform a wipe transition
 - **DVE** — perform a DVE transition
 - **MEDIA WIPE** — perform a MediaWipe transition (Carbonite only)

Note: The **TRANS X** buttons are configurable and can be assigned different functions.

Tip: Press and hold **DISS** and press **Flash** on the row control menu to select a WhiteFlash transition.

4. The display in the **Transition** area shows the current setting for the transition type. Tap one of these settings to show additional options.

Tip: Live Assist follows the transition type selection and shows the settings for that transition type.

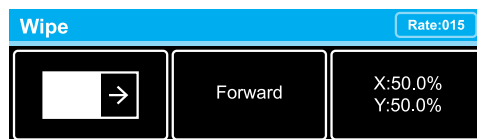


- **Left** — the left button shows the current pattern for the wipe or DVE transition. Tap the button and swipe left or right on the display to select a different pattern. For a MediaWipe the button shows the name of the media item being used for the transition.
- **Center** — the center button shows the current direction for the wipe, DVE, or MediaWipe transition. Tap the button and select a different direction for the transition to be performed in.
- **Right** — the right button shows the current position of the pattern for the wipe transition or the settings for the MediaWipe transition. Tap the button to have the 3-knob display show the position setting of the pattern and use the positioner to move the pattern around.

5. Set the rate for the transition you want to perform.

• Background

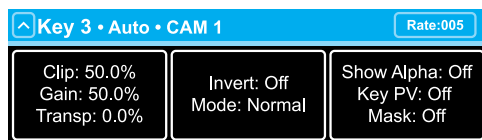
- a. On the Transition area tap **Rate** and use the 3-knob menu to enter the new rate.



• Key Only

Note: The **KEY RATE** is only used for key only transitions. Keys included in with the background are transitioned a the **ME Rate**.

- a. On the Keyer area tap the key you want to set the rate for.



- b. Tap **Rate** and use the 3-knob menu to enter the new rate.

6. Perform the transition.

- **Auto Transition** — press **AUTO**. The transition is performed at the set transition rate.
- **Cut** — press **CUT**.
- **Fader** — move the fader from one limit to the other. The rate at which you push the fader determines the speed of the transition.

7. If a pre-delay has been set, and the **ROLL CLIP** button is active, the switcher will apply the pre-delay interval before performing the transition.

To Perform a Transition on Carbonite Black

All transitions, with the exception of cuts on the background or key bus, have the same basic setup. The control panel offers physical buttons and mnemonics to setup and perform the transition.

1. Select the preset or key sources that you want to transition to on the buses.

Tip: You can perform a quick, or hot, cut on the background bus by simply selecting a different source.

2. In the **Transition** area, select the elements you want to include with the transition. If you are including multiple elements, press and hold the first button and press the other buttons to include them in the same transition.

Note: A key should be included in the transition if it is going on-air or off-air. The transition changes the on-air state of the keyer. If a key is on-air, a red indicator is visible just above the include button for that key and the **CUT** button for that key is red in the **Keyer** area.

3. In the **Transition** area, select the type of auto transition you want to perform. Refer to the manual that came with your switcher for information on setting up these transitions.

- **DISS** — perform a dissolve or WhiteFlash transition
- **WIPE** — perform a wipe transition
- **DVE** — perform a DVE transition
- **MEDIA WIPE** — perform a MediaWipe transition

Note: The **USER** button is configurable and can be assigned different functions.

4. In the **Memory** area, enter the rate that you want the transition performed at. This is the speed, in frames, that it takes for the transition to complete. A Cut or manual fader transition does not use the transition rate.

Note: If your control panel does not have a memory area, you can use the **Time** knob on the 3-knob menu, or **DashBoard**, to set the background transition rate.

- **Background** — press **ME RATE** and use the keypad to enter a new rate, in frames, and press **ENTER**.
- **Key Only** — press **KEY RATE** and use the keypad to enter a new rate, in frames, and press **ENTER**.

Note: The **KEY RATE** is only used for key only transitions. Keys included in with the background are transitioned at the **ME Rate**.

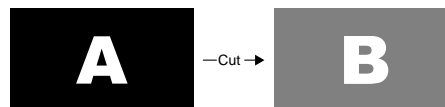
5. Perform the transition.

- **Auto Transition** — press **AUTO**. The transition is performed at the set transition rate.
- **Cut** — press **CUT**.
- **Fader** — move the fader from one limit to the other. The rate at which you push the fader determines the speed of the transition.

6. If a pre-delay has been set, and the **ROLL CLIP** button is active, the switcher will apply the pre-delay interval before performing the transition.

Cut Transitions

A Cut is an instantaneous transition between video sources. Unlike all the other transition types, there are no intermediate steps between the video source that is on-air, and the video source you are transitioning to.



A cut is performed either by selecting different sources on a background or key bus, or by pressing a **Cut** button.

Dissolve Transitions

A Dissolve is a gradual fade between video sources. For a Background transition, the video signal on the Background bus and the video signal on the Preset bus are mixed together until the Preset bus video signal completely replaces the Background bus video signal.



To Set Up a Dissolve

A dissolve transition requires that you set a background and key transition rate for the auto transition. A fader transition does not use the transition rate.

1. Click **Navigation Menu > Live Assist > MEs** and select the ME that you want to perform the transition on.

Tip: You can use the same procedure for a MiniME™ or Canvas. You can use the same procedure for a MiniME™.

2. Click **Trans > Dissolve**, or press **DISS** in the **Transition** area on the control panel.



3. Click **Dissolve**.

DVE Transitions

A DVE transition is a gradual transition where one video signal is replaced with another according to a 2D DVE pattern.

Keep the following in mind:

Keep the following in mind when performing DVE transitions:

- You must include the background when performing a DVE transition on a Chroma Key, Self Key, or Auto-Select Key. If you do not include the background, a dissolve transition is performed.
- Performing a DVE transition on a DVE Key without including the background scales the transition effect to the size of the DVE Key.

This transition does not consume an additional DVE resource.

- Performing a DVE transition on a DVE Key with the background included does not scale the transition effect. This transition consumes the second DVE resource.
- You cannot perform a DVE transition on a Canvas.
- You can only perform a DVE transition on a DVE key on a MiniME™. If the transition includes the Background, or a keyer that is not set as a DVE, the transition is switched to a dissolve.

To Set Up a DVE Transition

A DVE transition requires that you select the DVE pattern and duration for the transition.

1. Click **Navigation Menu > Live Assist > MEs** and select the ME that you want to perform the transition on.
2. Click **Trans > DVE**, or press **DVE** in the **Transition** area on the control panel.



3. Click a **DVE Pattern** button to select the DVE wipe pattern you want to use.

Keying

Keying is the term used to describe when you insert (or electronically cut) portions of one scene into another, or place titles over background images. Keys are made up of two basic components, an alpha, that cuts the hole in the background video, and a fill, that fills the hole with different video.

Keys, like MEs, are layered onto the background video signal from the lowest numbered key to the highest on an ME.

Note: DashBoard Live Assist will not notify you of error messages or if a confirmation is required. For example, if there are no available resources for the DVE Key you are trying to create, the switcher will not create the key and no notification will be shown.

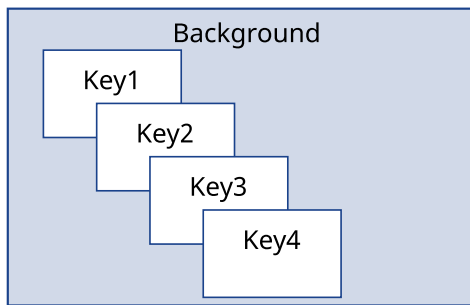


Figure 4: Key Priority

Self Keys

A Self Key is a key in which the luminance, or brightness, values of the key source are used as the alpha for the key.

To Set Up a Self Key

A self key is set up by selecting the keyer and video source you want to use, and adjusting the key parameters.

1. Click **Navigation Menu > Live Assist > MEs** and select the ME and key that you want to set up.

Tip: You can use the same procedure for a MiniME™ or Canvas. You can use the same procedure for a MiniME™.

2. Click **Key Fill** and select the video signal you want to use for the key.
3. Click **Self Key**.



Tip: Click **Make Linear** to return the clip and gain values to the default settings.

4. Use the **Clip** slider to remove lower-saturated colors from the video image.
5. Use the **Gain** slider to adjust the transition between the video image and the parts of the video image that are removed.
6. Use the **Transparency** knob to adjust the transparency of the key from opaque (**0**) to fully transparent (**100**).
7. Click **Key Invert** to reverse the polarity of the key alpha so that the holes in the background are cut by dark areas of the key alpha instead of bright areas.
8. Click a **Keyer Mode** button to override the shaped setting for the key.
 - **Normal** — set to a linear keyer for an unshaped source.
 - **Additive** — set to an additive keyer for a shaped source. The **Key Invert** function is disabled in this mode.
 - **Full** — set the alpha to fully opaque (white). The **Clip**, **Gain**, **Make Linear**, and **Key Invert** functions are disabled in this mode.
9. Click **Mask** to apply a mask to the key.

Auto Select Keys

An Auto Select key is a key in which two video signals are required to make the key. The alpha is used to cut the hole in the video and the fill is used to fill the hole. These signals often originate from external devices such as character generators, external still stores, or other graphics systems.

To Set Up an Auto Select Key

An auto select key is set up by selecting the keyer and video source you want to use, and adjusting the key parameters. The pairing of the video and alpha video signals is done when configuring video inputs. Refer to the Setup Manual that came with your switcher for information on setting up Auto Keys.

1. Click **Navigation Menu > Live Assist > MEs** and select the ME and key that you want to set up.

Tip: You can use the same procedure for a MiniME™ or Canvas. You can use the same procedure for a MiniME™.

2. Click **Key Fill** and select the video signal you want to use for the key.
3. Click **Auto Select**.



Tip: Click **Make Linear** to return the clip and gain values to the default settings.

4. Use the **Clip** slider to remove lower-saturated colors from the video image.
5. Use the **Gain** slider to adjust the transition between the video image and the parts of the video image that are removed.
6. Use the **Transparency** knob to adjust the transparency of the key from opaque (0) to fully transparent (100).
7. Click **Key Invert** to reverse the polarity of the key alpha so that the holes in the background are cut by dark areas of the key alpha instead of bright areas.
8. Click a **Keyer Mode** button to override the shaped setting for the key.
 - **Normal** — set to a linear keyer for an unshaped source.
 - **Additive** — set to an additive keyer for a shaped source. The **Key Invert** function is disabled in this mode.
 - **Full** — set the alpha to fully opaque (white). The **Clip**, **Gain**, **Make Linear**, and **Key Invert** functions are disabled in this mode.
9. Click **Mask** to apply a mask to the key.

DVE Keys

The DVE key allows you to apply digital video effects, such as scale, crop, aspect ratio, position, and border to a video image or another key type. When the DVE is applied to another key type, it is said to be flying (Fly Key).

Tip: You can see where DVE channels are allocated from the **Status** page in DashBoard.

Keep the following in mind:

Keep the following in mind when working with a Fly Key:

- The Fly Key feature consumes a single DVE channel for self keys, but two DVE channels for an auto select and chroma keys.
- The Fly Key feature cannot be applied to a DVE key.
- The Key Invert feature is not available for a Fly Key.
- The self key Fly Key can be used with all Canvas layouts. The auto select key Fly Key can only be used with the Dual Vert or Dual Horiz Canvas layouts.
- 3D border and lighting are not available when the switcher is operating in **2D** mode.

To Set Up a DVE Key

The DVE engine allows you to apply digital video effects, such as scale, crop, aspect ratio, position, and border to a video image in 2D space.

The DVE resources for this key may not be available. Depending on how your switcher is configured, you may be asked to steal the resources from another element, or be prevented from using the resources.

Note: The DVE Freeze feature is only available in SD or HD video modes.

1. Click **Navigation Menu > Live Assist > MEs** and select the ME and key that you want to set up.

Tip: You can use the same procedure for a MiniME™ or Canvas. You can use the same procedure for a MiniME™.

2. Click **Key Fill** and select the video signal you want to use for the key.
3. Click **DVE > Position / Crop**.



4. Use the **X-Size** and **Y-Size** sliders in the **Positioning** area to adjust the size and aspect ratio of the key.

Note: Click the **Aspect** buttons to lock or reset the aspect ratio of the key. If the aspect ratio is locked, size adjustments are applied to both X and Y to maintain the current aspect ratio of the key.

- **Lock** — toggle ON to lock the size adjustments to the current aspect ratio of the key. If you adjust the aspect ratio of the key and then lock it, the size adjustments will maintain the new aspect ratio settings.
- **Reset** — reset the aspect ratio and size to the default settings of the key.

5. Use the **X-Position** and **Y-Position** sliders in the **Positioning** area to adjust the position of the key.

Note: Click the **Origin** button to select the origin point for the key. Position adjustments are relative to this origin point.

6. Use the **Left** and **Right** sliders to crop the left and right sides of the key.
7. Use the **Top** and **Bottom** sliders to crop the upper and lower sides of the key.
8. Click **Mask** to apply a mask to the key.

Refer to the section [To Apply a Border/Edge Softness to a DVE Key](#) on page 35 for information on applying a border to the key.

To Apply a DVE to a Key (Fly Key)

The Fly key is when the DVE engine is applied to another key type.

The DVE resources for this key may not be available. Depending on how your switcher is configured, you may be asked to steal the resources from another element, or be prevented from using the resources.

You should set up your key as you want it before applying the Fly Key.

1. Click **Navigation Menu** > **Live Assist** > **MEs** and select the ME and key that you want to set up.
2. Click **DVE** and click **On**.



3. Use the **Size** and **Softness** sliders in the **Edge Softness** area to apply softness to the edges of the key.

Refer to the section [To Apply a Border/Edge Softness to a DVE Key](#) on page 35 for information.

4. Use the **Left** and **Right** sliders to crop the left and right sides of the key.
5. Use the **Top** and **Bottom** sliders to crop the upper and lower sides of the key.

To Apply a Border/Edge Softness to a DVE Key

A DVE border or edge softness is applied to the edges of the DVE key and is manipulated as part of the key.

Note: You can only apply a border to a DVE key. Fly Keys, such as chroma keys or auto select keys with DVE applied to them cannot have a border applied to them. Instead, the selection is Edge Softness and is used to soften the edges of the key without any color.

1. Click **Navigation Menu** > **Live Assist** > **MEs** and select the ME and key that you want to set up.

Tip: You can use the same procedure for a MiniME™ or Canvas. You can use the same procedure for a MiniME™.

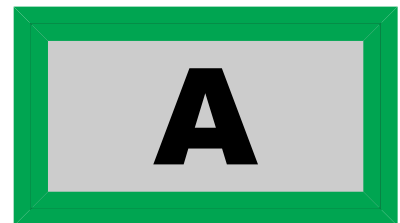
2. Click **DVE** > **Border**.



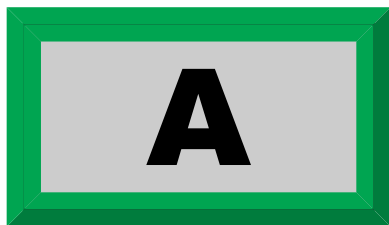
3. In the **Border** area, click **On** to apply the border to the key or **Off** to have it not visible. The border setting are not changed when the border is turned off.

Tip: To seamlessly apply a border with a custom control or memory, recall the border settings with the border turned off and then turn the border on with another CC event or memory. Remember to insert a pause between the border settings and turning the border on to allow for the border settings to be applied.

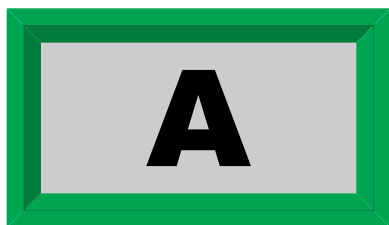
4. In the **Border Type** area, select the type of border you want to apply.
 - **Flat** — border with no bevel appearance on the outside or inside of the border.



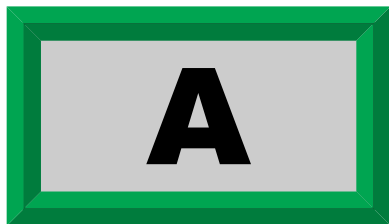
- **Bevel Flat** — border that appears bevelled on the outside and flat on the inside.



- **Flat Bevel** — border that appears flat on the outside and bevelled on the inside.



- **Bevel Bevel** — border that appears bevelled on both the outside and inside.



5. Use the **Size** slider to adjust the size of the border.
6. Use the **Perspective** slider to adjust the viewing angle of the border. This gives the key the appearance of being rotated in 3D space. Use **Border Lighting** to further enhance this look.

Tip: Perspective is applied to the border of the key and not to the video inside the key. This can result in a black bar on the side of the key video. Apply a larger border or manually crop the key to remove the bar. Use **Perspective Auto Crop** to automatically crop the key when perspective is applied.

7. Select a default or custom color for the border (borders only). The inner and outer border use the same color.
 - **Default** — click one of the preset colors.
 - **Custom** — click the arrow to the right of the **Border Color** area and use the **Hue**, **Saturation**, and **Lightness** sliders to select your own color. Click **OK** to apply the color or **Live** to apply it in real-time.
8. Use the **Transparency** slider to adjust the transparency of the inner and outer border.
9. Use the **Interior Softness** and **Exterior Softness** sliders to adjust the softness of the inner and outer border.

- **Interior Softness** — adjust the softness of the interior edge of the inner border.
- **Exterior Softness** — adjust the softness of the exterior edge of the outer border.

10. Use the **Bevel Position** slider to adjust the transition point of the inner and outer border. This is the point where the inner and outer border meet.

11. Use the **Overhang** slider to adjust the position of the border relative to the edges of the key.

Tip: At **50** the middle of the border is at the edge of the key. As you increase the overhang the border moves further to the outside of the key, revealing more of the video in the key.

12. Use the **Middle Gain** and **Corner Gain** to adjust the brightness of the corners or center of the bevelled border (does not apply to flat border).

- **Middle Gain** — adjust the brightness of the center portions of the border. These are the sections of the border that are not in the corners.
- **Corner Gain** — adjust the brightness of the corners of the border.

To Apply Lighting to the DVE Border

Apply a drop shadow and lighting effect to the DVE Key and border.

1. Click **Navigation Menu > Live Assist > MEs** and select the ME and key that you want to set up.

Tip: You can use the same procedure for a MiniME™ or Canvas. You can use the same procedure for a MiniME™.

2. Click **DVE > Shadow / Lighting**



3. Click a **Drop Shadow** button to turn the shadow on (**On**) or off (**Off**).

The drop shadow is semi-transparent and appears behind the key on top of the background. The position of the shadow is adjusted using the border lighting settings. Effects that are applied to the exterior border are also shown on the drop shadow.

4. Use the **Shadow Transparency** slider to adjust the amount of the background that is visible through the drop shadow.
5. Use the **Shadow Softness** slider to adjust the sharpness of the edges of the drop shadow.
6. Use the **Shadow Depth** slider to adjust the apparent distance of the shadow from the key.
7. Use the **Brightness** slider to adjust the brightness of the light.
8. Use the **Horizontal Lighting** and **Vertical Lighting** slider to adjust the position of the lighting.

Tip: As you change the position of the light, the brightness of the bevel on the inner and outer border changes to match the shadow created by the light.

Masks

A Mask is a technique in which a pattern is combined with the key source to block out unwanted portions of the key source.

Two types of masks are available, Box masks and Pattern masks. All key types can be masked.

- **Box Mask** — uses a simple box shape to mask out a portion of the key

To Box Mask a Key

Box masks can be adjusted for size, location, rotation, and multiplication.

1. Click **Navigation Menu > Live Assist > MEs** and select the ME and key that you want to set up.

Tip: You can use the same procedure for a MiniME™ or Canvas. You can use the same procedure for a MiniME™.

2. Click **Mask > Box**.



3. Click **Mask Invert** to invert the masked area with the unmasked area.
4. Set up the mask as required.
 - **Size** — adjust the size of the mask region.
 - **Left Edge** — adjust the position of the left edge of the mask region.
 - **Right Edge** — adjust the position of the right edge of the mask region.

- **Top Edge** — adjust the position of the top edge of the mask region.
- **Bottom Edge** — adjust the position of the bottom edge of the mask region.
- **X-Position** — position the mask on the x-axis. This adjust both the left and right edges at the same time.
- **Y-Position** — position the mask on the y-axis. This adjusts both the top and bottom edges at the same time.

Tip: You can use the Positioner to adjust the size and position of the box mask.

Split Keys

A Split key allows you to assign a different alpha source for a key than the fill/alpha associations that are set up during configuration, or to use a separate alpha source for a Self key.

A split key can be applied to an auto select, or self key.

To Set Up a Split Key

A split key works on an **Auto Select** or **Self Key** that has been set up and you want to apply a different alpha to.

1. Set up your key with the video source you want to use.
2. Click **Navigation Menu > Live Assist** and select the key you want split.

*Tip: From the control panel, press and hold the **SELF** or **AUTO** (depending on the type of key you are splitting) and press the source button for the new alpha you want to use.*

3. Click **Key Alpha** and select the new alpha you want to use.

Memory Functions

A memory register is a snapshot of the current state of the switcher that can include one or multiple MiniME™, Canvas. Up to 100 memory registers per MiniME™ or Canvas can be stored and recalled on the switcher. Each of these memory registers can store as little as the information of one MiniME™, or as much as the current state of the entire switcher, including all MiniME™, Canvas Aux Buses, and DVE settings.

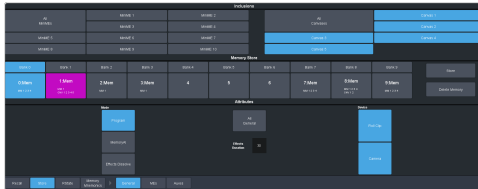
Storing Memories

When you store a memory, you are storing the complete state of that panel row. This includes the current state of all the areas on the ME, including keyer settings, transition rates, wipe and pattern selections, and source selections. In addition to the current state of the panel, the current settings for the various keyers, such as chroma key settings, and clip and gain settings, are also stored.

To Store a Memory

How to store a memory.

1. Click **Navigation Menu > Live Assist > Memory > Store > General.**



2. In the **Inclusions** area, select the MiniME™ and Canvass that you want to store the memory for. When you include an area in a memory, the current state of that area is stored in the memory and will be recalled with the memory.

Tip: You can deselect all inclusions for a memory so that it doesn't affect these areas. This can be used to create a memory that only recalls Media-Store or Aux bus selections.

3. In the **Memory Store** area, click the **Bank X** and **X:Mem** button for the bank and memory register that you want to store to.

Tip: If a memory register contains a memory for the area(s) selected in the **Inclusions**, the button glows purple and the areas that the register contains a memory for are listed below the memory number. The currently selected memory register glows blue.

4. Select the recall mode for the memory. This is the mode that is stored in the memory, but can be overridden when the memory is recalled.

- **Program** — all elements are recalled as stored (default).
- **MemoryAI** — current on-air elements are unchanged and the transition area is configured to take the on-air elements of the memory on-air with the next transition.
- **Effects Dissolve** — on-air elements listed below are transitioned to the elements stored in the memory. The time it takes to go from the current elements to the elements in the memory is set in the **Effects Duration** field.
 - Matte colors (background, wash or borders)
 - Keyer settings like clip, gain, transparency
 - Mask position and size
 - Pattern settings like size, position, aspect, border, softness, rotation
 - DVE settings like size, position, aspect, border, softness, cropping
 - Media-Store x/y position
 - Transition Progress

5. Set the memory attributes that you want recalled with the memory. Refer to [Memory Attributes](#) on page 40 for information on memory attributes.

Tip: All attributes are stored in the memory. Turning individual attributes on or off sets whether that item is included with the memory recall. Individual attributes can be turned on or off when the memory is recalled.

6. Click **Store** to store the memory.

Recalling Memories

When you recall a memory, the existing configuration of that ME is replaced with the settings stored in the memory.

Keep the following in mind:

Keep the following in mind when recalling memories:

- How a memory is recalled depends on the how the Memory Attributes are set.
- Memories cannot load media items into Media-Store channels. You must use a

switcher set to load media items into the channels.

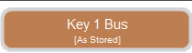

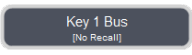
- Recalling a memory that includes a source assigned to a camera also recalls the shot stored in the memory for that camera if the **CamRcl** memory attribute is set to **Recall**. There is no delay in the memory recall so camera movement may be visible while the shot is recalled.
- You can override the video source stored in a memory by pressing and holding a source button and recalling the memory (Bus Hold). The held source button overrides the source that is recalled with the memory for that bus. The memory is not affected by a Bus Hold and will recall properly without the Bus Hold.
- Enabling Memory AI mode changes the way key elements are recalled. If a key is currently on-air, the element for that key is recalled in the next available off-air key. If there is no available off-air keys, the element is not recalled.
- If **Disable Audio Memories** is set to **On** (Click **Navigation Menu > Configuration > System > Global**) the audio memory attributes are disabled.

Related information

[Memory Attributes](#) on page 40

Memory Attribute Color Coding

For a memory recall you can set individual attributes to be recalled or not, regardless of how they were stored. How the attribute is recalled is indicated by the color of the attribute button.

Color	Description
	As Stored — the memory attribute is recalled exactly as it was stored in the memory.
	Recall — the memory attribute is recalled with the memory, even if the attribute was not set to be stored with the memory.
	No Recall — the memory attribute is not recalled with the memory, even if the attribute was set to be stored with the memory.

To Recall a Memory

How to recall a memory using DashBoard.

- Click **Navigation Menu > Live Assist > Memory > Recall > General**.



- In the **Inclusions** area, select the MiniME™ and Canvass that you want to recall the memory for.

Tip: You can deselect all inclusions for a memory so that it doesn't affect these areas. This can be used to create a memory that only recalls Media-Store or Aux bus selections.

- In the **Memory Recall** area, click the **Bank X** button for the bank that you want to recall from.



Important: Clicking a **X:Mem** button recalls that memory.

Tip: If a memory register contains a memory for the area(s) selected in the **Inclusions**, the button glows purple and the areas that the register contains a memory for are listed below the memory number.

- Select the recall mode for the memory.

Note: Recall attributes are color-coded for how they are going to be recalled. Refer to [Memory Attribute Color Coding](#) on page 39 for information on the color meaning.

- As Stored** — recall the memory with the same attributes that it was stored with.
- Program** — all elements are recalled as stored (default).
- MemoryAI** — current on-air elements are unchanged and the transition area is configured to take the on-air elements of the memory on-air with the next transition.
- Effects Dissolve** — recall the memory with an effects dissolve to the new memory elements. The time it takes to go from the current elements to the elements in the memory is set in the **Effects Duration** field or using the **Effect Duration From Memory**.

- Set the memory attributes that you want recalled with the memory. Refer to [Memory Attributes](#) on page 40 for information on memory attributes.

Note: All attributes are stored in the memory. Turning individual attributes on or off sets whether that item is

included with the memory recall. Individual attributes can be turned on or off when the memory is recalled.

6. Click the **X:Mem** button to recall the memory.

Tip: Click **Undo** to undo the last memory recall.

Memory Attributes

Memory Attributes allow you to specify what elements are recalled with a memory, as well as adding effects to memory recalls. These elements include the background/preset buses, keyer bus, Aux bus, and Media-Store selections, as well as keyer on-air status, and transition selections.

In addition to setting which sources to recall with the memory, effects such as performing an auto transition after the memory recall or running a custom control after the memory recall, can also be included.

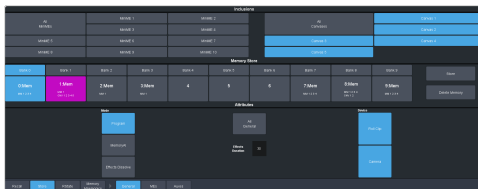
Memory attributes can be set both when the memory is stored, and when it is recalled. This allows you to store a set of attributes with a memory and then recall it as stored, or override the attributes stored in the memory and apply different ones when the memory is recalled. A memory attribute does not need to be stored in the memory to be recalled.

Tip: It is recommended that if you are new to working with memories, use the memory store attributes to set how you want a memory to be recalled and set the recall attributes to be **Memory**.

To Set the Memory Attributes

Memory attributes can be set when the memory is stored or when it is recalled. This procedure sets the store attributes, but the information applies to both.

1. Click **Navigation Menu > Live Assist > Memory > Store**.
2. Click **General** and set the attributes as required.



Note: For information on the recall mode (**Program/MemoryAI/Effects Dissolve**) refer to [To Store a Memory](#) on page 38.

- **Roll Clip** — set whether a play command is triggered when a source that is assigned to a video server is recalled.
- **Camera** — set whether camera shots are recalled.

3. Click **MEs**. This section includes MiniME™ and Canvas resources.
4. Click **MiniME X** for the MiniME™ you want to set the attributes for.



- **Trans Area** — set how the next transition type and parameters are recalled.
- **Next Trans** — set how the next transition area is recalled.
- **Run Auto** — set whether a transition is performed after the memory is recalled. (Not available during Effects Dissolve transitions.)
- **PGM Bus** — set how the sources selected on the program bus are recalled.
- **PST Bus** — set how the sources selected on the preset bus are recalled.
- **Key X Bus** — set whether the source selected on the key bus is recalled.
- **Key X Active** — set whether the on-air status of the key is recalled.
- **Key X Type** — set whether the key type is recalled.
- **Key X Mask** — set whether mask settings for the key are recalled.

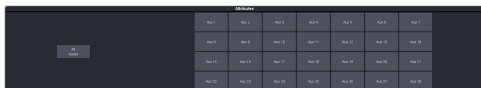
5. Click **Canvas X** for the Canvas you want to set the attributes for.



- **Trans Area** — set how the next transition type and parameters are recalled.
- **Next Trans** — set how the next transition area is recalled.
- **Run Auto** — set whether a transition is performed after the memory is recalled. (Not available during Effects Dissolve transitions.)
- **PGM Bus** — set how the sources selected on the program bus are recalled.
- **PST Bus** — set how the sources selected on the preset bus are recalled.
- **Key X Bus** — set whether the source selected on the key bus is recalled.

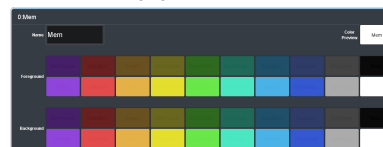
- **Key X Active** — set whether the on-air status of the key is recalled.
- **Key X Type** — set whether the key type is recalled.
- **Key X Mask** — set whether mask settings for the key are recalled.

6. Click **Auxes**.



- **Aux X** — set whether the source selected on the aux bus is recalled.

3. Click the memory you want to name.



Setting	Description
Name	Enter a new name for the selected memory.
Foreground	Click a Foreground button to select the color you want to apply to the text on the mnemonic.
Background	Click a Background button to select the color you want to apply to the background on the mnemonic.

Deleting a Memory

You can delete the contents of a single memory. Only one memory can be cleared at a time, and you cannot undo the deletion.

Tip: You can clear all memories from the switcher from the control panel. (Press **MENU** > **Reset** > **NEXT** > **NEXT**.)

To Delete a Memory

Delete an individual memory or bank.

1. Click **Navigation Menu** > **Live Assist** > **Memory** > **Store**
2. In the **Memory Store** area, click the **Bank X** and **Mem X** button for the memory register that you want to delete.
3. Click **Delete Memory**.

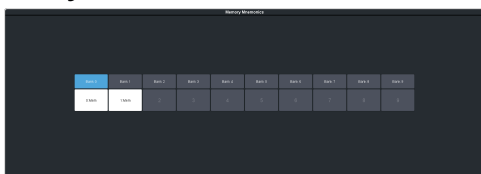
Memory Names and Mnemonics (TouchDrive only)

Assign custom mnemonic colors and names to individual memories. These are only visible on the TouchDrive panel when the user select bus is assigned to a memory bank,

To Assign a Name to a Memory

Memories can have custom names and colors on the TouchDrive control panel.

1. Click **Navigation Menu** > **Live Assist** > **Memory** > .



2. Click **Bank X** to select the bank that the memory you want to name is on.

Switcher Sets

The switcher stores configuration and operation data in a number of registers that contain the individual entries for items such as memories or personality settings. These registers can be stored as a single archive file, or as a register set that contains all the individual register of that type; all memories for example. These files are stored into Sets on USB drive. Different Sets can be created for different shows or applications, allowing you to quickly locate and recall the switcher configurations.

The switcher stores information in the following registers:

- **Memory** — contains all the memories for MiniME™ and Canvas.
- **Custom Control** — contains all the custom control banks and macros.
- **Sequences** — contains of all the sequences created in the sequencer.
- **Installation** — contains all the external device setup, and software settings for the switcher.
- **Personality** — contains all the user interface settings, such as transition rates, that are stored under the **Personality** menu. Some personality settings are specific to the control panel and can be stored independently if you are working with a MultiPanel system.

Tip: Sets are stored differently if they are stored directly to the USB or exported. Sets stored directly to the USB are located in folders, but sets that are exported are archived in a TAR file. To interchange between the two you will need an archive program, such as 7-Zip, to extract the files from the TAR file or archive the files into a TAR file. Inside the TAR is the Set folder (named how you want the set named on the switcher) and component sub folders.

To Store a Set

Store the switcher set to retain a copy of the current configuration of the switcher.

Note: If you are updating an older setup file, you must perform a Recall All followed by a Store All. This updates the setup files the latest format. You can then make changes and store to individual registers if needed.

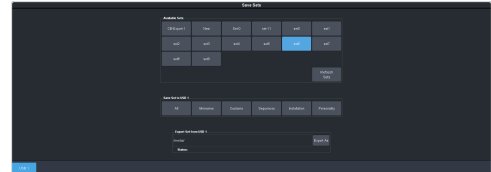
Tip: The switcher provides 10 empty sets by default. Additional sets can be created if you rename the sets on the USB from a separate computer.

1. Insert a USB drive into the USB Port on the frame. You must wait 5 seconds for the switcher to recognise the USB drive.

Tip: If you do not have a USB drive, you can store the working set to temporary internal storage. This set will be lost when the switcher restarts, but can be exported to an external computer.

2. Click **Navigation Menu > Configuration > System > Save Sets**.

Tip: Click **Refresh Sets** to update the list of available sets on the USB.



3. Click an **Available Sets** button for the set you want to store the switcher registers to.
4. Click a **Save Set to** button to save that register to the selected set on the USB or internal drive. If the button is shown in brown, that register already exists in the set and will be overwritten.
 - **All** — store all registers to the set.
 - **Memories** — store only the memory registers to the set.
 - **Customs** — store only the custom control registers to the set.
 - **Sequences** — store only the Sequencer registers to the set.
 - **Installation** — store only the installation registers to the set.
 - **Personality** — store only the personality registers to the set.
5. Click **Yes**.

The registers are stored to the set on the USB or internal drive.

Tip: You can export the switcher set to your local computer in the **Export Set From Available Sets** area. Click **Export As** and navigate to the folder where you want to store the file and enter a name and click **Open**. It may take several minutes for the set to download to your computer.

To Load a Set

Load the switcher set to restore a copy of the previous configuration of the switcher.

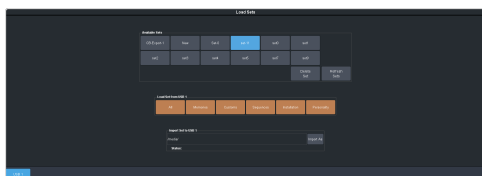
Note: If you are updating an older setup file, you must perform a Recall All followed by a Store All. This updates the setup files the latest format. You can then make changes and store to individual registers if needed.

1. Insert a USB drive into the USB Port on the frame. You must wait 5 seconds for the switcher to recognise the USB drive.

Tip: If you do not have a USB drive, you can recall the set from temporary storage. This set will be lost when the switcher restarts. Importing a set from an external computer will be stored in the temporary storage.

2. Click **Navigation Menu > Configuration > System > Load Sets**.

*Tip: Click **Refresh Sets** to update the list of available sets on the USB.*



*Tip: You can import a switcher set from your local computer in the **Import Set to Available Sets** area. Click **Import As** and navigate to the folder where the set is stored and click **Open**. It may take several minutes for the set to upload to the switcher.*

3. Click an **Available Sets** button to select the set you want to load the switcher register from.
4. Click a **Load Set from USB** button to load that register. Only those registers that are present in the set are shown.
 - **All** — recall all registers from the set.
 - **Memories** — recall only the memory registers from the set.
 - **Customs** — recall only the custom control registers from the set.
 - **Sequences** — recall only the Sequencer registers from the set.
 - **Installation** — recall only the installation registers from the set.
 - **Personality** — recall only the personality registers from the set.
5. Click **Yes**.

Media-Store

The MediaManager interface to the Media-Store allows you to load stills, animations, or audio files from the USB drive. Up to 18 (4 in UHDTV1) independent channels of video with alpha for playout of stills and animations are available switcher-wide.

Keep the following in mind:

Keep the following in mind when working with Media-Store:

- **External Inputs** must be configured as Media-Stores for those Media-Store channels to be available as sources to the switcher.
- A still, animation, or audio can be loaded either by browsing the file system, or by entering the still number using the pattern buttons.
- You can clear a Media-Store channel by loading media number 000.
- If you are loading an Auto Key into a Media-Store channel, you must have another Media-Store channel associated with the current one to load the alpha into.
- An FTP connection using RossLinq can be created from an external device directly to a Media-Store channel on the switcher.
- If you delete a media item from the USB, you may have to load that media item into a Media-Store channel for the switcher to prompt you to delete the media item from the database.
- Media items must be created in the same color gamut and dynamic range that they are intended to be used in on the switcher. If a media item is created in one color space and the switcher is operating in another, the media item may not appear correctly.
- If you delete or rename a media item using the file system, you must attempt to load the old file to clear that entry from the database.
- Media-Store attributes are stored in the database for a media item. These are the default settings that will be used every time that media item is loaded into a media channel. When a media item is loaded into a channel you can override the database settings. These override settings are only applied to the media item while it is loaded into the media channel and are not stored to the database entry.

- You can only change the X and Y position of a media item that is smaller than the full size of the screen.

Working With Media-Store Animations

Media-Store animations can be used for animated backgrounds, branding "bugs", or media transitions. You can set up an animation to loop, play automatically when taken on-air, play in reverse, or even play at different speeds.

***Tip:** You can play an animation manually from a control panel by selecting the source button for the Media-Store channel with the animation you want to play, and pressing **Run** on the 3-knob menu. The knob changes to **Stop** as the animation is playing.*

Keep the following in mind:

Keep the following in mind when working with Media-Store animations:

- When you load an animation to an off-air Media-Store channel, or the animation goes off-air with a transition, the preview shows the cut point (**CutFr**) for that animation, and not the first frame of the video.
- You can manually cycle through frames by turning the **Run** knob while the animation is stopped.
- Double-pressing the **Run** knob stops playback and re-cues the animation to the first frame.
- You can shuttle forwards and backwards through the animation by turning the positioner clockwise or anti-clockwise when the animation is stopped, if your control panel has a positioner with a z-axis. Shuttle speed is increased and decreased by turning the positioner more or less in each direction.
- You can run or stop an animation by pressing the positioner button, if your control panel has a positioner with a button.

Working With Media-Store Audio

Audio can be added to the playout of a Media-Store channel either by loading the file directly, or by naming the audio file the same as the animation or still you want it to play out with. When you load the still or animation, the switcher will automatically load the audio file of the same name.

Keep the following in mind:

Keep the following in mind when working with Media-Store audio:

- Audio files must be 20-bit or 24-bit wav files at a 48kHz sample rate.
- Audio files must be in the same folder and have the same name as the still or animation they are to be associated with.
- An audio file does not need to be of the same length as the animation it is associated with.
- A still with audio or audio only have the Auto Play and Looping attributes. These apply to the audio layout.
- The looping time of an animation with audio is the length of the animation.
- A Media-Store channel can be loaded with Audio only.

Media-Store File Specifications

Media items can be in TGA, PNG, or JPG file formats. For animations, the files must be numbered to indicate the order they go in, and the name and the number must be separated with an underscore. For audio, 20-bit or 24-bit WAV files of the same name as the still or animation are used to associate audio with a still or animation.

For example, the following files are treated as a single animation named Anim that is 100 frames long:

- Anim_001.tga
- Anim_002.tga
- Anim_003.tga
- ...
- Anim_100.tga

Note: Media items must be created in the same color gamut and dynamic range that they are intended to be used in on the switcher. If a media item is created in one color space and the switcher is operating in another, the media item may not appear correctly.

Note: An animation must start with _001 at the end of the name of the first frame.



Important: File or folder names cannot contain symbols such as ! @ # & * () / , , ? \ ' " and cannot start with an underscore (_). Files or folders that start with a period (.) are hidden.

Loading Stills or Animations

Stills or animations can be loaded into Media-Store channels by navigating to the file in

MediaManager. MediaManager creates and maintains a database of the media items on the drive where the media items are stored, as well as the setting for each media item and a thumbnail.

Note: The internal cache is used for sample images only and cannot be used to store user stills or animations.

To Load a Media Item

Media items are loaded into a Media-Store channel from MediaManager

Note: Media items must be created in the same color gamut and dynamic range that they are intended to be used in on the switcher. If a media item is created in one color space and the switcher is operating in another, the media item may not appear correctly.

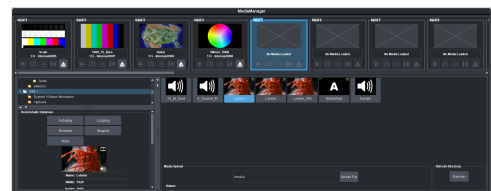
Note: External Inputs must be set to **Still** for a Media-Store to be available as a source.

1. If the media items are located on a USB, insert your USB drive into the USB Port on the switcher. You must wait 5 seconds for the switcher to recognise the USB drive.

If the files on your USB are new, it takes about 2 seconds per file for the switcher to generate the thumbnail for the MediaManager. Once all the thumbnails are generated, they are displayed in the MediaManager window.

2. Click **Navigation Menu > MediaManager**

Tip: The MediaManager can also be accessed from Live Assist (Click **Navigation Menu > Live Assist > Media > MediaManager**). The Live Assist version follows Media-Store source selections on the panel.



3. Navigate to the folder containing the media item you want to load into a Media-Store channel.

Note: The first time you navigate to a folder it may take a few moments for the Media-Store to scan the files and build the database entries.

Tip: If you have added media items to a folder but they do not appear on the menu, click **Refresh** to scan the folder for any new files.

All the media items in that folder are shown in the center area of the page.

4. Drag the media item onto the Media-Store channel you want to load it in.

Tip: The film-strip symbol (🎞️) indicates that the media item is an animation, the key symbol (🔑) indicates that the media item has an alpha, and the speaker symbol (🔊) indicates that the media item has audio associated with it, or is audio only.

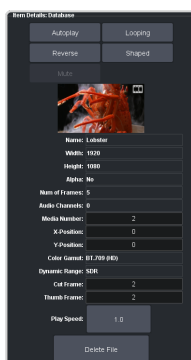
Deleting a Media Item

Delete media items to remove them from the folder and database.

To Delete A Media Item

Delete a media item. You can only delete a single item at a time and you cannot delete the internal sample items.

1. Click **Navigation Menu > MediaManager**
2. Navigate to the folder on the USB that has the item you want to delete and select the media item that you want to delete.
3. In the **Item Details** area, scroll to the bottom.

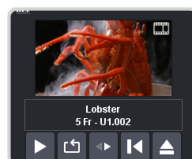


4. Click **Delete File** and **OK**.

MediaManager Channel Control

Once a media item is loaded into a channel you can control the playout for the media item from MediaManager.

Note: Playlists are not supported by MediaManager in DashBoard at this time.



Tip: The background of the channel areas tallies the on-air status of the Media-Store channel. Red for on-air and green for on-preview.

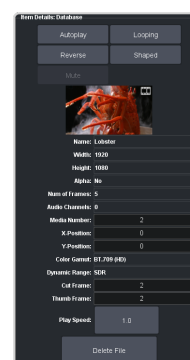
The label below the thumbnail of the media item shows the name of the file, the number of frames in the animation, and the media ID. In this example, the name of the media item is **Lobster**, it is **5** frames long, it is located on the USB (**U1**) and has a media ID of **001**.

The controls below the name allow you to set how the animation plays out as well as eject the current media item.

- **Play** — play the animation.
- **Loop** — set the animation to start playing again from the beginning when it reaches the last frame.
- **Play Direction** — set the animation to play in the forward or reverse direction.
- **Re-cue** — re-cue the animation to the first playout frame.
- **Eject** — eject the current media item from the channel.

Media-Store Attributes

Attributes are applied to the media item in the database and in each Media-Store channel. Where the attributes are being applied is shown in the upper left corner of the area. If you adjust the attributes of the media item in one channel, these settings are not applied back to the database or to other channel if the same media item is loaded into more than one channel.



Tip: At the top of the **Item Details** frame the title indicates if the information shown applies to the media channel loaded into the media channel (**MX**), or is from the media item in the database (**Database**).

Buttons:

- **Autoplay** — play the animation automatically when the Media-Store channel is taken on-air.
- **Reverse** — set the animation to play in the forward or reverse direction.

-
- **Mute** — mute the audio associated with the media item.
 - **Looping** — set the animation to start playing again from the beginning when it reaches the last frame.
 - **Shaped** — set the alpha to be shaped, or unshaped when not selected.

Fields:

- **Name** — the name of the media item as taken from the file name.
- **Width** — the width of the media item raster.
- **Height** — the height of the media item raster.
- **Alpha** — shows whether there is an associated alpha with the media item.
- **Number of Frames** — the number of frames in the animation.
- **Audio Channels** — the number of audio channels in the associated audio.
- **Media Number** — the media number of the media item.
- **X-Position** — set the horizontal position of the media item. Can only be applied if the media item is smaller than full screen.
- **Y-Position** — set the vertical position of the media item. Can only be applied if the media item is smaller than full screen.
- **Color Gamut** — shows the color mode that the switcher was operating in when the media item was added.
- **Dynamic Range** — shows the dynamic range that the switcher was operating in when the media item was added.
- **Cut Frame** — set the frame of the animation when used as part of a MediaWipe.
- **Thumb Frame** — set the frame of the animation that is used for the thumbnail.
- **Play Speed** — set the playout speed for the animation.

Tip: Click **Delete File** to delete the selected media item.

Custom Controls

Once programmed, a custom control (CC) can be played back by pressing a button. The custom control can be as simple as triggering an output GPI pulse, or as complex as recalling a specific memory register on an ME, performing a switcher transition, and selecting a group of keys.

You can record, edit, and run custom controls from the Custom Control node in DashBoard.

Refer to [Custom Control Events](#) on page 104 for information on available events.

Recording/Editing Custom Controls

When you create a custom control, you record a series of events and special functions that are played back when you run the custom control. The process for creating a new cc and editing an existing one are the same, except when editing you have the option to insert events at different points in the existing cc.

Almost any action or setting can be stored in a custom control, with the following exceptions:

- Diagnostic Functions
- Confirmation Dialogs
- Panel-Specific Functions

Note: It is recommended that you use a control panel for recording custom controls.

Keep the following in mind:

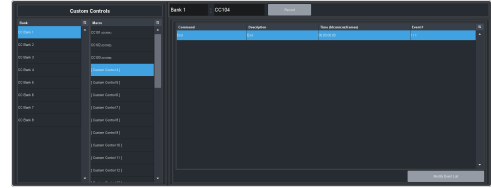
Keep the following in mind when recording custom controls:

- Some functions take time to perform and a pause should be added after the function to ensure that the command is completed before moving on to the next command.
- If you are recording a custom control from DashBoard, only new settings are recorded. If the current setting in DashBoard is the value you want to record, you need to select a different value and then select the value you want to use.

To Record a Custom Control

A basic custom control records a series of events that are played out in the same order they are recorded.

1. Click **Navigation Menu > Custom Control > Editor**.



2. Click a **Bank** list item to select the bank that the custom control you want to record will be stored on.
3. Click a **Macro** list item to select the custom control that you want to record to. If the custom control already has a macro recorded, the name of the custom control is shown in the list.

Tip: You can rename both the custom control and the bank by entering a new name in the field next to the record button.

4. Click **Record**.

Tip: The switcher can be set so that each command is automatically separated from the previous command by a pause equal to the real-time delay between you entering commands. Refer to [To Set the CC Pause Mode](#) on page 49 for more information.

The **CC/UP** button on the control panel, as well as the button assigned to the CC on the bus, flash red when the CC is recording.

5. Insert the events you want to record. Events can be entered from the menu or from actions directly on the control panel.

Each custom control can have a maximum of 998 events, plus the End event.

Note: When the switcher runs a custom control, it attempts to execute each event in the custom control as quickly as possible. If an event takes time to complete, the event may not be complete before the switcher attempts to execute the next event. For example, if your custom control has a memory recall followed by a transition, a pause should be added between the memory recall and the transition to ensure that the memory is fully recalled before the transition is performed. The same applies if you want to add events after a transition.

6. Click **Stop Recording** to finish recording.

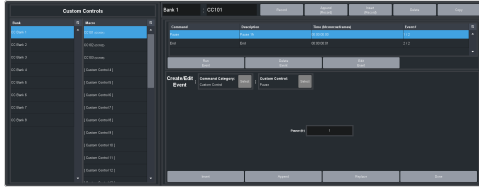
Tip: Click **Cancel** if you do not want to store your events to the custom control.

To Edit a Custom Control

When editing a custom control, you can delete and insert events at any point in the custom control, or append events to the end.

Tip: When editing a custom control, press **Run Event** to run the currently selected event. This can help you diagnose problems in a custom control.

1. Click **Navigation Menu > Custom Control > Editor**.



2. Click a **Bank X** list item to select the bank that the custom control you want to edit is on.
3. Click the custom control that you want to edit.
4. Click the event that you want to edit or insert an event before.

Note: The name of a custom control is highlighted in red if it contains events that are no longer supported. The unsupported events in the custom control are also highlighted in red.

Refer to [Custom Control Events](#) on page 104 for information on available events.

5. Edit the custom control or event.
 - **Append (Record)** — start inserting events to the end of the custom control.
 - **Append** — insert a new event at the end of the custom control.
 - **Copy** — copy the entire custom control.
 - **Delete** — delete the entire custom control.
 - **Delete Event** — delete the currently selected event.
 - **Edit Event** — edit the parameters of the currently selected event.
 - **Insert (Record)** — start insert events before the currently selected event.
 - **Insert** — insert a new event before the currently selected event.
 - **Record** — start recording a new custom control over the existing one.
 - **Replace** — replace the currently selected event with the new event.
 - **Run Event** — run the currently selected event.

Custom Control Pause Mode

The switcher can be set so that each command is automatically separated from the previous

command by a pause equal to the real-time delay between events as you enter them.

When you are entering events into the custom control, the length of time between you entering the events is recorded as a pause between the events. This allows you to perform a set of actions as you normally would and have the custom control play those events back with the same pauses and 'rhythm' that you would normally have.

To Set the CC Pause Mode

The CC Pause Mode must be set before recording a custom control and does now change how a custom control plays out.

1. Click **Navigation Menu > Configuration > System > Custom Controls**.



2. Click a **Pause Mode** button to select how the switcher inserts pauses into a custom control.
 - **Manual Pause** — no pauses are added. You must manually add pauses to the custom control.
 - **Record Pause** — pauses are entered automatically as you enter events. For example, if you pause for 30 seconds between selecting a key and performing a transition, a 30 second pause is inserted between those events in the custom control.

Running a Custom Control

Once a custom control has been programmed, you can run that custom control by pressing the button that the custom control was recorded to.

Keep the following in mind:

Keep the following in mind when running custom controls:

- A custom control will continue to run until it reaches a hold event, is stopped by another custom control, you edit a custom control, or the custom control reaches the end.
- When a custom control is running, the button on the custom control bus is red, a red border

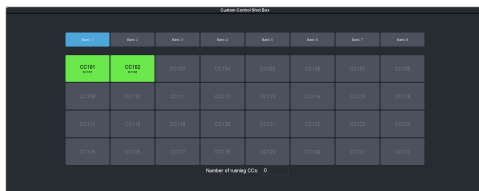
is applied to the custom control on the Shot Box page in DashBoard, and the word Running is shown below the name.

- When a custom control is held (at a Hold event), the button on the custom control bus flashes white, a grey border is applied to the custom control button on the Shot Box page in DashBoard, and the word Held is shown below the name.
- You can run multiple custom controls at the same time. The number of running custom controls is shown on the display when in custom control mode.
- You can stop a running custom control by pressing the red custom control button on the custom control bank.
- You can stop all running custom controls by selecting a custom control with no events recorded to it.
- A maximum of 128 custom controls can be run at the same time.
- The name of a custom control is highlighted in red if it contains events that are no longer supported. The unsupported events in the custom control are also highlighted in red.

To Run a Custom Control

Once a custom control has been recorded, you can run that custom control at any time.

1. Click **Navigation Menu > Custom Control > Shot Box**.



Tip: You can also run a custom control directly from the control panel.

Tip: The number of custom controls that are currently running is shown at the bottom of the page.

2. Click **Bank X** to select the bank that the custom control you want to run is on.
3. Click a custom control button to run that specific custom control.
The custom control starts to play immediately.

Custom Control Names and Mnemonics

Each custom control can be given a unique name and mnemonic color. The name and color are shown on the custom control button.

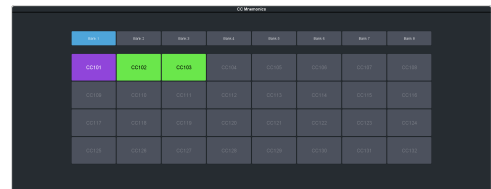
To Name a Custom Control

The procedure to name or rename a custom control is the same.

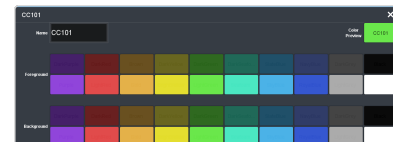
Tip: You can also name a custom control and bank from the **Editor** page.

Tip: Refer to [General Settings](#) on page 86 for information setting how the custom control names are shown on the control panel mnemonics.

1. Click **Navigation Menu > Custom Control > .**



2. Click **Bank X** to select the bank that the custom control you want to name is on.
3. Click the custom control that you want to name.



Setting	Description
Name	Enter a new name for the selected custom control.
Foreground	Click a Foreground button to select the color you want to apply to the text on the mnemonic.
Background	Click a Background button to select the color you want to apply to the background on the mnemonic.

Deleting a Custom Control

Any custom control on the switcher can be deleted to remove unused customs to free up space for new custom controls.

To Delete a Custom Control

Deleting a custom control from the switcher.

There is no undo for this delete function.

1. Click **Navigation Menu > Custom Control > Editor**.
2. Click **Bank X** to select the bank that the custom control you want to delete is on.
3. Click the custom control button that you want to delete.
4. Click **Delete**.
5. Click **Delete** to delete the custom control.

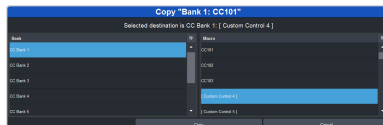
Copying and Pasting a Custom Control

The contents, or events, of a custom control can be copied from one custom control and pasted to another. Along with the events, the name and mnemonic settings are also copied.

To Copy and Paste a Custom Control

Copy the contents of a custom control from one button to another.

1. Click **Navigation Menu > Custom Control > Editor**.
2. Click **Bank X** to select the bank that the custom control you want to copy is on.
3. Click the custom control that you want to copy.
4. Click **Copy**.
5. Select the custom control that you want to paste into.



6. Click **Copy**.

Sequencer

The Sequencer allows you to create a playlist of custom control events.

The switcher supports 5 Sequencers, each with an independent rundown of events. The Sequencer uses sequences to store the rundown of events. These sequence files can be loaded into one or multiple Sequencers.

Tip: You can link multiple Sequencers together so that as you advance through one, the other Sequencers will advance.

Keep the following in mind:

Keep the following in mind when working with a Sequencer:

- Unlike a Custom Control, a Sequence only runs a single event at a time. You must advance to the next event in the sequence to run that event.
- If you run a Play CC event in a sequence, the Sequencer does not indicate when the CC event has completed.
- Only a subset of CC events can be run directly in the a sequence. You can use the Play CC event to run a custom control that contains any other events.
- If you edit a sequence that is already loaded into a Sequencer, you must **Reload** the sequence to update the event in the Sequencer.
- There is only one linked group. When **Linked** is toggled on for a Sequencer it is tied to all other Sequencers with **Linked** turned on.
- Linking only affects the operation of the **Next** button.
- Memories cannot be used to load a sequence into a Sequencer.

Creating/Editing Sequences

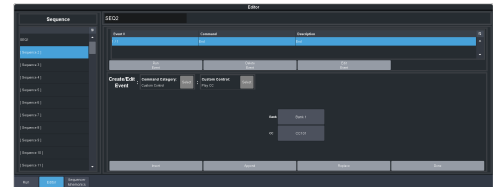
When you create a sequence, you record a series of events and special functions that are played back as you step through the sequence. The process for creating a new sequence and editing an existing one are the same, except when editing you have the option to insert events at different points in the existing sequence.

Tip: Remember that sequences run one event at a time. Use the Memory Recall or Transition Action events to perform complex actions.

To Create/Edit a Sequence

Editing a sequence is similar to creating or editing a custom control. A series of events are added to a list in the order you want the events to be run.

1. Click **Navigation Menu > Live Assist > Sequencer > Editor**.



2. Click a **Sequence** list item to select the sequence that you want to create or edit. If the sequence already has events, the name of the sequence is shown in the list and events are shown on the right.

Tip: You can rename the sequence by entering a new name in the field at the top.

3. Click **Modify Event List**.
4. Click the **Create/Edit Event** buttons to navigate to and select the event you want to add to the sequence. Refer to [Custom Control Events](#) on page 104 for information on the events.

Tip: The Sequencer only supports a subset of the possible CC events. If you want to run a custom control event that is not listed for the sequencer, you can create a CC with that event in it and then use the Play CC event in the sequence to run that custom control.

Tip: If you want to edit an existing event, select the event you want to edit and click **Edit Event**.

5. Add or edit an event in the sequence.
 - **Append** — insert the new event at the end of the sequence.
 - **Delete Event** — delete the currently selected event.
 - **Insert** — insert the new event before the currently selected event.
 - **Replace** — replace the currently selected even with the new event.
 - **Run Event** — run only the currently selected event.
6. Click **Done** when you are finished editing the sequence.

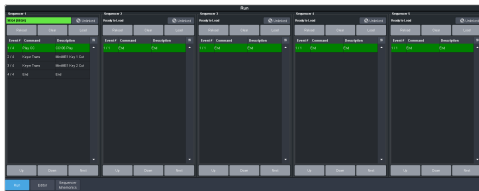
Loading and Running a Sequence

Once a sequence has been created, you can load that sequence into a Sequencer and run each event.

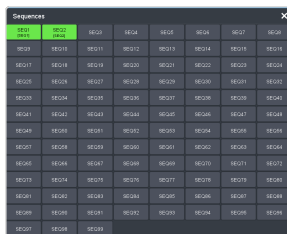
To Load a Sequence

A sequence must be loaded into the Sequencer before it can be run.

1. Click **Navigation Menu > Live Assist > Sequencer > Run**.



2. Click **Load** on the Sequencer you want to load a sequence into.



3. Click the **SEQ** button for the sequence you want to load.

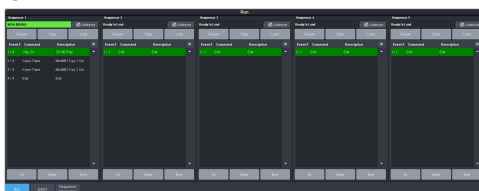
Tip: Click **Clear** to unload the sequence from the Sequencer.

Tip: Click **Reload** to load the sequence into the Sequencer again. This can be useful if you have edited the sequence.

To Run a Sequence

A sequence is run one event at a time. Events can be skipped over by selecting a different event in the sequence as the next event.

1. Click **Navigation Menu > Live Assist > Sequencer > Run**.



2. Use the **Up**, **Down**, and **Next** buttons to run through the sequence.



#	Function
1	The currently loaded sequence. This uses the mnemonic name and color.
2	Multiple Sequencers can be linked together. This only affects the Next button and allows clicking Next on any of the linked Sequencers to advance all the linked Sequencers. There is only one linked group.
3	The Reload , Clear , and Load buttons allow you to populate or clear the Sequencer. <ul style="list-style-type: none"> Load — load a different sequence into the Sequencer. Clear — unload the current sequence from the Sequencer. Reload — reload or update the current sequence in the Sequencer.
4	The red highlight shows the last run (current) sequence event.
5	The green highlight shows the next event to be run. Click on a different event, or use the Up or Down buttons to select a different event to be run next.
6	The Up and Down buttons move the green (run next) highlight up and down in the sequence.
7	The Next button runs the event that is currently highlighted in green.

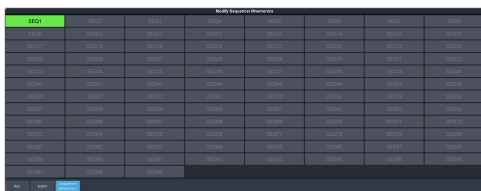
Sequence Names and Mnemonics

Each sequence can be given a unique name and mnemonic color. The name and color are shown on the Sequencer.

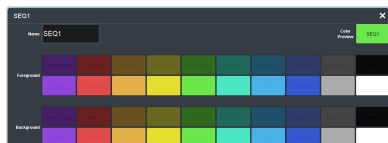
To Name a Sequence

Tip: You can also name a sequence from the **Editor** page.

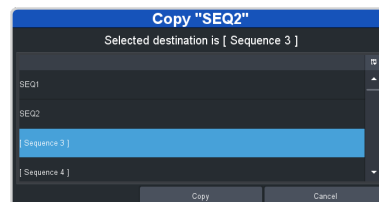
1. Click **Navigation Menu > Live Assist > Sequencer > Sequencer Mnemonics**.



2. Click the sequence that you want to name.



Setting	Description
Name	Enter a new name for the selected sequence.
Foreground	Click a Foreground button to select the color you want to apply to the text on the mnemonic.
Background	Click a Background button to select the color you want to apply to the background on the mnemonic.



5. Click **Copy**.

Deleting a Sequence

Any sequence can be deleted to remove unused sequences to free up space for new sequences.

To Delete a Sequence

There is no undo for this delete function.

1. Click **Navigation Menu > Live Assist > Sequencer > Editor**.
2. Click the sequence that you want to delete.
3. Click **Delete**.
4. Click **Delete** to delete the sequence.

Copying and Pasting a Sequence

The contents, or events, of a sequence can be copied from one sequence and pasted to another. Along with the events, the name and mnemonic settings are also copied.

To Copy and Paste a Sequence

1. Click **Navigation Menu > Live Assist > Sequencer > Editor**.
2. Click the sequence that you want to copy.
3. Click **Copy**.
4. Select the sequence that you want to paste into.

Network Connections

The switcher requires a network connection for the DashBoard interface as well as any control panel you want to use.

DashBoard can be run on a remote computer, or from the TouchDrive control panel. The Carbonite Black control panels still require a separate DashBoard computer.

Note: Refer to the documentation that came with DashBoard or your control panel for setup information.

The switcher uses the following network ports:

- DashBoard Main — 5253
- DashBoard Sat 1 — 5255
- DashBoard Sat 2 — 5256
- DashBoard SoftPanel — 5257
- FTP — 21
- SFTP — 2222
- RossTalk — 7788
- SLP — 427
- SSH — 22
- TFTP — 69
- TSL 3.1 (TCP, Carbonite) — 5727
- TSL 3.1 (TCP, Ultrix™) — 5727
- TSL 3.1 (UDP, Ultrix™) — 4490
- TSL 5.0 (TCP, Carbonite) — 5728
- TSL 5.0 (TCP, Ultrix™) — 5729
- TSL 5.0 (UDP, Ultrix™) — 4492
- SideShot-NG — 5255

Network Setup

The frame comes from the factory set with a static IP address (192.168.0.123) but can be set to a different static IP address. You must connect to the frame from DashBoard to set a different IP address.

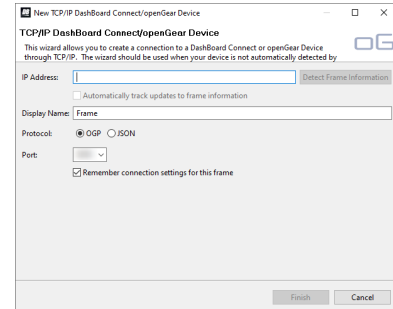
To Connect DashBoard to the Frame

DashBoard connects to the frame as the main panel, or as a satellite panel. Connecting as a main or satellite panel is selected by the port used to connect to the frame. All DashBoard connections and physical panels that connect on the same port mirror each other.

Note: The frame supports a maximum of DashBoard connections at any one time. If there are already the maximum number of connections to a frame you will not be able to connect to it.

You need the IP address of the frame to connect to it from DashBoard.

1. Click **File > New > TCP/IP DashBoard Connect or openGear Device**.



2. In the **IP Address** field, enter the IP address of the frame. The default IP address is 192.168.0.123.

Note: If you are connecting through a Network Address Translator (NAT), the **Detect Frame Information** button may return the wrong IP address. We recommend to not use this function.

3. In the **Display Name** field, enter the name you want to use to identify the frame in DashBoard. This should be a unique name for the frame you are setting up.
4. Select **OGP**.
5. In the **Port** field, enter the port you want to connect to on the frame. The port you connect to assigns the relationship the DashBoard connection has to the frame.

Tip: Multiple DashBoard connections can use the same port, but they will mirror each other. For example, you can connect a control panel and a separate DashBoard computer to the Main Panel port to give control from the panel and DashBoard.

- **Main Panel** — 5253
- **Satellite 1** — 5255
- **Satellite 2** — 5256
- **Satellite 3/SoftPanel** — 5257

Tip: Refer to [MultiPanel](#) on page 93 for information on setting up a MultiPanel system.

6. Click **Finish**.
The frame appears in the **Tree View**.

To Change the IP Address

Change the IP address of the frame from DashBoard.

1. Click **Navigation Menu > Configuration > Network**.



2. Enter a name in the **Switcher Name** field. This is the name that appears in the tree view in DashBoard.
3. Click an **Automatic Discovery** button to have the switcher automatically discoverable by DashBoard (**On**), or not (**Off**). Automatic Discovery allows you to automatically find this device from any DashBoard running on your subnet.
4. Click **Edit**.



5. Enter the IP address (**IP Address**), subnet mask (**Subnet Mask**), and gateway (**Gateway**) you want to use.
6. Click **Update**.

Ross Platform Manager Connections

Ross Platform Manager can store and load configurations onto your switcher remotely. This allows for a centralized management of system configurations.

A Ross Platform Manager server can connect to the switcher over ethernet to download the working set or upload a new working set over FTP. An uploaded working set is immediately applied to the switcher when it is detected.

Refer to the Ross Platform Manager documentation for more information on orchestration.

FTP Connection

You can create a File Transfer Protocol (FTP) connection from a computer to your switcher. You can use the FTP connection to copy still images and animations to and from your switcher as well as copy Edit Decision List (EDL) files from your switcher.

The procedure for creating an FTP connection from a computer varies between operating systems and client software. Consult with the

documentation that came with your computer for assistance with creating an FTP connection.

Note: The FTP connection to the frame can be disabled by setting **FTP** (Click **Navigation Menu** > **Configuration** > **System** > **Global**) to **Disable**. The switcher must be re-started for the change to be applied.

Tip: The FTP connection can be used to copy media items onto the USB that is installed in the switcher.

To Create an SFTP Connection

This procedure applies to Microsoft® Windows® 7 and above.

Note: FTP must be **Enabled** (Click **Navigation Menu** > **Configuration** > **System** > **Global**) to connect to the frame over FTP. If FTP is disabled SFTP will be used.

1. On your computer launch Windows Explorer.
2. In the address bar, type `sftp://IP Address of your switcher:2222`. You are prompted for a username and password.
3. Type the user name for the application your are creating an sFTP connection for. Each application has specific requirements. The switcher will set these requirements automatically based on the username.
 - `xpression` – used when creating a connection from a Ross® XPression Motion Graphics System directly to the Media-Store channels on the switcher, as well as any USB drive installed in the switcher
 - `liveedl` – used to create a connection to the LiveEDL folder on the switcher to download an edit decision list file from the switcher
 - `user` – used to create a connection to the general storage folders on the switcher, as well as any USB drive installed in the switcher
 - `rpm` — used by Ross Platform Manager to manage the configuration of the switcher.
4. Enter the password password

Video Reference

The switcher uses the REF A or B input reference signal on the router directly as a reference clock. The switcher does not rely on the reference settings in Ultrix™ for a reference signal.

Supported Reference Formats

The switcher supports a number of reference modes for both internal and external reference signals. References to 1080p 59.94Hz (A) and 1080p 50Hz (A) refer to 1080p Level A only.

UHD-QSD is not supported at this time.

Switcher Format	Required Reference
HD Formats	
720p 50Hz	576i
	720p 50Hz
	1080i 50Hz
720p 59.94Hz	480i
	720p 59.94Hz
	1080i 59.94Hz
1080i 50Hz	576i
	1080i 50Hz
1080i 59.94Hz	480i
	1080i 59.94Hz
1080pSF 23.98Hz	1080pSF 23.98Hz
1080pSF 24Hz	1080pSF 24Hz
1080pSF 25Hz	576i
	1080pSF 25Hz
1080pSF 29.97Hz	480i
	1080pSF 29.97Hz
1080pSF 30Hz	1080pSF 30Hz
1080p 23.98Hz	1080p 23.98Hz
1080p 24Hz	1080p 24Hz
1080p 25Hz	576i
	1080i 50Hz
1080p 29.97Hz	480i
	1080i 59.94Hz
1080p 30Hz	1080p 30Hz
1080p 50Hz (A)	576i
	1080i 50Hz
	720p 50Hz

Switcher Format	Required Reference
1080p 59.94Hz (A)	480i
	720p 59.94Hz
	1080i 59.94Hz
1080p 60Hz (A)	720p 60Hz
	1080i 60Hz
UHD Formats	
UHDTV1 23.98Hz	1080p 23.98Hz
UHDTV1 24Hz	1080p 24Hz
UHDTV1 25Hz	1080p 25Hz
UHDTV1 29.97Hz	1080p 29.97Hz
UHDTV1 30Hz	1080p 30Hz
UHDTV1 50Hz	720p 50Hz
	1080i 50Hz
UHDTV1 59.94Hz	720p 59.94Hz
	1080i 59.94Hz
UHDTV1 60Hz	720p 60Hz
	1080i 60Hz

The switcher allows you to use any interlaced video format to operate the switcher in any format of the same frequency; however, the use of 480i or 576i (Composite Sync) reference signals for High Definition (720p, 1080i, or 1080p) video modes is not recommended.

The use of composite sync reference formats is recommended for Standard Definition video modes only, and provides stable outputs with jitter performance in compliance with SMPTE-259M specifications.

Switcher Modes

The switcher can operate in either HD or UHDTV1 based modes. The video formats that the switcher can operate in are restricted to the mode the switcher is set to. If the switcher is in HD mode, only HD video formats are available.

Any valid reference signal can be used for all modes.

To Set the Switcher Mode

Set the type of video formats that you want the switcher to operate in. This also selects the features and resources that are available on your switcher.

1. Click **Navigation Menu > Configuration > System > Global**.



2. Click the **Switcher Mode** button for the mode you want the switcher to operate in.
3. Wait for the DashBoard pages to come back up. This may take a few minutes.

Switcher Mode Video Formats

The switcher is restricted to specific video formats when operating in each Switcher Mode.

	HD Modes	UHD Modes
720p 50Hz	✓	
720p 59.94Hz	✓	
1080i 50Hz	✓	
1080i 59.94Hz	✓	
1080pSF 23.98Hz	✓	
1080pSF 24Hz	✓	
1080pSF 25Hz	✓	
1080pSF 29.97Hz	✓	
1080pSF 30Hz	✓	
1080p 23.98Hz	✓	
1080p 24Hz	✓	
1080p 25Hz	✓	
1080p 29.97Hz	✓	
1080p 30Hz	✓	
1080p 50Hz	✓	
1080p 59.94Hz	✓	
1080p 60Hz	✓	
UHDTV1 23.98Hz		✓
UHDTV1 24Hz		✓
UHDTV1 25Hz		✓
UHDTV1 29.97Hz		✓
UHDTV1 30Hz		✓
UHDTV1 50Hz		✓
UHDTV1 59.94Hz		✓
UHDTV1 60Hz		✓

Switcher Mode Resources

When the switcher is operating in a UHDTV1 video format, the number of available resources is reduced to provide the additional processing power required for UHDTV1 production. The following table provides a quick overview of how the resources are re-allocated.

Note: Values represent maximum resources with all options installed.

Table 1: Switcher Mode Restrictions

	Mosaic HD	Mosaic UHD
MiniME™ Engines	10	6
Keyers per MiniME™	4	4
2D DVE Channels Switcher Wide	18	8
Input FSFCs (Max) ²	18	4
Frame Delay (Max Frames)	13	7
Proc Amp/Color Correctors (Max) ²	18	4
Media-Store Channels (Video ³)	18	4 ⁴
SDI Video Inputs ⁵	18	18
SDI Video Outputs ⁵	18 ⁶	18 ⁶

Notes:

¹ Each Canvas consumes MiniME™ engines to generate the output. The number of Canvas outputs that are available depends on the number of MiniME™ engines that are available.

² Software options are required to be installed to activate the maximum number of resources.

³ When a media item with an alpha is loaded into a channel, the alpha is loaded into the next channel. A media item with alpha uses 2 channels.

⁴ An FSFC must be assigned to an input so that it can then be configured as a Media-Store.

⁵ The SDI inputs and output on the SDPE blade are not available at this time.

⁶ Not all outputs are configurable.

Switching Field (HD Only)

The switching field is the field in an interlaced video format that the switcher uses to transition from one video source to another. An interlaced video format is made up of two fields, field 1 (odd lines) and field 2 (even lines).

Note: If you are running in a progressive video format, selecting an even or odd fields will cause the switcher to only allow transitions on every second frame.

To Set the Switching Field

Set the field that transitions are performed on when operating in an HD video format.

Note: If you are using a Frame Sync or Format Conversion (FSFC), transitions are locked to Field 1.

1. Click **Navigation Menu > Configuration > System > Global**.



2. Click a **Field Dominance** button to select which field video transitions occur on.
 - **Field 1** — transitions occur on the odd field
 - **Field 2** — transitions occur on the even field
 - **Both** — transitions occur on the current field, either even or odd

Video Inputs

Video sources come into the switcher either from the router matrix, or through the HD-BNCs on the SDPE blade. Depending on how you want to use these video sources, or where they come from, you may want the switcher to pair them together, or associate an external device with them. Pairing two video sources together is usually used for an auto select key where an external device, such as a character generator, outputs both a key video and key alpha. Associating a video source with an external device allows special control over that device to become active when you select the source on a bus.

Switcher inputs are fixed to either the router matrix or the HD-BNCs on the SDPE blade.

Tip: In the router, Switcher Inputs are Destinations for the slot the SDPE is installed in.

Switcher Input	Video Source
1	Router Destinations
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	SDPE Input 1
20	SDPE Input 2
21	SDPE Input 3
22	SDPE Input 4

Video Input Setup

Video inputs are separated into external sources and internal sources. The external sources are the video inputs coming in on the HD-BNC at the back of the frame and the internal sources are generated internally either from re-entries or follows, or from media generators.

To Set up an External Video Input

External sources come into the switcher from other devices, such as cameras, video servers, or character generators.

Click **Navigation Menu > Configuration > Inputs > External**



The physical inputs are listed along the side and the various settings are listed across the top. Click the setting button for the source you want to set up to view the available settings.

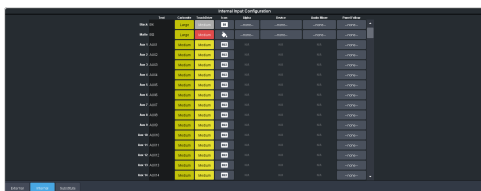
Setting	Description
Text	Apply a custom name to the source. Enter a new name for each input you want to identify differently. The name is used to identify the input on the panel mnemonics and well as on menus. If TSL id is associated with the input, the switcher will use the router mnemonic name over the internal one.
Carbonite	Set up the mnemonic appearance of the source for the control panel you are using. Refer to your control panel documentation for more information on setting up mnemonics.
TouchDrive	
Icon	
Alpha	Link an alpha video feed to the video. If the input is the video or fill for an auto key, click the Alpha button and select the video source you want to use as the alpha. Refer to To Set Up an Auto Key Association on page 63 for information on setting up an auto key.
Device	Link an external device to a video input to allow remote control for that device.
Audio Mixer	Link an external audio mixer to a video input. Select the audio mixer and audio channels on the mixer that you want to associate with the video. Associating audio channels with video sources allows for Audio Follow Video (AFV) control from the switcher where the audio channel is brought up when the video it taken on-air.

Setting	Description
Mask Source	Link a video mask to the video source. Much like an alpha, you can link a mask source to the video. The external mask source is used by the chroma keyer mask. Refer to To Mask a Chroma Key for information on using an external mask.
Configure	Assign an FSFC or Delay to the input, or assign an input as a Media-Store. Refer to Frame Sync and Format Conversion on page 76 for information on FSFC setup, Frame Delays on page 79 for information on Frame Delay setup, and Input Media-Stores on page 80 for information on setting an input to a Media-Store.
Dyn. Range	Select the current dynamic range of the video signal on the input. This is the dynamic range that the video signal is being converted from. Refer to High Dynamic Range (HDR) and Wide Color Gamut (WCG) Conversion on page 83 for more information.
Color Gamut	Select the color gamut of the video signal on the input. This is the color gamut the video signal is being converted from. Refer to High Dynamic Range (HDR) and Wide Color Gamut (WCG) Conversion on page 83 for more information.
TSL	Assign a TSL id to the input and set the tally state. Refer to To Assign a TSL ID to a Video Input on page 62 for information on assigning a TSL id to an input.
Panel Follow	Select one of the custom panels to be shown on Live Assist when the source is selected. This can be used to have the Dashboard page for a camera control unit displayed when the camera source is selected. Refer to Custom Page Auto Follow on page 64 for information on setting up custom panels.

To Set up an Internal Video Input

Internal sources are generated inside the switcher, such as matte backgrounds, Media-Store channels, and ME re-entries.

Click **Navigation Menu > Configuration > Inputs > Internal**



The internal sources are listed along the side and the various settings are listed across the

top. Click the setting button for the source you want to set up to view the available settings.

Setting	Description
Text	Apply a custom name to the source. Enter a new name for each input you want to identify differently. The name is used to identify the input on the panel mnemonics and well as on menus.
Carbonite	Set up the mnemonic appearance of the source for the control panel you are using. Refer to your control panel documentation for more information on setting up mnemonics.
TouchDrive	
Icon	
Alpha	Link an alpha video signal to the video. The Media-Store channels have dedicated alpha channels that cannot be changed. Refer to To Set Up an Auto Key Association on page 63 for information on setting up an auto key.
Device	Link an external device to a video input to allow remote control for that device.
Audio Mixer	Link an external audio mixer to a video input. Select the audio mixer and audio channels on the mixer that you want to associate with the video. Associating audio channels with video sources allows for Audio Follow Video (AFV) control from the switcher where the audio channel is brought up when the video it taken on-air.
Panel Follow	Select one of the custom panels to be shown on Live Assist when the source is selected. The pages for MediaManager are assigned to the Media-Store sources. Refer to Custom Page Auto Follow on page 64 for information on setting up custom panels.

Source Names

Each video source in the switcher can be given a unique name. These names can be customized for how they appear on the mnemonics by adjusting the size or the font and the background color.

Note: If a TSL ID is assigned to a source, the switcher overwrites the source name on the MultiViewer and mnemonics with the TSL name. If there is no TSL name, or it has not been received yet, the source name is blank. For the labels on the MultiViewer, a combination of the TSL name and switcher source name are used. The new TSL name is passed from the switcher to any downstream TSL devices.

To Set Up a Source Name

Source names appear on mnemonics, menus, and on the MultiViewer.

Note: Source names are restricted to eight characters in length.

1. Click **Navigation Menu > Configuration > Inputs > External** if you are setting up a physical input, or **Internal** if you are setting up an internal input.
2. Enter a new name in the **Text** field for the video input that you want to name.

To Assign a TSL ID to a Video Input

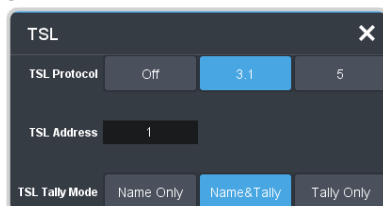
Pass router mnemonic names to the switcher with TSL ID 3.1 or 5 data.

The switcher accepts incoming TSL 3.1 data on TCP port 5727 and TSL 5 data on TCP port 5728.

1. Click **Navigation Menu > Configuration > Inputs > External**



2. Click the **TSL** button for the input you want to assign a TSL ID to.



3. Click a **TSL Protocol** button to select the TSL protocol version the input is listening for.
 - **Off** — TSL is off for this input.
 - **3.1** — the selected input is listening for TSL 3.1 messages.
 - **5** — the selected input is listening for TSL 5 messages.
4. In the **TSL Address** field, enter the TSL ID that applies to the selected input.
5. Click the **TSL Tally Mode** button and select how the source is tallied and which mnemonic name is used.
 - **Name Only** — TSL tally information for the selected ID is ignored. TSL mnemonic source names are used.
 - **Name&Tally** — source tallied on the MultiViewer based on the TSL input. TSL mnemonic source names are used.
 - **Tally Only** — source tallied on the MultiViewer based on the TSL input. TSL mnemonic source names are not used.

Note: If a TSL ID is assigned to a source, the switcher overwrites the source name on the MultiViewer and mnemonics with the TSL name. If there is no TSL name, or it has not been received yet, the source name is blank. For the labels on the MultiViewer, a combination of the TSL name and switcher source name are used. The new TSL name is passed from the switcher to any downstream TSL devices.

Mnemonics

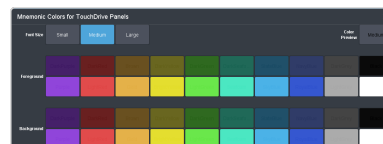
The mnemonic displays on the control panel show the name of the video source and can be customized for font size, color, and in some cases icons can be added. The customization that is available depends on the control panel you are using.

Note: The SoftPanel uses the Carbonite settings.

To Customize Mnemonics for TouchDrive

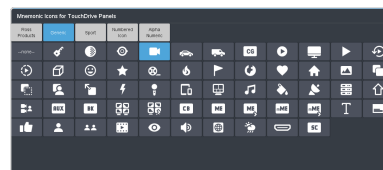
The TouchDrive control panels support RGB color mnemonics and icons.

1. Click **Navigation Menu > Configuration > Inputs > External** if you are setting up a physical input, or **Internal** if you are setting up an internal input.
2. Click the **TouchDrive** button for the source you want to customize the mnemonics for.



Setting	Description
Font Size	Click Small , Medium , or Large to select the size of the font used on the mnemonic display. The larger the font, the fewer characters that are visible on the mnemonic.
Foreground	Click a Foreground button to select the color you want to apply to the text and icon on the mnemonic.
Background	Click a Background button to select the color you want to apply to the background on the mnemonic.

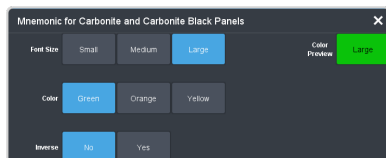
3. Click the **Icon** button for the source you want to customize the mnemonics for and click the icon you want to use.



To Customize Mnemonics for Carbonite Black

The Carbonite control panels support three-color mnemonics without icons.

1. Click **Navigation Menu > Configuration > Inputs > External** if you are setting up a physical input, or **Internal** if you are setting up an internal input.
2. Click the **Carbonite** button for the source you want to customize the mnemonics for.



Setting	Description
Font Size	Click Small , Medium , or Large to select the size of the font used on the mnemonic display. The larger the font, the fewer characters that are visible on the mnemonic.
Color	Click a Color button to select the color you want to apply to the mnemonic. The color is applied either to the background or the font, depending on the Inverse setting.
Inverse	Click an Inverse button to have the color applied to the background (No) or the text (Yes).

Auto Key Setup

An auto key allows you to associate a key alpha with a key video source in the switcher. When the video source is selected as a key, the key alpha is automatically used.

Note: Some internal sources, like Media-Store and MiniME™ outputs are hard-coded to their alpha signals.

To Set Up an Auto Key Association

As well as input sources, internally generated sources, such as media-stores and color backgrounds, can be set up as an auto key.

1. Click **Navigation Menu > Configuration > Inputs > External** if you are setting up a physical input, or **Internal** if you are setting up an internal input.
2. Click the **Alpha** button for the key video source that you want to assign an alpha to.



3. Click the **Alpha Source** button for the source that you want to assign to the key video.

Tip: Some internal sources have alpha signals hard coded to them and others do not support an alpha signal.

- **--none--** — no alpha
- **XX** — assign the source on the selected input as a key alpha
- **BK** — assign internal black as a key alpha
- **BG** — assign the matte generator as a key alpha
- **MiniMEX** — assign the output of MiniME™ X as the key alpha

4. Click an **Alpha Mode** button to select the alpha mode for the key alpha.
 - **Linear** — switcher performs a multiplicative key. The key alpha cuts a hole based on the gradient values of the alpha. Shades of gray are translated into transparency levels, giving the key a soft edge. Unshaped key alphas can also be considered true linear alphas.
 - **Shaped** — switcher perform an additive key. With shaped keys, the key alpha cuts a hole based on the monochrome value of the alpha. Shades of gray are translated into either white or black, giving the key a hard edge. Shaped Key alphas are sometimes used with Character Generators to cut very precise holes for the fill.

GPI Device Control

You can assign a GPI output to a video source for basic external device control. When a video source is taken on-air, the switcher can be set to trigger a GPI output, with a pre-delay. The external device can be set up to cue a clip, or load a page when it receives the GPI input trigger.

Note: The Next Button Secondary Function must be set to GPO to be able to trigger a GPI output manually using the **NEXT** button on the control panel.

Keep the following in mind:

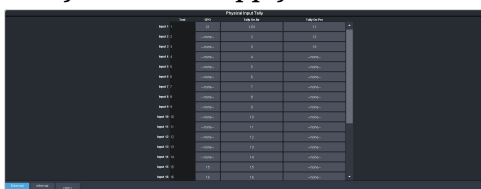
Keep the following in mind when working with GPI output triggers:

- The **Roll Clip** must be set to **On** to trigger a GPI output with a transition.
- Edge triggered GPI outputs remain triggered for the configured duration.
- Level triggered GPI outputs toggle between high and low each time they are triggered.

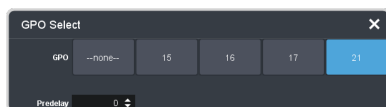
To Assign a GPI Output to a Video Source

Assign a GPI output to an external video source to trigger events on external devices.

1. Click **Navigation Menu > Configuration > Tally and GPIO** and click **External Tally** or **Internal Tally**, depending on the video source you want to apply the GPI to.



2. Click the **GPO** button for the video source that you want to assign a GPI output to.
If you are using the GPI to control the device, the video source should be the video output coming from the device.
3. Click the GPI output that you want to assign to the video source.



Note: You must have GPIs set as outputs to be able to assign them to the video source.

4. In the **Pre-delay** field, enter the pre-delay time, in frames, you want to use with the GPI output.
When you transition a video source with a GPI assigned to it, and the Roll Clip feature is active, the switcher triggers the GPI output, and then waits the pre-delay time before performing the transition. The length of the pre-delay is usually the length of time your video server requires to start playing a clip or your character generator requires to load a page.

Tallies Setup

Tallies are simple contact closure relays that the switcher uses to signal other devices, and users, that a particular video source is on-air.

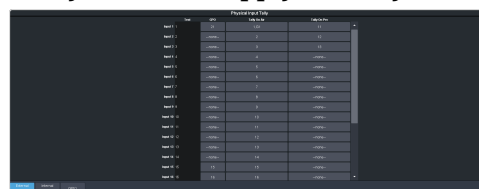
Typically, tallies are used to light a red light on a camera to show people that they are on-air and what camera they should be looking at.

Note: Tallies are tied to the On-Air setting for the bus the source is selected on. If the bus is not set to be tallied as on-air, the tallies for the sources selected on that bus do not trigger. Refer to [On-Air Setting](#) on page 69 for information on setting the on-air status.

To Assign a Tally to a Video Source

Tallies are assigned to video sources and are triggered when that input is selected on a bus that is on-air or is going on-air.

1. Click **Navigation Menu > Configuration > Tally and GPIO** and click **External Tally** or **Internal Tally**, depending on the video source you want to apply the tally to.



2. Click the **Tally On Air** or **Tally on Prv** button for the source you want to assign a tally to.
 - **Tally On Air** — tally the selected source when it is on-air.
 - **Tally On Prv** — tally the selected source when it is going to be taken on-air with the next transition.



3. Click the **Tally** and/or **GPO Tally** buttons for the tallies you want to assign to the source.

Tip: You can assign multiple tallies to the same source, and you can assign the same tallies to multiple sources.

Custom Page Auto Follow

DashBoard pages can be assigned to custom page buttons in Live Assist. These custom pages can then be assigned to video inputs allowing Live Assist to auto follow to these pages when that video input is selected. For example, you can assign a custom page to the DashBoard page that controls a robotic camera. You can then set that custom page to follow the input from that camera. Whenever you select that camera as a source, Live Assist will jump to the custom page for that camera.

Note: PanelLink must be active in Live Assist for auto follow to function.

Tip: Press Click **Navigation Menu** > **Live Assist** > **Custom Views** to view the current custom view pages.

To Assign a Page to a Custom Page Button

The custom page buttons on the Live Assist page can be assigned any custom page or node in DashBoard. This allows you to quickly access controls from another device on DashBoard from Live Assist on your current device.

1. Click **Navigation Menu** > **Configuration** > **System** > **Live Assist**.



2. Click on the **Address** drop-down list for the custom page button you want to assign to a page.
3. Select the connection or custom panel that you want to assign to the custom page button.
 - **All Connections** — expand the list and select the device and node that you want to assign to the custom page button. Some older DashBoard nodes from plug-ins may not display properly on the Live Assist buttons.

Note: Do not assign the Live Assist page to a custom page. A custom page will not display Live Assist from any switcher.

- **Open Panels** — expand the list and select the open custom panel you want to assign to the list. You must have the custom panel running on DashBoard for it to appear in the list.

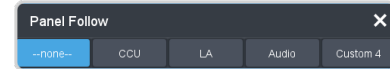
Tip: Click **Clear** to remove the custom page and name assigned to that button.

4. Click on the name field for the custom page button you are assigning a page to and enter a descriptive name for the custom page. The name appears on the button in Live Assist.

To Assign a Custom Page to Follow an Input

Assign a Live Assist custom page to follow a physical or internal video source.

1. Click **Navigation Menu** > **Configuration** > **Inputs** > **External** if you are setting up a physical input, or **Internal** if you are setting up an internal input.
2. Click the **Panel Follow** button for the input you want to assign a custom page to.



3. Click the custom page you want to assign to the input or click **none**.

Substitution Table

A substitution table allows you to specify a different source that will be taken on a bus when a specific source is selected on that bus. The substitution table requires either a MultiScreen or ME follow to be set up between the buses to trigger the substitution.

The substitution table can be used with the ME follows feature to create multilingual production feeds. For example, you can have ME 2 follow ME 1 to simultaneously produce multiple feeds. When a source is selected on ME 1, the same source is selected on ME 2. With the substitution table you can have it that when camera 1 is selected on ME 1 the follow will select camera 1 on ME 2 but the substitution table substitutes camera 4 for camera 1 on ME 2. Refer to [ME Follows](#) on page 68 for information on setting up ME follows.

When working with a MultiScreen setup, the substitution tables allow you to take pre-tiled sources from a CG or video server and have the switcher treat them as a single source across multiple areas or buses. When the first tile is selected on MiniME™ 1, the substitution table also selects the second tile on MiniME™ 2.

Keep the following in mind:

Keep the following in mind when working with substitution tables:

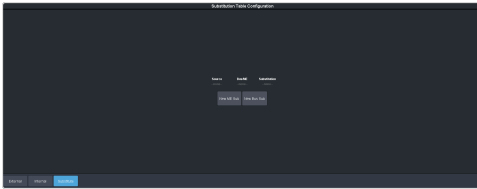
- When working with a MultiScreen, the bezel compensation and data doubling setting should be set up on the source generator.
- If you want to create a substitution for an auto-select key, you must set up a substitution for both the fill and the alpha.
- Selecting a crosspoint directly on a bus that has a substitution set up for it overrides the substitution. The substitution continues when a new source is selected on the leading bus.

To Set Up a Pre-Tiled Source

The substitution table is a single table that allows you to specify a different source that should be taken when a specific source is selected on a bus. The substitution table requires either a Canvas or ME follow to be set up between the buses to trigger the substitution.

***Tip:** When you select the Source on the ME/Bus, the Substitution source is taken instead.*

1. Click **Navigation Menu > Configuration > Inputs > .**



2. Click **New ME Sub** or **New Bus Sub** to select the type of substitution table you want to set up.
 - **New ME Sub** — create a substitution on an ME or MiniME™.
 - **New Bus Sub** — create a substitution on a key bus of an ME or MiniME™, or an aux bus.
3. Click the **Source** button and select the source that you want to substitute with another source.
4. Click the **ME** or **Bus** button and select the area that you want the substitution to occur on.
5. Click the **Substitution** button and select source you want to substitute for the selected one. Repeat for any addition substitutions you want to create.
6. Click **Save**.

Video Outputs

Switcher outputs are routed to destinations in the router matrix or to the HD-BNC on the SDPE blade directly.

Switcher outputs are fixed to either the router matrix or the HD-BNCs on the SDPE blade.



Important: Only outputs 1-8 are available as PiPs to UltraScape.

Tip: In the router, Switcher Outputs are Sources for the slot the SDPE is installed in.

Switcher Output	Video Output
1	Router Sources
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	Output 1
20	Output 2
21	Output 3
22	Output 4

UHDTV1 Outputs

When the switcher is operating in UHDTV1, some of the output signals are fixed. These signals can be routed to any destination in the router, but the output signal from the switcher is fixed.

Table 2: UHDTV1 Switcher Outputs

Output	Video Signal
1	Any Switcher Video Source
2	Any Switcher Video Source
3	Any Switcher Video Source
4	Any Switcher Video Source
5	Any Switcher Video Source
6	Any Switcher Video Source
7	Any Switcher Video Source
8	Any Switcher Video Source
9	MiniME™ 2 (Fixed)
10	MiniME™ 3 (Fixed)
11	MiniME™ 4 (Fixed)
12	MiniME™ 5 (Fixed)
13	MiniME™ 6 (Fixed)
14	Splicer 2 (Fixed)
15	Splicer 3 (Fixed)
16	Splicer 4 (Fixed)
17	Splicer 5 (Fixed)
18	Splicer 6 (Fixed)

Video Output Setup

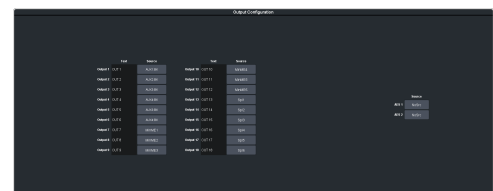
You can assign a video source or bus to an output BNC. Some outputs can only be used for certain features

To Set up a Video Output

Assign video sources or buses to the output HD-BNCs on the back of the switcher. Some outputs are fixed to a specific video signal.

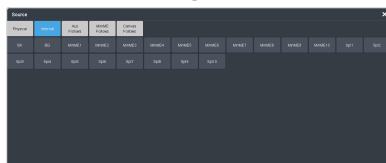
1. Click **Navigation Menu > Configuration > Outputs.**

Note: In UHDTV1, some outputs are fixed to a specific video signal.



Note: The number of outputs that can be configured depends on the video mode the switcher is operating in.

- Click on the **Source** button for the output that you want to assign a source to.



- Click the video source that you want to assign to the output.
 - Physical** — the external inputs to the switcher from the router matrix or the input HD-BNCs.
 - BK** — black
 - BG** — matte generator
 - MinMEX** — main program output of MiniME™ X
 - SpIX** — output of Splicer X.
 - Aux Follows** — the aux buses.
 - MiniME Follows** — the background, preset, and key buses of each MiniME™.
 - MMXBg** — source on background of MiniME™ X
 - MMXPst** — source on preset output of MiniME™ X
 - MMXKYV** — key Y video of MiniME™ X
 - MMXKYA** — key Y alpha of MiniME™ X
 - Follows** — the background, preset, and key buses of each Canvas.
 - CanXBg** — source on background of Canvas X
 - CanXPst** — source on preset output of Canvas X
 - CanXKYV** — key Y video of Canvas X
 - CanXKYA** — key Y alpha of Canvas X

Note: The MiniME™ preset only shows the source that is selected on the preset bus for the MiniME™. This does not include keys or any video manipulation that is done if the MiniME™ is used as part of a Canvas.

- In the **Text** column, enter a new name for each output you want to identify differently. The name is used to identify the output on the panel mnemonics as well as on menus.

Ancillary Data

Ancillary data is information such as closed captioning or embedded audio that is included in the non-active video portions of the video

signal. These portions include the Horizontal Ancillary Data Space (HANC) and Vertical Ancillary Data Space (VANC).

The switcher can be configured to strip or pass this data from the video output.

Note: Frame Converters and Synchronizers strip embedded audio data from the video signal.

The following restrictions apply to ancillary data being included in the output:

- MultiViewer outputs do not include any ancillary data.
- MiniME™ and Canvas outputs do not include any ancillary data unless an ME with ancillary data is re-entered onto the background bus.
- Any format conversion on the input video signal.
- Setting ancillary data to be stripped.

To Strip or Pass Ancillary Data

Strip or pass ancillary data on video outputs. Video manipulation such as FSFC conversion automatically strips ancillary data from the video signal.

- Click **Navigation Menu > Configuration > System > Global**.



- Click an **Ancillary Mode** button to select whether ancillary data is stripped or passed.
 - Strip** — ancillary data is stripped
 - Pass** — ancillary data is passed unmodified

ME Follows

An ME or MiniME™ can be linked to another ME or MiniME™ so that actions performed on the first are duplicated on the following. Linking can only be set between areas of the same type. You cannot have a MiniME™ follow an ME.

Tip: The ME follows can also be used with the substitution table feature to create multilingual production feeds. For example, you can have ME 2 follow ME 1 to simultaneously produce multiple feeds. When a source is selected on ME 1, the same source is selected on ME 2. With the substitution table you can have it that when camera 1 is selected on ME 1 the follow will select camera

1 on ME 2 but the substitution table substitutes camera 4 for camera 1 on ME 2.

Keep the following in mind:

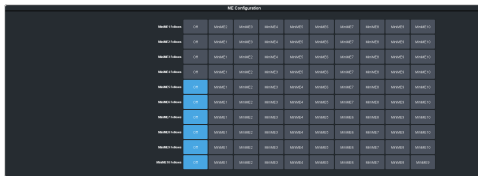
Keep the following in mind when working with ME Follows:

- Memories and resets are also performed on the following ME or MiniME™.
- You must turn the MultiScreen off to be able to set the follows for the MiniME™.
- You cannot cascade/re-enter follows. For example, if MiniME™ 1 is following MiniME™ 2, MiniME™ 2 cannot be set to following anything and no other MiniME™ can follow MiniME™ 1.

To Set Up an ME Follow

Set an ME or MiniME™ to follow another ME or MiniME™. Actions on the first ME or MiniME™ are duplicated on the following ME or MiniME™.

1. Click **Navigation Menu > Configuration > System > ME.**



2. Click the **MiniME X Follow** button for the MiniME™ that you want MiniME™ X to follow.
For example, click **MiniME 2** in the **MiniME 1 Follow** row to have actions performed on MiniME™ 2 duplicated on MiniME™ 1.

Note: The MiniME™ follows are only available if the MiniME™ is not being used for a MultiScreen. You must turn the MultiScreen off to be able to set the follows for the MiniME™.

Tip: Select **Off** to have the ME or MiniME™ not follow anything.

On-Air Setting

Some switcher outputs can be set to be considered on-air or not. This allows you to set which outputs are tallied, how resource allocation is divided, and how the Roll Clip feature works.

To Set the On-Air Status for an Output

Set an output to be on-air to tally sources that are selected on that bus.

1. Click **Navigation Menu > Configuration > On Air.**



2. Click an **Always OnAir** button for an output to select whether the output is considered on-air (**On**) or not (**Off**).

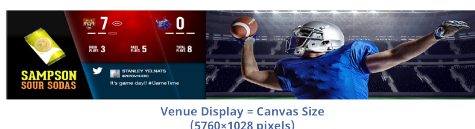
Tip: Setting an output to be always on-air tallies sources that are selected on that bus, or are going to be taken on-air with the next transition.

MultiScreen

MultiScreen works by breaking your display into individual panels. Each panel is represented by a tile in MultiScreen and the entire display is represented by the canvas.

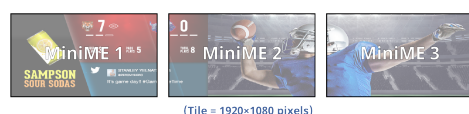
To properly set up MultiScreen you must calculate the total number of pixels on your display (width and height). In the example shown below we are using a display that is 3840 pixels wide and 2160 pixels high. This information is entered as the canvas size.

Tip: MultiScreen uses a MiniME™ to create a tile. The two terms are used interchangeably in the menus.



Once the canvas has been set, you need to calculate how many tiles it will take to cover the canvas. The size of the tiles is determined by the video format the switcher is operating in. For example, if you are a 1080 format, each tile will be 1920 pixels wide by 1080 pixels high. MultiScreen can automatically position the tiles in an X by Y grid over the canvas.

Tip: If your canvas is larger or smaller than the grid of tiles, make sure to use enough tiles to cover the entire canvas.



Putting video onto the tiles can be done in a number of ways, depending on how the background graphic you want to use was created. In the case of a pre-tiled source, the background image has already been divided up into individual segments. A separate video source is fed into the switcher for each tile. In the example below, tile 1 is fed the video source on BNC 1 (Source 1), tile 2 is fed from BNC 2, and so on.

Tip: When dealing with pre-tiled sources, it is recommended that you set up a substitution table for all the sources you will use. This allows you to select a source on one MiniME™ and have the switcher automatically select the corresponding sources on the other MiniME™ buses.



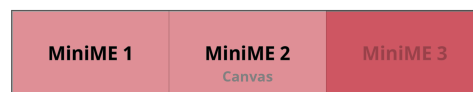
Alternatively to the pre-tiles sources, MultiScreen can use DVE resources to stretch a single image over the entire background.



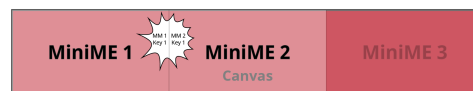
MultiScreen Video Processor Setup

The MultiScreen compositing engine allows you to map switcher outputs (Tile/MiniME™) to regions on your LED display (Canvas). With the tiles laid out on the canvas, background images can be stretched (Background DVE) or tiled (Pre-Tiled Source) across the entire canvas.

Tip: The maximum size and number of the canvases depends on the number of tiles you have available.



Keys are automatically interpolated between tiles across the entire canvas. As the key moves from one tile to another, the keyer for that MiniME™ takes over. You must keep in mind how many keyers you are using on each tile as you move keys around the canvas.



MultiScreen Terms

The following terms are used when discussing MultiScreen:

- **Canvas** — The pixel-based surface area of your LED display. For irregular shaped display assemblies, your canvas should be the maximum height and width of your display.
- **Tile** — The individual MiniME™ video outputs of the switcher that go to each panel of the display. How the tiles are arranged on the canvas must match how the panels are arranged on the display.
- **Bezel** — The pixel compensation for any bezel on the edges of the individual panels that make up the display. Bezel compensation in the absolute distance between the active pixels on the panels, and not the size of the bezel on each panel. Adjust bezel values based on visual inspection of active video on the display.

- **Background DVE** — DVE resources are used to stretch the background image to cover the entire canvas. DVE resources may not be needed if pre-tiled sources are used with the substitution table.
- **Pre-Tiled Sources** — The background image has already been separated for each tile of the canvas. Each part is fed into the switcher as a separate video source and a substitution table is used to tell the switcher which source to put on each tile/MiniME™.

Keep the following in mind:

Keep the following in mind when setting up MultiScreen:

- The Canvas uses MiniME™/Tile resources to provide the keys and outputs. As a key crosses from one tile to the next, a key from either of the MiniME™/Tile outputs is being used to provide the two halves of the key.
- The Canvas can either take separate parts of a pre-tiled source, or scale a single source to the size of the Canvas output. When you use a pre-tiled source, you must assign sources to each MiniME™/Tile that is used in the Canvas. This substitution table allows you to select a single source on the Canvas program bus and the switcher automatically assigns the required source to each MiniME™/Tile.
- The Canvas does not support edge blending.
- In UHDTV1 there are only 2 MiniME™/Tile outputs.
- If you are using a Background DVE for your Canvas, you must use the **Canvas X** controls in Live Assist to stretch or position the DVE key.
- You can set the origin position (**MiniME Origin Position**) of the MiniME™ from the **System/Global** menu.

DVE Units

DVE position and size can be based on screen units or pixel location.

Note: Pixel based DVE position and size is only available from DashBoard. DVE position and size adjustment from the 3-knob menu are always in screen units.

1. Click **Navigation Menu > Configuration > System > Global**.



2. Click a **DVE Unit** button to select the units you want to use for DVEs.
 - **Screen Unit** — size and position adjustments in DashBoard use screen units.
 - **Pixel Unit** — size and position sliders in DashBoard use pixels.

Tip: Pixel based DVEs can lock the aspect ratio for sizing and set the origin point for positioning.

MiniME™ Origin on the Canvas

Select the origin point that the MiniME™ (tiles) use on the Canvas. MiniME™ position adjustments are relative to this origin point on the Canvas and the upper left corner of the MiniME™.



Important: It is recommended that the origin point be set to **Top Left**. This puts the origin for the MiniME™ and the origin for the Canvas in the same top left position.

Note: MiniME™ origin point is only available from DashBoard.

1. Click **Navigation Menu > Configuration > System > Global**.



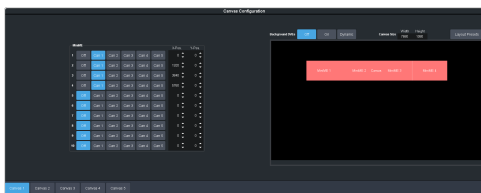
2. Click **MiniME Origin Position** and select the point on the Canvas that the MiniME™ (tiles) will use.



To Set Up MultiScreen

Create your canvas and then overlay tiles to cover the canvas area with video.

1. Click **Navigation Menu > Configuration > Canvases**.



2. Click **Canvas X** to select the Canvas you want to set up.

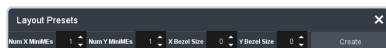
On the right of the screen is a canvas workspace with a visual representation of the canvas in red. Tiles appear as numbered gray boxes in the workspace. The MiniME™/tiles are the only outputs of the system. The canvas is shown to help visualize the placement of the tiles and should be the same pixel size as your target display.

3. Click a **CanX** button for each **MiniME** (tile) to assign that tile to the selected canvas. A tile can only be applied to one canvas at a time.

Tip: Click **Off** to have the tile not applied to any of the canvases. This does not turn off the output of the MiniME™.

The tiles appear as a grey boxes on the canvas workspace you apply them to.

4. In the **Canvas Size** area, enter the **Width** and **Height** of your display in pixels.
A red box representing the canvas is shown in the workspace.
5. Click **Layout Presets** and select how you want the tiles arranged on the canvas.



- **Num X MiniMEs** — enter the number of columns of tiles you want.
- **Num Y MiniMEs** — enter the number of rows of tiles you want.
- **X Bezel Size** — enter the size of the gap you want between columns of tiles to compensate for display bezels or projector edges. This is the total gap and not the size of an individual bezel.
- **Y Bezel Size** — enter the size of the gap you want between rows of tiles to compensate for display bezels or projector edges. This is the total gap and not the size of an individual bezel.

Note: The canvas size does not automatically compensate for bezel offsets.

6. Click **Create**.

The tiles are laid out on the canvas from the top/left corner to the bottom/right corner.

7. Click a **Background DVEs** button to select how DVE resources are used to scale sources for the Canvas screen.
 - **Off** — DVE resources are not allocated to the Canvas for scaling of background sources.
 - **On** — DVE resources are always allocated to the Canvas for scaling of background sources. This reduces the number of available DVE resources to the switcher when a Canvas is turned on.
 - **Dynamic** — DVE resources are dynamically allocated to the Canvas for scaling of background sources if there is no substitution table.

Note: If there are no DVE resources to scale the background source across the entire Canvas, the switcher needs a substitution table to map separate inputs to the Canvas screens or the selected source is repeated in each screen of the Canvas.

Tip: Click **Navigation Menu > Live Assist > MEs > Canvas X > BkgDVE** to control the size and position of the background DVE used by the selected Canvas.

8. Click **OK**.
9. Click a **MV 1 Follow** button to have MultiViewer 1 mimic the current tile layout.

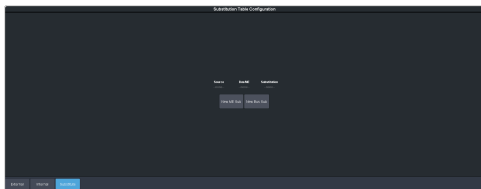
Note: The MultiViewer layout only follows the last layout that you generated (**Layout Preset**). Manually moving tiles around is not followed in the MultiViewer. The MultiViewer can only mimic layouts that currently exist as MultiViewer layouts.

To Set Up a Pre-Tiled Source

The substitution table is a single table that allows you to specify a different source that should be taken when a specific source is selected on a bus. The substitution table requires either a Canvas or ME follow to be set up between the buses to trigger the substitution.

Tip: When you select the Source on the ME/Bus, the Substitution source is taken instead.

1. Click **Navigation Menu > Configuration > Inputs > .**

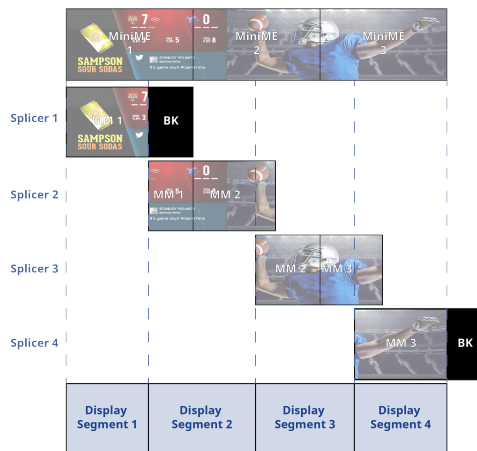


2. Click **New ME Sub** or **New Bus Sub** to select the type of substitution table you want to set up.
 - **New ME Sub** — create a substitution on an ME or MiniME™.
 - **New Bus Sub** — create a substitution on a key bus of an ME or MiniME™, or an aux bus.
3. Click the **Source** button and select the source that you want to substitute with another source.
4. Click the **ME** or **Bus** button and select the area that you want the substitution to occur on.
5. Click the **Substitution** button and select source you want to substitute for the selected one. Repeat for any addition substitutions you want to create.
6. Click **Save**.

Splicers

Splicers allow you to use DVEs to position up to four sources (2x2) on a single output. This can be used to divide up a Canvas for the display segments you want to show it on.

For example, if we have a 5760x1028 display made up of four (4) segments, we can use Mosaic to composite the image across the three (3) MiniME™ outputs required to fill the canvas. We can then use four (4) Splicer outputs to position the MiniME™s on the 4 (four) display segments.

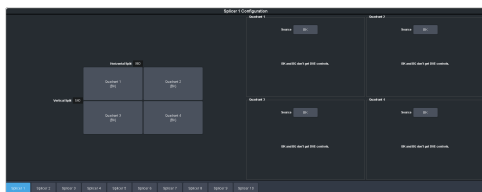


To Set Up a Splicer

Each Splicer can use a DVE to size, stretch, or position the image to fill the quadrant.

Note: Selecting a MiniME™ as a source for a quadrant requires a DVE resource be turned On for the quadrant.

1. Click **Navigation Menu > Configuration > Splicers**.

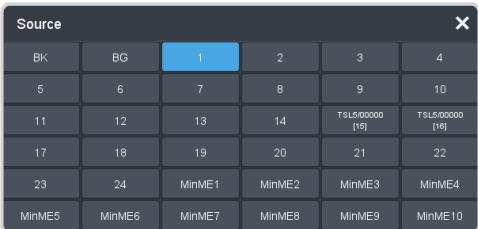


2. Enter a position, in pixels, for the split positions.
 - Horizontal Split — the x-axis boundary between the quadrants on the left and the quadrants on the right.
 - Vertical Split — the y-axis boundary between the quadrants on the top and the quadrants on the bottom.

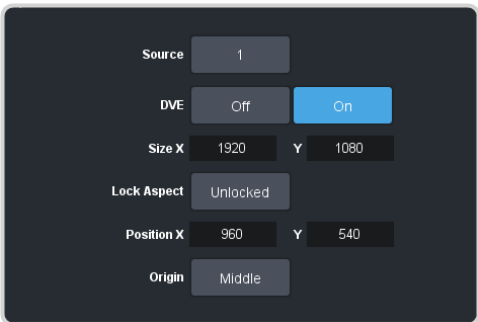
Tip: If you only need 2 quadrants, then set the split in that axis to the full size of the raster. For example, if you only

need two quadrants next to each other, set the **Vertical Split** to 1080 (in HD).

3. Click the **Source** button for the **Quadrant** you want to assign a video source to.



4. Click the video source that you want to assign to the quadrant.
5. Configure the Quadrant for the output you want.



Option	Description
Source	The video source you want to fill the quadrant.
DVE	Assign a DVE to the quadrant to allow the image to be sized, stretched, and moved. <ul style="list-style-type: none">• Off — no DVE is assigned to the quadrant. No other adjustments can be made.• On — a DVE is assigned to the quadrant.
Size	Adjust the size and aspect ratio of the image. This setting is used together with Aspect . <ul style="list-style-type: none">• X — adjust the width of the image. If Aspect is set to Lock then the Y value will also change to maintain the aspect ratio of the image.• Y — adjust the height of the image. If Aspect is set to Lock then the X value will also change to maintain the aspect ratio of the image.

Option	Description
Aspect	<p>Lock or reset the aspect ratio of the image. If the aspect ratio is locked, size adjustments are applied to both X and Y to maintain the current aspect ratio of the image.</p> <ul style="list-style-type: none"> • Lock — toggle ON to lock the size adjustments to the current aspect ratio of the image. If you adjust the aspect ratio of the image and then lock it, the size adjustments will maintain the new aspect ratio settings. • Reset — reset the aspect ratio and size to the default settings of the image.
Position	<p>Adjust the position of the image relative to the Origin point.</p> <ul style="list-style-type: none"> • X — move the image left or right from the origin point. • Y — move the image up or down from the origin point.
Origin	<p>Select the origin point for the image. Position adjustments are relative to this origin point.</p>

Frame Sync and Format Conversion

The frame synchronizer / format converter (FSFC) and input i-to-p converters can be used to convert video signals as well as correct mistimed, or drifting, video input signal. The frame synchronizers cannot completely correct badly formatted video, mistimed switches, signal drops, or similar issues.

The CUFR-ADD-FSFC option provides 22 FSFC in HD (4 in UHDTV1).

Each FSFC channel maintains a separate setting for different video formats. This lets you change between video formats without losing FSFC channel configurations.

Keep the following in mind:

Keep the following in mind when working with Frame Synchronizers and Format Converters:

- If a video format not compatible with the currently defined conversion is used, the video image is frozen with the last successfully processed image frame.
- FSFCs create a one-frame delay in the video output of the switcher for the video signal being converted.
- FSFCs strip embedded audio data from the video signal. Ensure that no FSFC channels are assigned to any input or bus you are using with external audio mode.
- The FSFCs used in the switcher conform to the SMPTE ST 125:2013 standard. Some older equipment may not fully conform to the current standards and can send out-of-spec video to the switcher which can have unexpected results. Ensure that video coming into the switcher conforms to current standards, especially with regard to 480i video signals with variable blanking sizes.

Supported FSFC Video Formats

FSFCs can only convert between specific video formats at a given frequency. The available conversions also depends on the switcher mode you are in. References to 1080p 59.94Hz (A) and 1080p 50Hz (A) refer to 1080p Level A only.

Table 3: Supported FSFC Input Formats

Input	Switcher	Output
UHDTV1 60Hz (Single 12Gb/s UHD-2SI)	UHDTV1 60Hz	UHDTV1 60Hz (Single 12Gb/s UHD-2SI)
720p 60Hz		
1080i 60Hz		
1080p 60Hz (A)		
UHDTV1 59.94Hz (Single 12Gb/s UHD-2SI)	UHDTV1 59.94Hz	UHDTV1 59.94Hz (Single 12Gb/s UHD-2SI)
720p 59.94Hz		
1080i 59.94Hz		
1080p 59.94Hz (A)		
UHDTV1 50Hz (Single 12Gb/s UHD-2SI)	UHDTV1 50Hz	UHDTV1 50Hz (Single 12Gb/s UHD-2SI)
720p 50Hz		
1080i 50Hz		
1080p 50Hz (A)		
UHDTV1 30Hz (Single 6Gb/s UHD-2SI)	UHDTV1 30Hz	UHDTV1 30Hz (Single 6Gb/s UHD-2SI)
1080p 30Hz		
1080pSF 30Hz		
720p 30Hz		
UHDTV1 29.97Hz (Single 6Gb/s UHD-2SI)	UHDTV1 29.97Hz	UHDTV1 29.97Hz (Single 6Gb/s UHD-2SI)
1080p 29.97Hz		
1080pSF 29.97Hz		
720p 29.97Hz		
UHDTV1 25Hz (Single 6Gb/s UHD-2SI)	UHDTV1 25Hz	UHDTV1 25Hz (Single 6Gb/s UHD-2SI)
1080p 25Hz		
1080pSF 25Hz		
720p 25Hz		
UHDTV1 24Hz (Single 6Gb/s UHD-2SI)	UHDTV1 24Hz	UHDTV1 24Hz (Single 6Gb/s UHD-2SI)
1080p 24Hz		
1080pSF 24Hz		
720p 24Hz		

Input	Switcher	Output
UHDTV1 23.98Hz (Single 6Gb/s UHD-2SI)	UHDTV1 23.98Hz	UHDTV1 23.98Hz (Single 6Gb/s UHD-2SI)
1080p 23.98Hz		
1080pSF 23.98Hz		
720p 23.98Hz		
1080p 60Hz (A)	1080p 60Hz (A)	1080p 60Hz (A)
1080i 60Hz		
720p 60Hz		
1080p 59.94Hz (A)	1080p 59.94Hz (A)	1080p 59.94Hz (A)
1080i 59.94Hz ¹		
720p 59.94Hz		
1080p 50Hz (A)	1080p 50Hz (A)	1080p 50Hz (A)
1080i 50Hz ¹		
720p 50Hz		
1080p 30Hz	1080p 30Hz ⁴	1080p 30Hz
1080p 29.97Hz	1080p 29.97Hz	1080p 29.97Hz
1080p 59.94Hz (A) ²		
1080p 25Hz	1080p 25Hz	1080p 25Hz
1080p 50Hz (A) ²		
1080p 24Hz	1080p 24Hz ⁴	1080p 24Hz
1080p 23.98Hz	1080p 23.98Hz ⁴	1080p 23.98Hz
1080pSF 29.97Hz	1080pSF 29.97Hz ⁴	1080pSF 29.97Hz
1080pSF 25Hz	1080pSF 25Hz ⁴	1080pSF 25Hz
1080pSF 24Hz	1080pSF 24Hz ⁴	1080pSF 24Hz
1080pSF 23.98Hz	1080pSF 23.98Hz ⁴	1080pSF 23.98Hz
1080i 59.94Hz	1080i 59.94Hz	1080i 59.94Hz
1080p 59.94Hz (A)		
720p 59.94Hz		
480i 59.94Hz		
1080i 50Hz	1080i 50Hz	1080i 50Hz
1080p 50Hz (A)		
720p 50Hz		
576i 50Hz		
720p 59.94Hz	720p 59.94Hz	720p 59.94Hz
1080p 59.94Hz (A)		
720p 50Hz	720p 50Hz	720p 50Hz
1080p 50Hz (A)		

Notes

- ¹ Converted using either a simple line-doubler or 4-line interpolater and may result in lower quality video.
- ² Converted by dropping frames and may result in lower quality video.
- ⁴ Conversion is not supported when the switcher is operating in this video format.

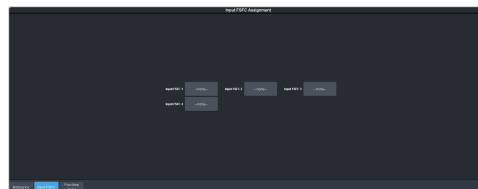
Input FSFC

Assign an FSFC to an input and then set up how the FSFC is used on the input.

To Assign an FSFC to an Input (UHDTV1 Only)

You must assign an FSFC to an input to convert the input video. The CUFR-ADD-FSFC option provides additional resources.

- Click **Navigation Menu > Configuration > Reference > Input FSFC**.



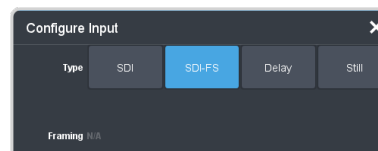
- Click the **Input FSFC X** button for FSFC you want to assign to an input.
- Click the **Input** button to select the video input that you want to assign the FSFC to.

Tip: Click **none** to take the FSFC out of the video path for the selected input.

To Set Up an Input FSFC (HD Only)

Note: If you do not have the CUFR-ADD-FSFC option activated, an FSFC must be assigned to the input first.

- Click **Navigation Menu > Configuration > Inputs > External**.
- Click the **Configure** button for the input you want to assign an FSFC to.



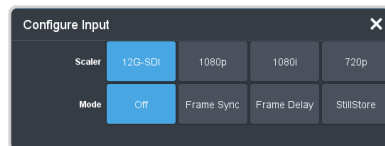
- Click a **Type** button to turn on the FSFC.
 - SDI** — no FSFC is applied to the input.
 - SDI-FS** — an FSFC is applied to the input.

To Set Up an Input FSFC (UHDTV1 Only)

Set up the FSFC that has been assigned to the input. The conversion that is available depends on the format the switcher is operating in and the input that is being converted.

Note: You must assign an FSFC to the input before you can set it up.

1. Click **Navigation Menu > Configuration > Inputs > External**.
2. Click the **Configure** button for the input you want to set up the FSFC for.



3. Click a **Scaler** button to select the type of format conversion you want to apply to the input.
 - **12G-SDI** — no conversion is applied to the input (single-link 12Gb/s UHD-2SI).
 - **1080p** — the input is converted from 1080p.
 - **1080i** — the input is converted from 1080i.
 - **720p** — the input is converted from 720p.
4. Click **Frame Sync** to apply a frame synchroniser to the input.

Note: If a frame delay has been applied to the selected input, the frame sync functionality is disabled.

Frame Delays

A delay of up to 13 frames in HD, or 7 frames in UHD TV1, can be added to any input that an FSFC is assigned to. This allows you to delay the timing of an input to compensate for the delay in another source. For example, in a virtual set environment it may take a few frames for the system to track the position of the camera and render the background. In this case you want to delay the foreground cameras to compensate for this delay.

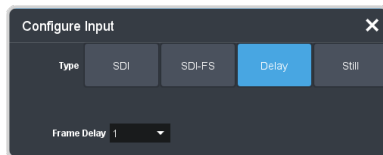
Note: The frame sync functionality is disabled when a frame delay is applied to an input.

To Apply a Frame Delay to an Input

Delay a video signal coming into the switcher.

Note: If you do not have the CUFR-ADD-FSFC option activated, an FSFC must be assigned to the input first.

1. Click **Navigation Menu > Configuration > Inputs > External**.
2. Click the **Configure** button for the input you want to apply a delay to.
3. Click **Delay**.



4. In the **Frame Delay** field enter the amount of delay to apply to the input.

Input Media-Stores

Video inputs must be configured as a Media-Store for that Media-Store channel to be available as a source.

The Media-Store uses the video input and the FSFC resources assigned to that input. An input assigned to a Media-Store cannot be used to pass SDI video into the switcher or used for FSFC or Delay.

Each input has a corresponding Media-Store channel. When an input is configured as a Media-Store, you can load media items into that input and take it as a source on a bus.

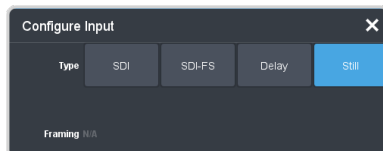
Note: In UHDTV1 you must assign an Input FSFC to an SDI input before you can configure the input as a Media-Store.

To Configure an Input as a Media-Store

Configure an external input as a Media-Store.

Note: If you do not have the CUFR-ADD-FSFC option activated, an FSFC must be assigned to the input first.

1. Click **Navigation Menu > Configuration > Inputs > External**.
2. Click the **Configure** button for the input you want to configure as a Media-Store.
3. Click **Still**.



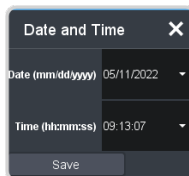
The media item loaded into the Media-Store channel (**Input X**) is displayed when that input is taken on a bus.

System Real-Time Clock/Date

The switcher uses an internal clock to generate the time for the clock overlay for the MultiViewer.

To Set the System Real-Time Time and Date

1. Click **Navigation Menu > Configuration > System > Global**.
2. Click **Edit Date and Time**.



3. Click on the **Date** field and select the current date.
4. Click on the **Time** field and select the current time.
5. Click **Save**.

Color Correction

The color correctors can operate as Processing Amplifiers (Proc Amps) in the HSL (Y-Cr-Cb) color space or as RGB Color Correctors in the RGB color space. Proc Amps and RGB Color Correctors apply color correction to video on input to the switcher, before the switcher crosspoint.

The CUFR-ADD-PACC option provides the switcher with 18 color correctors (4 in UHDTV1).

Color correction is additive, allowing you to apply any combination of Proc Amp and RGB Color Corrector based adjustment to a video signal. If multiple color corrections are applied, the correction is applied first, and the bus-based correction is applied after that.

To Assign a Color Corrector to a Source (UHDTV1 Only)

You must assign a color corrector to an input to correct the color of the video.

1. Click **Navigation Menu > Configuration > Reference > ProcAmp Color**.



2. Click the **PA/CC X** button for the color corrector you want to assign to an input.
3. Click a button to select the video input that you want to assign the color corrector to.

Tip: Click **None** to unassign the color corrector.

Proc Amp Color Correction

The Proc Amp video correction allows you to adjust the gain, offset, black level, and gamma of the video signal.

To Apply a Proc Amp to a Video Source

A Processing Amplifier (Proc Amp) applies color correction in the HSL (Y-Cr-Cb) color space for switcher sources.

1. Click **Navigation Menu > Configuration > ProcAmps > ProcAmp**.
2. Click the source button at the bottom left of the page and select the video you want to apply the Proc Amp to.

Note: Only those sources with an I/O Processor assigned to them will be shown on the list.



Tip: If correction has already been applied (**ON**), press **Reset** to return the Proc Amp and Color Correctors to the default values.

3. Click an **Enable** button to turn the Proc Amp on (**On**) for the selected video.



4. Use the sliders to adjust the video source.

Item	Description
Chroma Gain	Adjust the chrominance gain only.
Luma Gain	Adjust the luminance gain only.
Hue Rotation	Adjust the Hue. Increasing the Hue Rotation turns the color wheel clockwise, and decreasing the Hue Rotation turns the color wheel counter-clockwise.
Black Level	Adjust the black level. Black level acts as a luminance offset.
Gamma	Adjust the luminance gamma value.
Gamma Offset	Adjust the luminance gamma offset.
Cr Gain	Adjust the gain of the Cr (red color difference).
Cr Offset	Adjust the offset of the Cr.
Cb Gain	Adjust the gain of the Cb (blue color difference).
Cb Offset	Adjust the offset of the Cb.

RGB Color Correction

The RGB color correctors allow you to adjust the red, green, and blue component gain, offset, and gamma of the video signal.

To Apply RGB Color Correction to a Video Source

An RGB Color Corrector applies color correction in the RGB color space for switcher sources.

1. Click **Navigation Menu > Configuration > ProcAmps > Color Correction**.

- Click the source button at the bottom left of the page and select the video you want to apply the Color Corrector to.

Note: Only those sources with an I/O Processor assigned to them will be shown on the list.



Tip: If correction has already been applied (**ON**), press **Reset** to return the Proc Amp and Color Correctors to the default values.

- Click an **Enable** button to turn the color corrector on (**On**) for the selected video input.

Tip: The **HDR** presets are not available in UHDTV1.



- Click the **Component** button for the individual color component (**Red**, **Green**, **Blue**) you want to adjust, or **RGB** for all of them.
- Use the sliders to adjust the color components.

Tip: Click a **Color Temperature** button to apply a temperature color correction to the video.

- **Gain** — adjust the gain of the component(s).
 - **Offset** — adjust the offset of the component(s).
 - **Lower Offset** — adjust the lower offset of the component(s).
 - **Gamma** — adjust the gamma value of the component(s).
 - **Gamma Offset** — adjust the gamma offset of the component(s).
- Optional: Click an **HDR** button to set the RGB color corrector to convert between HDR and SDR color spaces. You can adjust the color correction to fine tune the conversion if required.
 - **SDR to HLG1200** — convert the video signal from Standard Dynamic Range (SDR) to the Hybrid Log Gamma (HLG) 1200 dynamic range.
 - **HLG1200 to SDR** — convert the video signal from the Hybrid Log Gamma (HLG)

1200 dynamic range to the Standard Dynamic Range (SDR).

High Dynamic Range (HDR) and Wide Color Gamut (WCG) Conversion

The RGB color correctors are used to convert between different SDR and HDR ranges and between color gamuts (WCG).

Note: You must have available color correctors to be able to perform the HDR/WCG conversion.

Note: Media items must be created in the same color gamut and dynamic range that they are intended to be used in on the switcher. If a media item is created in one color space and the switcher is operating in another, the media item may not appear correctly.

HDR and WCG conversion can be applied on the fly to input video signals or aux bus outputs.

Tip: You can use the RGB Color converter to convert between SDR and HLG1200 dynamic ranges.

To configure the dynamic range and color gamut conversion of input sources you must apply a color corrector to the input. This will convert the input source to the format that the switcher is operating in. Video signals can again be converted for individual output BNCs.

Tip: The RGB Color Corrector can be used to convert between SDR and HLG1200 color spaces in HD video formats.

Supported Color Gamuts:

- **BT.709** — color gamut recommended for HD video signals.
- **BT.2020** — wide color gamut recommended for UHDTV1 video signals.

Supported Dynamic Ranges

- **SDR** — Standard Dynamic Range.
- **HLG** — Hybrid Log Gamma.
- **PQ** — Perceptual Quantizer.
- **S-Log3** — Sony® S-Log3.

Supported HDR and WCG Conversion

The switcher supports both dynamic range and color gamut conversion.

Note: Round trip color conversion is not recommended. Converting a source from BT.709 to BT.2020 and then back to BT.709 will not precisely reproduce the original image colors again.

Note: The switcher uses the color correctors for conversion.

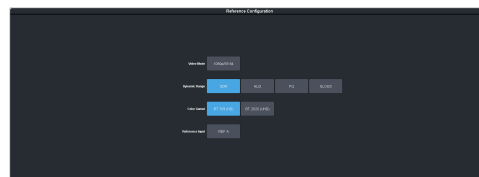
Table 4: Supported HDR/Color Gamut Conversion

Input	Supported Conversions
SDR BT.709	SDR BT.709
	SDR BT.2020
	HLG BT.2020
	PQ BT.2020
	S-Log3 BT.2020
HLG BT.709	HLG BT.709
PQ BT.709	PQ BT.709
S-Log3 BT.709	S-Log3 BT.709
SDR BT.2020	SDR BT.2020
	SDR BT.709
	HLG BT.2020
	PQ BT.2020
	S-Log3 BT.2020
HLG BT.2020	SDR BT.2020
	SDR BT.709
	HLG BT.2020
	PQ BT.2020
	S-Log3 BT.2020
PQ BT.2020	SDR BT.2020
	SDR BT.709
	HLG BT.2020
	PQ BT.2020
	S-Log3 BT.2020
S-Log3 BT.2020	SDR BT.2020
	SDR BT.709
	HLG BT.2020
	PQ BT.2020
	S-Log3 BT.2020

To Set the Switcher Dynamic Range and Color Gamut

To properly convert input and output video sources you must set the color gamut and dynamic range that the switcher is operating in. These are the dynamic range and color gamut settings that inputs are converted to and outputs are converted from.

1. Click **Navigation Menu > Configuration > Reference > Reference**.



2. Click a **Dynamic Range** button to select the range you want the switcher to operate in.
 - **SDR** — Standard Dynamic Range.
 - **HLG** — Hybrid Log Gamma.
 - **PQ** — Perceptual Quantizer.
 - **SLOG3** — Sony® S-Log3.
3. Click a **Color Gamut** button to select the color gamut you want the switcher to operate in.
 - **BT.709 (HD)** — color gamut recommended for HD video signals.
 - **BT.2020 (UHD)** — wide color gamut recommended for UHD TV1 video signals.

To Set the Video Input Dynamic Range and Color Gamut

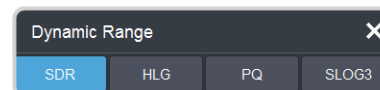
You must assign the dynamic range and color gamut of input video for that source to be converted.

Note: Only those sources with an I/O Processor assigned to them can have the dynamic range and color gamut configured.

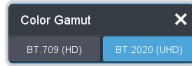
1. Click **Navigation Menu > Configuration > Inputs > External**.



2. Click the **Dyn. Range** button for the video input that needs to be converted and select the dynamic range of the input video signal.



- **SDR** — Standard Dynamic Range.
 - **HLG** — Hybrid Log Gamma.
 - **PQ** — Perceptual Quantizer.
 - **SLOG3** — Sony® S-Log3.
3. Click the **Color Gamut** button for the video input that needs to be converted and select the color gamut of the input video signal.



- **BT.709 (HD)** — color gamut recommended for HD video signals.
- **BT.2020 (UHD)** — wide color gamut recommended for UHD TV1 video signals.

Personality

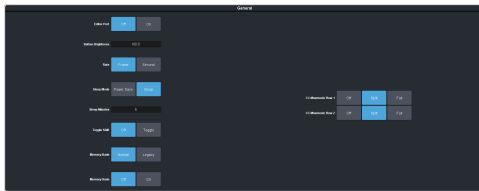
Personality settings allow you to configure how you interact with the control panel and switcher, as well as how the buttons on the control panel appear. All of these settings are stored in the Personality register.

Personality Settings

There are a number of settings for how the switcher will react to different situations, or how switcher elements appear to the operator. All these settings are grouped together into the Switcher Personality. These settings include double-press rates and sleep time, among others.

General Settings

- Click **Navigation Menu > Personality > General**.



Personality	Description
Editor Port	Allow the switcher to be controlled by an external editor. The external editor can control the switcher to perform transitions, or recall memories, among the supported commands. This setting is for the frame. <ul style="list-style-type: none"> On — allow the switcher to be controlled by an external editor. Off — switcher ignores editor commands.
Button Brightness	Set the overall brightness (0-100%) of all the buttons on any physical control panel connected to the switcher. This setting is unique to the control panel.
Rate	Have the switcher use frames or seconds for transition rates. Rates are entered and displayed in the select selected values. This setting is unique to the control panel. <ul style="list-style-type: none"> Frames — transition rates are in frames. Seconds — transition rates are in seconds.

Personality	Description
Sleep Mode	have the switcher go into a sleep mode after a user-defined amount of time (Sleep Minutes) without user interaction. Touching any button, knob, or fader will wake the switcher. The switcher does not act on the button, knob, or fader control that wakes it from sleep mode. During sleep mode, video related hardware is not affected and video signals still pass through the switcher. This setting is unique to the control panel. <ul style="list-style-type: none"> Power Save — all buttons and displays are turned off and as much power is conserved as possible. Sleep — displays are turned off and buttons light in raindrop pattern.
Sleep Minutes	The amount of time that the switcher waits without user input before going into sleep mode. Setting the value to 0 (Off) prevents the switcher from entering sleep mode. This setting is unique to the control panel.
Toggle Shift	Have the Shift buttons either be latching (toggle) or momentary (off). When in toggle mode, you can press a shift button and then select a source on the shifted bus without having to hold down the shift button. This only affects the bus the shift button is on. This setting is unique to the control panel. <ul style="list-style-type: none"> Off — Shift buttons only stay on as long as you are holding them down. Toggle — when you press a Shift button it stays on until you press a source button on that bus.
Memory Bank	Allows you to set how the BANK button behaves when pressed and released. This setting is unique to the control panel. <ul style="list-style-type: none"> Normal — the keypad is used to enter the bank number directly, followed by the memory (For example, to access memory 3 on bank 2, press BANK > 2 > 3.) Legacy — the next bank is selected every time the button is pressed, cycling through all banks (For example, to access bank 5, press BANK repeatedly until bank 5 is selected.)
Memory Undo	A memory recall can be reversed by pressing the memory number a second time after a memory is recalled. This is the same as pressing the UNDO button, if present on your control panel. This setting is unique to the control panel. <ul style="list-style-type: none"> Off — pressing the memory number again does not undo the recall. On — pressing the memory number again undoes the last memory recall.

Personality	Description
CC Mnemonic Row	<p>How you want the mnemonics on each panel row to display the mnemonics for custom controls.</p> <ul style="list-style-type: none"> • Off — the mnemonics don't change when the row is assigned to a custom control bank. • Split — the mnemonics are split (top to cc name and bottom to bus sources) when the row is assigned to a custom control bank. • Full — the mnemonics are show only the names of the custom controls when the row is assigned to a custom control bank.

Transition Settings

- Click **Navigation Menu** > **Personality** > **Transition**.



Personality	Description
Transition	<p>Have the next transition reset to a default background dissolve after each transition. This allows you to prevent the selections from the last transition from being accidentally included with the next transition. This setting is for the frame.</p> <ul style="list-style-type: none"> • No Reset — the next transition settings are not changed after a transition. • Reset — the next transition is reset to a background only transition after a transition.
Next Transition	<p>Have the next transition buttons on the control panel latch when pressed (toggle). This setting is unique to the control panel.</p> <ul style="list-style-type: none"> • Off — press and hold all the buttons you want included in the next transition. All buttons must be pressed at the same time. • Toggle — press a button to toggle it on or off as being included in the next transition.

Personality	Description
Remove Keys	<p>Have a key removed from the next transition after it has been transitioned off-air using key Cut or Trans buttons. This allows you to transition a key off-air in an emergency and not have it accidentally transitioned back on-air with the next transition. This setting is for the frame.</p> <ul style="list-style-type: none"> • Off — key can remain part of the next transition when it is independently transitioned off-air. • On — key is removed as part of the next transition when it is independently transitioned off-air.
Background Double Press	<p>Have a double-press of the next transition background button select the background and all on-air keys as part of the next transition. This setting is unique to the control panel.</p> <ul style="list-style-type: none"> • Ignore — ignore the double-press of the next transition background button. • Transition Clear — set the next transition to include the background and only the on-air keys. If an off-key is selected as part of the next transition it is deselected.
ME Auto Trans Double Press	<p>Set what action is performed when the auto transition button is pressed again during a transition. This setting is for the frame.</p> <ul style="list-style-type: none"> • Halt Forward — the transition is halted and then continues in the same direction when the transition button is pressed again. • Reverse — the transition immediately reverses directions when the transition button is pressed. • Halt Reverse — the transition is halted and then reverses directions when the transition button is pressed again. • Cut — the transition immediately cuts back to the initial state when the transition button is pressed. • Ignore — the button press is ignored and the transition continues.

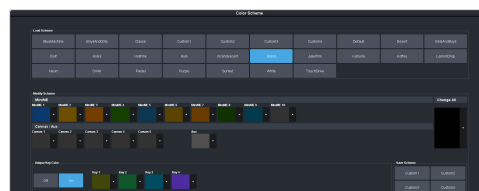
Personality	Description
Key Auto Trans Double Press	<p>Set what action is performed when the independent key auto transition button is pressed again during a transition. This setting is for the frame.</p> <ul style="list-style-type: none"> • Halt Forward — the transition is halted and then continues in the same direction when the transition button is pressed again. • Reverse — the transition immediately reverses directions when the transition button is pressed. • Halt Reverse — the transition is halted and then reverses directions when the transition button is pressed again. • Cut — the transition immediately cuts back to the initial state when the transition button is pressed. • Ignore — the button press is ignored and the transition continues.
Roll Clip	<p>Set whether the roll clip feature is always on, or must be turned on manually. This setting is for the frame.</p> <ul style="list-style-type: none"> • User — the roll clip feature must be turned on manually. • Force — the roll clip feature is always on.

Tip: You can load a pre-loaded color scheme and then modify the colors and save it as a custom color scheme. You cannot save your modifications back to the pre-loaded color scheme.

To Create a Custom Color Scheme

A custom color scheme can be created and used instead of one of the pre-loaded color schemes. This setting is unique to the control panel.

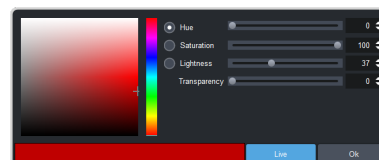
1. Click **Navigation Menu > Personality > Color Scheme**.



2. In the **Modify Scheme** area, click the MiniME™, Canvas, or aux that you want to change the color for.

Tip: Click **Change All** to change the color of all the areas at once. They will all use the selected color.

3. Use the color picker to select the new color you want to use and click **Ok**.



Tip: Click **Live** to have the color changes update in real time on the control panel.

4. In the **Unique Key Color** area select how you want the keyer buttons on the control panel to be colored.
 - **Off** — the keyer buttons use the same color as their MiniME™, or Canvas.
 - **On** — the keyer buttons use the unique colors assigned to each key. Click the key that you want to change the color for and use the color picker to change the color.
5. Click a **Custom X** button to store your color scheme to that location.
6. Click **Yes**.

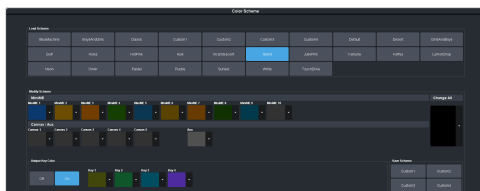
Color Schemes

The buttons on the control panel glow with different colors specific to their state, function, and assignment. This color can be selected from a list of pre-set color schemes, or a custom color can be selected. Up to four (4) custom color schemes can be saved on the switcher.

To Select a Color Scheme

ME, MiniME™, Canvas, aux buses, and keyers can be set to different colors by loading one of the pre-installed color scheme. This setting is unique to the control panel.

1. Click **Navigation Menu > Personality > Color Scheme**.



2. In the **Load Scheme** area, select the color scheme you want to use on the control panel.

Bus Maps

Any video input can be mapped to any source button on the control panel using a bus map. Each source button can have multiple inputs

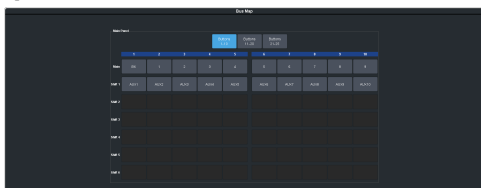
assigned (a main source and shifted sources). You can have up to 6 shifted buses.

To Create a Bus Map

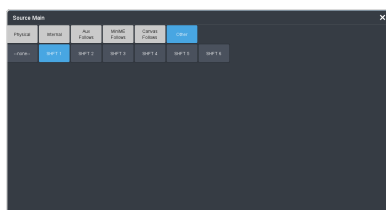
The bus map assigns video sources to the buttons on the control panel.

Note: The bus map is unique to the control panel (Main, Sat 1, Sat 2, or Sat 3) and can only be set for that control panel.

1. Click **Navigation Menu > Personality > Bus Map**.



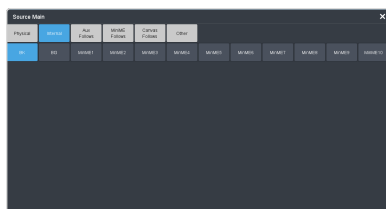
2. Depending on the size of your panel, click a **Buttons X-Y** button to view the source buttons in that range.
3. Click the source button you want to use for a Shift function and click **Other** and select the shift level you want to assign to that source button.



Note: You can have up to 6 shifted buses. All Shift buttons must be assigned to the **Main** bus.

Tip: You can rename the shift button, and other internal sources, from the **Internal Input Configuration** menu.

4. Click the source button on the main or shifted bus that you want to assign a source to and select the source you want to assign to that button.



Note: The sources that are available on your switcher may differ depending on the options you have installed and how your switcher is configured.

User Buttons

These buttons can be assigned to a number of functions, including MiniME™ and key selections, custom control, and memories. The number and position of the buttons on the control panel depend on the model of your control panel.

If a button is assigned to an aux bus, MiniME™, or Canvas, you can press and hold the button to be able to select a different aux bus, MiniME™, or Canvas from the key bus. If the user button is assigned to an Aux, it will allow you to select a different Aux.

To Set A User Button

1. Click **Navigation Menu > Personality > User Select**.

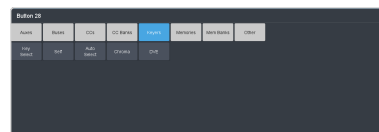
Note: The menu only shows the user buttons that are available on your control panel.



2. Click the user button that you want to assign a function to and select the function you want to assign to that button.

Tip: Each row on your control panel can have a separate set of user button assignment. These settings are tied to the row, and not the ME that is assigned to that row.

Tip: The **Trans** buttons are located on the Transition area of the TouchDrive control panel.



Note: The functions that are available on your switcher may differ depending on the options you have installed and how your switcher is configured.

Licenses

The switcher comes with all the hardware required for the available options. These options can either be licensed at the time you purchase your switcher, or purchased and installed later on.

To Add a License

The license menu lists the options that are installed, as well as allows you to copy and paste codes for installing new options.

Tip: Software options can be reduced or removed by contacting Ross Video and getting a License Key for the new number.

1. Contact your Ross Video sales representative to purchase a license for the option you want to install.

Tip: You can also email (solutions@rossvideo.com) or call (+1-613-652-4886) for sales options.

2. Click **Navigation Menu > Configuration > System > Licenses**.



3. Click the **Request Code Copy** button for the option type(s) you have purchased.
4. Send the **Request Codes** to the Ross Video contact you were given when you purchased the options and they will send you the **License Keys** for the options.
5. Click the **License Key Paste** button to paste the key into the field.

Note: If you paste the license key into the field using a keyboard, you must click away from the field for the key to be validated and the **Apply** button to function.

- 6. Click **Apply**.**

GPI Control

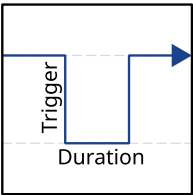
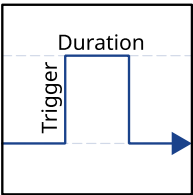
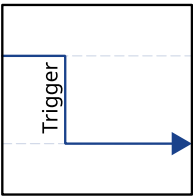
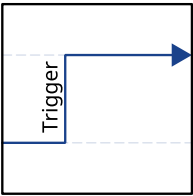
General Purpose Interface (GPI) is a high/low voltage signalling protocol that allows the switcher to send simple commands to an external device, or receive commands from a device. Each pin on the GPI is set as either high (+5 Volts), or low (0 Volts), and it is the switching between high and low that sends commands to the external device, or to the switcher.

Refer to [GPI Device Control](#) on page 63 for information on assigning a GPI to a video input.

GPI Trigger Types

There are four trigger types supported by the switcher. These can be either output triggers, or input triggers.

Table 5: Trigger Types

Trigger	Description	
Low Edge	The output level is set high, and momentarily goes low for the trigger.	
High Edge	The output level is set low, and momentarily goes high for the trigger.	
Low Level	The output level toggles from the base high level to the low level. The output signal remains at this level until reset.	
High Level	The output toggles from the base low level to the high level. The output signal remains at this level until reset.	

GPI Setup

Each GPI pin on the switcher can be configured as either an input, or an output. By default, all GPIs are set as inputs.

Keep the following in mind:

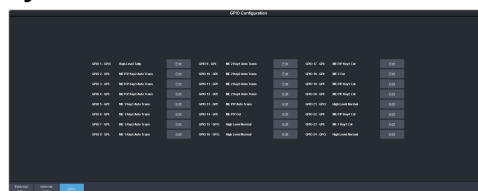
Keep the following in mind when working with GPI output triggers:

- Edge triggered GPI outputs remain triggered for the configured duration.
- Level triggered GPI outputs toggle between high and low each time they are triggered.

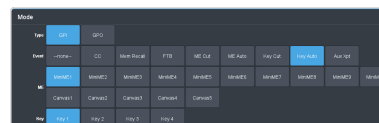
To Set Up a GPI Input

The switcher requires a Low Edge GPI input trigger.

1. Click **Navigation Menu > Configuration > Tally and GPIO > GPIO.**



2. Click **Edit** for the GPI that you want to configure as an input.
3. Click **GPI.**



4. Click the **Event** button for the action you want to assign to the selected GPI input pin.

Setting	Description
--none--	No action is taken
CC	Run a specific custom control: <ol style="list-style-type: none"> Enter the custom control bank in the Bank field. Enter the custom control in the CC field.
Mem Recall	Recall a memory on all MEs: <ul style="list-style-type: none"> Enter the memory to recall in the Mem field.
FTB	Perform a transition to black on the program ME that also takes all keys off-air. The source originally selected on program is selected on preset
ME Cut	Perform a background cut on the selected ME: <ul style="list-style-type: none"> Click an ME button to select the MiniME™ or Canvas.
ME Auto	Perform a background auto transition on the selected ME: <ul style="list-style-type: none"> Click an ME button to select the MiniME™ or Canvas.

Setting	Description
Key Cut	Perform a key cut on the selected ME and key: a. Click an ME button to select the MiniME™ or Canvas. b. Click a Key button to select the keyer.
Key Auto	Perform a key auto transition on the selected ME, MiniME™, or Canvas and key: a. Click an ME button to select the MiniME™ or Canvas. b. Click a Key to select the keyer number.
Aux Xpt	Select a video source on an aux bus: a. Click the Aux button and select the aux bus. b. Click the Source button and select the video source.

- For level triggers, click a **Mode** button to select how you want to GPI output to act.
 - Normal** — when assigned to a video source and RollClip is active, will trigger with the source going on-air, and back with the source going off-air (pre-delay values are only used when the source is going on-air)
 - Tally** — when assigned to a video source, will trigger with the source going on-air, and back with the source going off-air (RollClip and pre-delay values are ignored)

To Set Up a GPI Output

A GPI output can be set as a Normal GPI output, or as a Tally output. As a tally output, the GPI output must be assigned to a video source. A GPI output in tally mode can still be used as a normal GPI output.

- Click **Navigation Menu > Configuration > Tally and GPIO > GPIO**.



- Click **Edit** for the GPI that you want to configure as an output.
- Click **GPO**.



- Click a **Level** button to select whether you want the GPI to trigger low (**Low**), or high (**High**).
- Click a **Trigger** button to select whether you want to use an edge trigger (**Edge**), or a level trigger (**Level**).
- For edge triggers, use the **Duration (fr)** slider to set the length of time (in frames) that the GPI edge output remains triggered.

MultiPanel

Each frame supports up to 3 independent control connections (Main, Satellite 1, and Satellite 2) as well as Satellite 3/SoftPanel. Each connection, with the exception of SoftPanel, can be from a control panel, DashBoard, or a combination of the two. All devices on the same control connection mirror each other.

The independent control connections are selected by the port you connect to on the frame. Multiple panels and DashBoard connections can connect on the same port, but they will all share the same permissions and mirror each other for control.

- **Main Panel** — 5253
- **Satellite 1** — 5255
- **Satellite 2** — 5256
- **Satellite 3/SoftPanel** — 5257

Keep the following in mind:

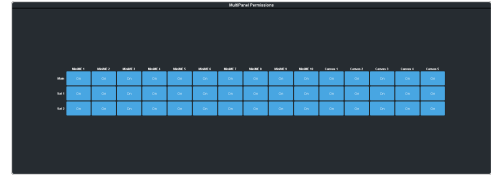
Keep the following in mind when working with MultiPanel:

- SoftPanel shares the permissions of the Main Panel.
- The assignment of the panel ID is done from the control panel.
- Control panel specific personality settings are stored on the frame for the panel ID and are not tied to the control panel.
- DashBoard automatically follows the main panel but will ignore permissions set for the main panel.
- If you change switcher modes, the MultiPanel permissions may have to be set again.
- An undo of a memory recall ignores panel permissions and will undo the last memory recalled from any panel.
- Bus maps are specific to each control panel. Creating or updating a bus map for one control panel does not change the bus map on another control panel.
- Custom controls ignore control panel permissions and will run events on an ME, MiniME™, or Canvas that the control panel does not have permission for.

To Set Up MultiPanel Permissions

Tip: MultiPanel permissions can also be set from the Ultritouch.

1. Click **Navigation Menu > Configuration > System > MultiPanel**.



2. Click a **Main**, **Sat 1**, or **Sat 2** button to select whether that control connection has access to that resource.

Note: SoftPanel and Main share the same permissions.

Note: A control panel must have permission to at least one MiniME™ or Canvas.

SDPE Reconfiguration for Switcher Type

The Software Defined Production Engine (SWR-SDPE) can be used as either an Acuity® ME or Carbonite switcher. To switch between Ultrix Acuity and Ultrix Carbonite you must access the SDPE blade from the switcher you want to convert from. For example, if you have an SDPE in your Acuity® switcher that you want to convert to Carbonite, you must use the Acuity® menus to convert the blade to Carbonite.

The following software versions are required to reconfigure the SDPE from the menus:

- Ultrix Carbonite 7.0.0 or higher
- Ultrix Acuity 11.0a or higher

Note: You can only convert an SDPE blade to Carbonite from Acuity®, or to Acuity® from Carbonite.



Important: When you reconfigure the SDPE as Carbonite it will boot up with the last software and IP address that was assigned to it as Carbonite. This may be the factory default settings. When you reconfigure the SDPE as Acuity® it will pull the latest software from the Acuity CPU.

To Configure the SDPE for Carbonite

To configure the SDPE blade for Carbonite you must use the Acuity® menus.

1. Press **HOME > Setup > Installation > More > More > SDPE Configuration**.
2. Press **Convert to Carbonite** for the SDPE blade you want to convert to Carbonite.



Important: The ME and resources provided by that SDPE blade will no longer be available to the switcher. You may have to update your switcher configuration.



Important: This process cannot be undone from Acuity®. If you convert an SDPE blade to Carbonite you must connect to the Carbonite switcher on the SDPE blade to convert it back to Acuity®.

3. Click **Yes** to confirm the conversion.

The SDPE blade reboots as a Carbonite switcher with the default IP address. The version of Carbonite depends on the software that was last installed on the SDPE blade.

To Configure the SDPE for Acuity®


To configure the SDPE blade for Acuity® you must use the Carbonite DashBoard menus.



Important: The router must have an Acuity CPU installed to operate as an Acuity®.



Important: Ultrix Acuity does not support the Ultrix™ 2RU frame

1. Click **Navigation Menu > Configuration > System > Global**.
 2. Click **Ultrix Acuity**.
-  **Important:** This process cannot be undone from Carbonite. If you convert an SDPE blade to Acuity® you must connect to the Acuity® switcher to convert it back to Acuity®.
3. Click **OK** to confirm the conversion.
 4. On Acuity® you must configure the switcher for the slot and ME of the SDPE blade (Press **HOME > Setup > Installation > More > More > SDPE Configuration > ME to Slot Assignment**).

The SDPE blade reboots as part of the Acuity® switcher. You may have to reboot the system for the new blade configuration to be recognised.

Diagnostics and Maintenance

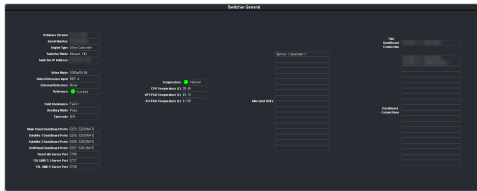
Switcher status menus and error conditions, installed options, calibration, diagnostics, and logs.

Switcher Status

The status menus show information for various components of the frame.

General

- Click **Navigation Menu > Status**



- Software Version** — the current version of the software running on the switcher.
- Serial Number** — the serial number of the system.
- Engine Type** — the model of switcher.
- Switcher Mode** — the current mode the switcher is operating in.
- Switcher IP Address** — the IP address of the switcher.
- Video Mode** — the video format that the switcher is operating in.
- Video Reference Input** — the source of video reference to the router.
- External Reference** — the video format of the external reference, if connected.
- Reference** — status of whether the switcher has locked to the reference format.
- Field Dominance** — the switching field.
- Ancillary Mode** — how ancillary data is handled (strip or pass).
- Timecode** — the current timecode being received by the switcher.
- Main Panel DashBoard Port** — the local and NAT network port that the switcher is listening on for the main panel.
- Satellite 1 DashBoard Port** — the local and NAT network port that the switcher is listening on for the satellite 1 panel.
- Satellite 2 DashBoard Port** — the local and NAT network port that the switcher is listening on for the satellite 2 panel.

- SoftPanel DashBoard Port** — the local and NAT network port that the switcher is listening on for the SoftPanel.
- RossTalk Server Port** — the network port that the switcher is listening on for RossTalk commands.
- TSL UMD 3.1 Server Port** — the network port that the switcher is listening on for TSL UMD commands.
- TSL UMD 5 Server Port** — the network port that the switcher is listening on for TSL UMD commands.
- Temperature** — status of the ambient temperature in the frame.
- CPU Temperature (C)** — the temperature of the frame CPU in degrees Celsius.
- VP FPGA Temperature (C)** — the temperature of the frame video processor FPGA in degrees Celsius.
- IO FPGA Temperature (C)** — the temperature of the frame I/O processor FPGA in degrees Celsius.
- Allocated DVEs** — where DVE channels are allocated in the switcher.
- DashBoard Connections** — the IP addresses of all the DashBoard connections to the switcher, including panels. The port number after the IP address indicates the role each DashBoard connection is filling. Refer to [MultiPanel](#) on page 93 for more information.

Note: The frame supports a maximum of DashBoard connections at any one time. If there are already the maximum number of connections to a frame you will not be able to connect to it.

Switcher Information Text File

The switcher information file contains the software version and IP address of the switcher. When you plug a USB drive into the USB port on the switcher, a `swInfo.txt` file is created at the root directory of the USB. This text file contains the current software version number and IP address of the switcher, as well as other helpful information:

- SW Version** — the current software version installed on the switcher.
- IP Address** — the local IP address of the switcher. This will not include any external NAT IP addresses.
- MicroSD Card Installed** — shows whether the microSD™ card is installed in the switcher.

The last line in the file is the date and time that the file was last created on the USB.

Switcher Logs

Switcher logs can be used to identify and diagnose problems with the switcher. Use this information when contacting Ross Video Technical Support.

A copy of the working set from the switcher is also included with the logs to assist in diagnosing problems.

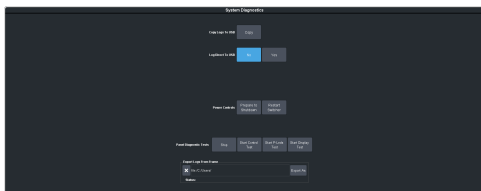
To Copy Logs To a USB

Switcher logs can be stored onto a USB to be sent to technical support to diagnose problems with your switcher.

Tip: Logs can also be exported to your DashBoard computer instead of saving them to the USB. Click **Export As...** in the **Export Logs From Frame** area and select the location on your computer to save the logs file.

Note: Logs must be copied before a reboot or power-cycle of the switcher, or the information in them will be lost.

1. Insert USB drive into the USB port on the frame. Wait 5 seconds after inserting the USB drive before using it.
2. Click **Navigation Menu > Configuration > Diagnostics**.



3. Click the **Copy Logs To USB** button to copy the switcher logs to the USB drive.

Tip: You can have logs stored directly to the USB drive. Click a **Logs Direct to USB** button to select **Yes**.

The logs have been copied into the \switcher directory on the USB drive.

Diagnostic Tests

Diagnostics consist of a number of tests that are used to confirm the functionality of your equipment.

To Run the Tally Test

The Tally Test turns all tallies off, and then turns each tally on consecutively. There is a three (3) second delay between each tally being toggled

on. Once the last tally has been turned on, all the tallies blink on and off three times.



Important: A control panel is required to perform this procedure. If you do not have access to a physical control panel, the SoftPanel can be used. The position of items on the menus on the SoftPanel may not match those of a physical panel.

1. Press **MENU > System > NEXT > NEXT > Diagnostic Tests (Diag Tests on Carbonite Black) > NEXT > NEXT > Tally Test**. All tallies are turned off, and then each tally is turned on consecutively. There is a three (3) second delay between each tally being toggled on. Once the last tally has been turned on, all the tallies blink on and off three times.
2. Press **MENU** to end the test.

To Run the GPI Input Test



Important: A control panel is required to perform this procedure. If you do not have access to a physical control panel, the SoftPanel can be used. The position of items on the menus on the SoftPanel may not match those of a physical panel.

1. Press **MENU > System > NEXT > NEXT > Diagnostic Tests (Diag Tests on Carbonite Black) > NEXT > NEXT > GPI Test**. The second line of the menu show the state of all GPI input pins as High or Low.
2. Press **MENU** to end the test.

To Run the GPI Output Test



Important: A control panel is required to perform this procedure. If you do not have access to a physical control panel, the SoftPanel can be used. The position of items on the menus on the SoftPanel may not match those of a physical panel.

1. Press **MENU > System > NEXT > NEXT > Diagnostic Tests (Diag Tests on Carbonite Black) > NEXT > NEXT > GPO Test**. All GPI outputs are turned off, and then each one is turned on consecutively. There is a three (3) second delay between each GPI output being triggered. Once the last tally has been triggered, all the GPI outputs blink on and off three times.
2. Press **MENU** to end the test.

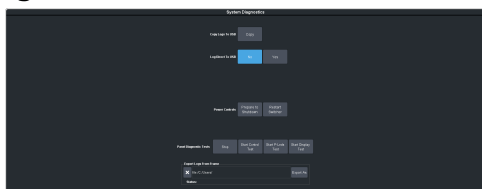
To Run the Control Panel Test

Test the functionality of any of the buttons, knobs or fader and positioner on the control panel.



Important: This test disrupts the functionality of the control panel. If you are running this test from a remote computer, ensure that the control panel is available before performing the test.

1. Click **Navigation Menu > Configuration > Diagnostics**.



2. Click **Start Control Test**.

The button shows Running and the 3-knob menu of the control panel shows the current button, knob, positioner, or fader being used.

3. Test the button, knob, positioner, and fader you want to check.

Note: On the TouchDrive control panel the displays show a touch pattern. Tap on the happy face to test the touch sensitivity and calibration. If the tap registers on the happy face, the happy face disappears. If the tap does not register on the happy face, a green X is shown where the tap was registered.



4. Click **Stop** or press **MENU** and **NEXT** on the control panel to end the test.

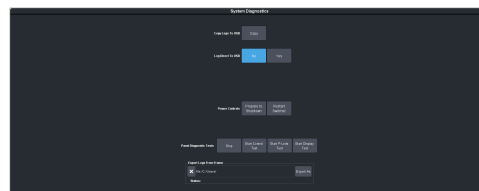
To Run the LED Test

Test the color range of all the LEDs on the control panel.



Important: This test disrupts the functionality of the control panel. If you are running this test from a remote computer, ensure that the control panel is available before performing the test.

1. Click **Navigation Menu > Configuration > Diagnostics**.



2. Click **Start P-LEDs Test**.

The button shows Running and all the buttons and indicators on the control panel cycle through different colors.

3. Click **Stop** or press **MENU** on the control panel to end the test.

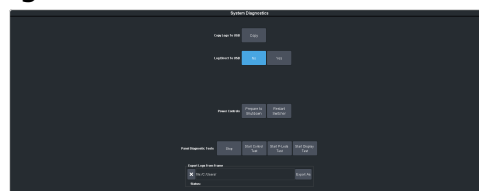
To Run the Display Test

Test the displays on the control panel.



Important: This test disrupts the functionality of the control panel. If you are running this test from a remote computer, ensure that the control panel is available before performing the test.

1. Click **Navigation Menu > Configuration > Diagnostics**.



2. Click **Start Display Test**.

The button shows Running and on the TouchDrive the displays and the mnemonics cycle colors.

On the Carbonite Black a series of letters, numbers, and symbols scroll across the displays and the mnemonics cycle colors.

3. Click **Stop** or press **MENU** on the control panel to end the test.

Error Messages

The switcher will show an error message on the control panel display when a problem is detected.

The following error messages may appear when starting your switcher.

Table 6: Switcher Error Messages

Error	Description	Solution
DDR 0 Not Found; DDR 1 Not Found; or DDR 0 & 1 Not Found	There is a problem with the switcher DDR memory. The switcher may be used but many features will be limited or disabled.	Re-start your switcher. If the problem persists, contact Ross Video Technical Support for assistance.
Panel/Frame Mismatch	Your switcher control panel is connected to the wrong frame type.	Connect your switcher control panel to the proper frame and re-start the switcher.
Upgrade PMC?	Your switcher requires a Panel Module Controller (PMC) upgrade as part of a software upgrade. The switcher may be used without the PMC upgrade but may respond in an unpredictable manner.	Allow the PMC upgrade to proceed. Contact Ross Video Technical Support for assistance if you are unsure about upgrading your switcher.
Unknown panel type Please upgrade	The frame does not recognise the control panel. This could be caused by an unsupported panel being connected to the frame, or a problem with the panel module controlled or the configuration files.	Ensure that you have the correct control panel connected to the frame. If the problem persists, download the latest upgrade file from and force an upgrade of the switcher. Contact Ross Video Technical Support for assistance if you are unsure about upgrading your switcher.

Switcher Reset

If required, the switcher can be reset to return it to a user-defined default setting (RState), or the factory default state. A reset can be performed for the entire switcher, or individual components, such as keys.

Custom Reset Settings (RState)

You can customize many of the default switcher parameters and save them as a user-defined reset settings. These custom reset settings can then be recalled when you want to return the switcher to a previous state.

To Save a Custom Reset Setting

The Custom Reset Setting, or RState, saves how you want the switcher to be configured when it

powers up, or when you recall the RState manually.

1. Click **Navigation Menu > Live Assist > Memory > RState**.



2. Click **AuxX**, **MiniMEX**, and **CanvasX** to select the buses or channels that are reset with a switcher reset.

Tip: Because the Media-Stores are assigned to inputs you cannot reset them with a memory.

Note: If **Disable Audio Memories** is set to **On** (Click **Navigation Menu > Configuration > System > Global**) the audio attributes are disabled.

Tip: Click the **All** button to select or de-select all the items in that category.

3. Click **Save RState** and **Yes**.

To Load a Custom Reset Setting (RState)

The Custom Reset Setting, or RState, is recalled every time the switcher is powered on, or it can be recalled manually.

1. Click **Navigation Menu > Live Assist > Memory > RState**.
2. Click **Load RState** and **Yes**.

Tip: Click **Default RState** to load the default RState settings.

Factory Default Settings

You can restore all or part of the switcher to the factory default state. A factory default returns all installation and personality settings are reset.

To Factory Reset the Switcher

Return the switcher to the factory default settings.

1. Click **Navigation Menu > Configuration > System > Reset**.



2. Click a reset or clear button to return that feature to the factory default state.

- **Clear Memories** — clear all memory registers on the switcher.
- **Clear CCs** — clear all custom controls on the switcher.
- **Clear Sequences** — clear all Sequencers on the switcher.
- **Clear UltraScenes** — clear all UltraScenes on the switcher.
- **Default Bus Map** — return the bus map to the default mapping.
- **Factory Reset** — return the installation and personality registers to the default settings.

Frame DIP Switches

The DIP switches allow you to set default IP address and other diagnostic states.

There are a number of DIP switches on the SDPE blade that are used to diagnose the operation of the switcher.

Table 7: Ultrix Carbonite Frame DIP Switches

DIP	Description
1	This DIP switch is used to set the IP address of ethernet port on the frame to the default value (192.168.0.123). It must be in the up (off) position to set another IP address for the frame.
2	Reset the SFTP password.
3	Enables the micro switch (on) that can be used to power cycle the SDPE blade. This functionality is intended to be used with DIP 4 to force a recovery upgrade. A recovery upgrade is only to be used when advised by Ross Video Technical Support.
4	Force the switcher to perform an upgrade (on) from the USB the next time it boots up. This is intended to be used as a recovery upgrade if you cannot connect to the switcher to perform a normal upgrade.

Software Upgrade

The switcher software is upgraded from DashBoard either by dragging and dropping the software onto the Upgrade page, or by saving the upgrade file to the USB drive inserted in the frame.

Depending on the version of software you are upgrading from, your menus may be arranged or appear differently.



Important: Refer to the Upgrade Notes for the version of software you are upgrade to for hardware compatibility and operational issues or changes.

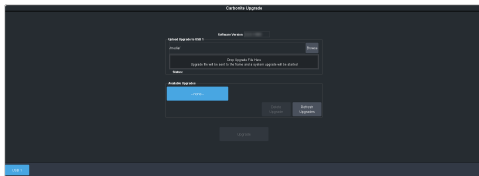
To Upgrade the Switcher OS

Use DashBoard to upload the OS upgrade file to the switcher.



Important: Do NOT turn the switcher power off during the upgrade. Doing so may corrupt the switcher OS or damage the switcher components.

1. Click **Navigation Menu > Configuration > System > Upgrade.**



2. Locate the OS upgrade file (ultra60-rootfs-xx.xx-xx-xxx.ultra60) for the switcher and drag and drop it into the **Drag and Drop Upgrade** area on DashBoard.

Tip: You can also upgrade by clicking **Browse**, locating the upgrade file, and then clicking **Upload File**.

The file is uploaded to the switcher.

3. Click **OK** to confirm the OS upgrade.
4. Wait for the DashBoard pages to come back up. This may take a few minutes.

Once the OS has been upgraded you can next upgrade the software.

To Upgrade the Switcher Software

Use DashBoard to upload the upgrade file to the switcher.

Note: Save your switcher setup information to a set on a separate USB drive before upgrading. This switcher set can be

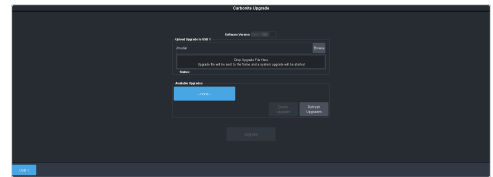
used as a backup in case there is a critical error during the upgrade.

Tip: Switcher sets are not backwards compatible. Keep an archive copy of your sets in case you want to downgrade to the previous software version.



Important: Do NOT turn the switcher power off during the upgrade. Doing so may corrupt the switcher software or damage the switcher components.

1. Click **Navigation Menu > Configuration > System > Upgrade.**



2. Locate the software upgrade file (upgrade_mosaic-x.x.x.xxxxx.ultx_carb) for the switcher and drag and drop it into the **Drag and Drop Upgrade** area on DashBoard.

Tip: You can also upgrade from the USB. All upgrade files located on the USB are shown in the **USB Upgrade** area. Click the file you want to use and click **Upgrade**.

Tip: You can also upgrade by clicking **Browse**, locating the upgrade file, and then clicking **Upload File**.

The file is uploaded to the switcher.

3. Click **OK** to confirm the upgrade.
4. Wait for the DashBoard pages to come back up. This may take a few minutes.
5. Restart router to ensure proper communications between the switcher and router.

Specifications

Switcher resources, video specifications, power rating, and port pinouts.

Resources

The number of resources specific to your switcher depends on the options installed.

	Mosaic HD	Mosaic UHD
MiniME™ Engines	10	6
Keyers per MiniME™	4	4
Canvas Generators	5 ¹	2 ¹
Splicer Generators	10	6
Input FSFCs (Max) ²	18	4
Frame Delay (Max Frames)	13	7
Proc Amp/Color Correctors (Max) ²	18	4
2D DVE Channels Switcher Wide	18	8
Aux Buses	28	
Custom Controls	256 (8 Banks × 32 CCs)	
Max Events per CC	998	
GPI I/Os	24	
Media-Store Channels (Video ³)	18	4 ⁴
Media-Store CACHE	8 GB	
Memories per ME	100	
Sequencers (Max)	5	
Tallies	24	
SDI Video Inputs ⁵	18	18
SDI Video Outputs ⁵	18 ⁶	18 ⁶
Frame IP (default)	192.168.0.123	
Panel/CarboNET IP (default)	192.168.0.129	

Notes:

¹ Each Canvas consumes MiniME™ engines to generate the output. The number of Canvas outputs that are available depends on the number of MiniME™ engines that are available.

² Software options are required to be installed to activate the maximum number of resources.

³ When a media item with an alpha is loaded into a channel, the alpha is loaded into the next channel. A media item with alpha uses 2 channels.

⁴ An FSFC must be assign to an input so that it can then be configured as a Media-Store.

⁵ The SDI inputs and output on the SDPE blade are not available at this time.

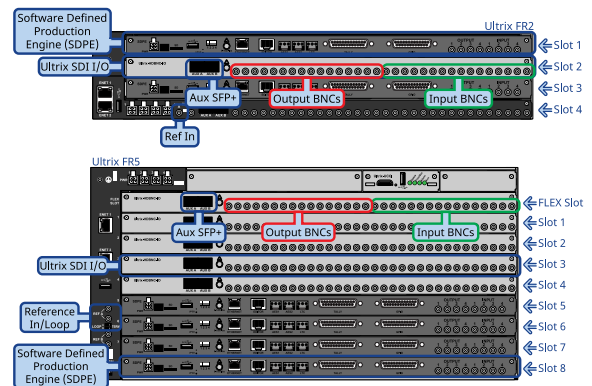
⁶ Not all outputs are configurable.

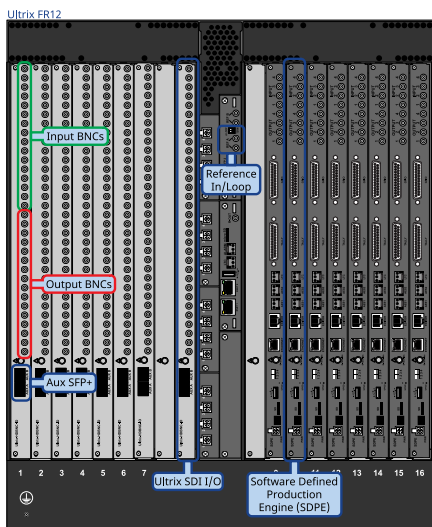
Network Ports

The following network ports are used:

- DashBoard Main — 5253
- DashBoard Sat 1 — 5255
- DashBoard Sat 2 — 5256
- DashBoard SoftPanel — 5257
- FTP — 21
- SFTP — 2222
- RossTalk — 7788
- SLP — 427
- SSH — 22
- TFTP — 69
- TSL 3.1 (TCP, Carbonite) — 5727
- TSL 3.1 (TCP, Ultrix™) — 5727
- TSL 3.1 (UDP, Ultrix™) — 4490
- TSL 5.0 (TCP, Carbonite) — 5728
- TSL 5.0 (TCP, Ultrix™) — 5729
- TSL 5.0 (UDP, Ultrix™) — 4492
- SideShot-NG — 5255

Frame Ports





Serial Port

The serial port supports the RS-422 transmission standard in the following format:

- 38.4k Baud
- 8 bits
- 1 stop bit
- Odd Parity

The serial ports use a female RJ-45 connector.

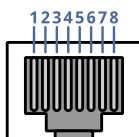


Table 8: Serial Port Pinouts

Pin	Signal
1	Tx+
2	Tx-
3	Rx+
4	n/c
5	n/c
6	Rx-
7	Ground
8	Ground

GPI Port

The switcher supports 24 GPI I/Os on each female DB25 connector.

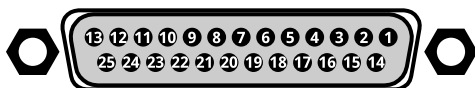


Table 9: GPI I/O Pinouts

Pin	Signal
1	GPI I/O 1
2	GPI I/O 2
3	GPI I/O 3
4	GPI I/O 4
5	GPI I/O 5
6	GPI I/O 6
7	GPI I/O 7
8	GPI I/O 8
9	GPI I/O 9
10	GPI I/O 10
11	GPI I/O 11
12	GPI I/O 12
13	GPI I/O 13
14	GPI I/O 14
15	GPI I/O 15
16	GPI I/O 16
17	GPI I/O 17
18	GPI I/O 18
19	GPI I/O 19
20	GPI I/O 20
21	GPI I/O 21
22	GPI I/O 22
23	GPI I/O 23
24	GPI I/O 24
25	Ground

Tally Port

The switcher supports 24 fixed tallies on each female DB25 connector. Each tally is fully configurable.

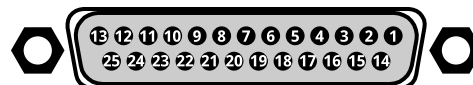


Table 10: Tally Rating

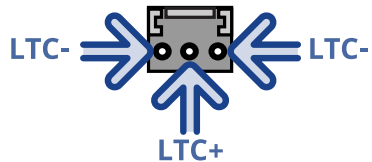
Specification	Value
Input Voltage	24VAC(rms)/40VDC
Maximum Current	120mA
Impedance	<15 ohm

Table 11: Tally Pinouts

Pin	Tally #
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16
17	17
18	18
19	19
20	20
21	21
22	22
23	23
24	24
25	Common

LTC Port

The LTC port on the back of the frame supports a single LTC connection.



Custom Control Events

The Custom Control editor in DashBoard allows you to add or edit events in custom controls.

Note: Not all custom control events may be supported by your hardware or switcher mode. Unsupported custom control events are not shown on the menus.

Operations Custom Controls

Canvas (BKGD DVE)

Event	Location	Description
BKGD DVE Size	Switcher > Bkgd DVE > Bkgd DVE Crop Param	<p>Set the size of the background DVE for the selected Canvas.</p> <ol style="list-style-type: none">1. Click the ME button for the Canvas that you want to perform the event on.2. Click the Parameter button and select Size3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter.4. In the Value (%) field, enter the size you want to apply to the Background DVE.
BKGD DVE X-Position	Switcher > Bkgd DVE > Bkgd DVE Crop Param	<p>Set the X-Position of the background DVE for the selected Canvas.</p> <ol style="list-style-type: none">1. Click the ME button for the Canvas that you want to perform the event on.2. Click the Parameter button and select X-Position3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter.4. In the Value (%) field, enter the position on the X-axis you want to apply to the Background DVE.
BKGD DVE Y-Position	Switcher > Bkgd DVE > Bkgd DVE Crop Param	<p>Set the Y-Position of the background DVE for the selected Canvas.</p> <ol style="list-style-type: none">1. Click the ME button for the Canvas that you want to perform the event on.2. Click the Parameter button and select Y-Position3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter.4. In the Value (%) field, enter the position on the Y-axis you want to apply to the Background DVE.
BKGD DVE Aspect	Switcher > Bkgd DVE > Bkgd DVE Crop Param	<p>Set the aspect ratio of the background DVE for the selected Canvas.</p> <ol style="list-style-type: none">1. Click the ME button for the Canvas that you want to perform the event on.2. Click the Parameter button and select Aspect3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter.4. In the Value (%) field, enter the aspect ratio you want to apply to the Background DVE.

Event	Location	Description
BKGD DVE Border Size	Switcher > Bkgd DVE > Bkgd DVE Crop Param	<p>Set the size of the border of the background DVE for the selected Canvas.</p> <ol style="list-style-type: none"> 1. Click the ME button for the Canvas that you want to perform the event on. 2. Click the Parameter button and select Edge Size 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. In the Value (%) field, enter the size of the border you want to apply to the Background DVE. When a border is set to 0 the border is not visible.
BKGD DVE Edge Softness	Switcher > Bkgd DVE > Bkgd DVE Crop Param	<p>Set the softness of the edge of the background DVE for the selected Canvas.</p> <ol style="list-style-type: none"> 1. Click the ME button for the Canvas that you want to perform the event on. 2. Click the Parameter button and select Edge Softness 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. In the Value (%) field, enter the amount of softness to apply to the edge of the Background DVE.
BKGD DVE Crop	Switcher > Bkgd DVE > Bkgd DVE Crop Param	<p>Set the amount of cropping you want to apply to each edge of the background DVE for the selected Canvas.</p> <ol style="list-style-type: none"> 1. Click the ME button for the Canvas that you want to perform the event on. 2. Click the Parameter button and select the edge you want to crop. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. In the Value (%) field, enter the amount of cropping you want to apply to the selected edge of the Background DVE.

Custom Control Events

Event	Location	Description
Cancel All CC	Custom Control > Cancel All	Stop all running custom controls.
Cancel CC	Custom Control > Cancel CC	<p>Stop a particular custom control. The specific custom control is set when the cancel is inserted.</p> <ol style="list-style-type: none"> 1. Click the Bank button and select the custom control bank you want to cancel a custom control on. 2. Click the CC button and select the custom control you want to cancel.
Hold CC	Custom Control > Hold	Insert a command in a custom control that will stop the custom control at the hold event. You must press the custom control button again, or use a GPI trigger, to continue the custom control.
Loop CC	Custom Control > Loop	Have a custom control run continuously until stopped, or a Cancel/Cancel All custom control command is executed from another custom control.
Pause CC	Custom Control > Hold	<p>Insert a command in a custom control that will stop a custom control at the pause event. The length of the pause is set when the pause is inserted.</p> <ol style="list-style-type: none"> 1. Enter the length of the pause in the Pause (fr) field.

Event	Location	Description
Play CC	Custom Control > Play CC	<p>Play a custom control. Note: The Play CC command applies to a target custom control button only. If you move the contents of the custom control from the button selected in the Play CC to another button, the Play CC command will not follow and will continue to play the custom control assigned to the original button.</p> <ol style="list-style-type: none"> 1. Click the Bank button and select the custom control bank you want to play a custom control on. 2. Click the CC button and select the custom control you want to play.
Resume CC	Custom Control > Resume CC	<p>Resume a particular custom control that is at a hold. The specific custom control is set when the resume is inserted. If the target custom control is not at a hold event, the resume command will not start the target custom control.</p> <ol style="list-style-type: none"> 1. Click the Bank button and select the custom control bank you want to resume a custom control on. 2. Click the CC button and select the custom control you want to resume.
Resume All CCs	Custom Control > Resume All	<p>Resume all custom control that are at hold. The specific custom control is set when the resume is inserted. If a custom control is not at a hold event, the resume command will not start the a custom control.</p>
State, Insert	Custom Control > State	<p>Embed the state of the switcher into a custom control. A state in a custom control behaves just like a memory.</p> <ol style="list-style-type: none"> 1. Click State Attributes and select the elements that you want to include in the state of the switcher when it is stored to the custom control. If Disable Audio Memories is set to On (Click Navigation Menu > Configuration > System > Global) the audio attributes are disabled.

Keyer

Event	Location	Description
Key Only Transition	Switcher > Keyer > Keyer Trans	<p>Perform a key only transition for the selected area.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click the Keyer button for the key you want to perform the event on. 3. Click the Action button and select the type of transition to perform. <ul style="list-style-type: none"> • Cut — cut transition • Auto — auto transition • Reset Rate — reset the transition rate to default • Cut On — cut the key on-air • Cut Off — cut the key off-air • Auto Trans On — auto transition the key on-air • Auto Trans Off — auto transition the key off-air
Key Trans Rate	Switcher > Keyer > Keyer Trans Rate	<p>Set or reset the keyer transition rate of the selected area.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click the Keyer button for the key you want to perform the event on. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Enter a new transition rate, in frames, for the key in the Value (fr) field.
Chroma Key, Initialize	Switcher > Keyer > Chroma Key Init	<p>Initialize a chroma key for the selected key for the selected area.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on.

Event	Location	Description
Chroma Key Auto Adjust	Switcher > Keyer > CK Auto Adjust	<p>Select the chroma key auto adjustments that you want to turn on.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click a Parameter button to select whether to toggle Auto Re-Spill Color or Auto Edge Luma. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Click the Value button and select whether to turn the parameter On or Off.
Chroma Key Color	Switcher > Keyer > Chroma Key Color	<p>Select the color you want to key out for the selected key for the selected area.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click Color and select the color you want to key out.
Chroma Key Measurement Source	Switcher > Keyer > CK Measurement Source	<p>Select the video source that you want to use for the automatic adjustment of the chroma key.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click the Value button and select video source you want to use.
Chroma Key Re-spill Color	Switcher > Keyer > CK Color (Preset Color)	<p>Select the re-spill color for the chroma key.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click the Color button and select the re-spill color.
Chroma Key Re-spill Saturation	Switcher > Keyer > CK Color (HSL Color)	<p>Select the re-spill saturation for the chroma key.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click the Component button and select Sat. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Click the Value button and select the new value you want to enter for the selected component.
Chroma Key Setup	Switcher > Keyer > UCHR Param	<p>Select the various advanced chroma key settings for the selected key for the selected area.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click the UCHR Controls button and select the parameter you want to adjust. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Click the Value button and select the new value you want to enter for the selected parameter.

Event	Location	Description
DVE Freeze	Switcher > Keyer > DVE Freeze	<p>Turn the DVE freeze feature on or off for the selected key for the selected ME, MiniME™, or Canvas.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click the Keyer button for the key you want to perform the event on. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Click the Value button and select whether to freeze the video and appearance of a key (On) or not (Off). When a key is frozen, the DVE attribute are disabled and you can not move the key.
DVE Key Aspect	Switcher > Keyer > DVE Param	<p>Select the aspect ratio for the DVE key on the selected key for the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Keyer button for the key you want to perform the event on. 3. Click the Parameter button and select Aspect. 4. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 5. Enter an aspect ratio in the Value (%) field.
DVE Key Border Color (HSL)	Switcher > Keyer > DVE Border Color (HSL)	<p>Select the custom color you want to apply to the border of the DVE key of the selected area. Each component of the HSL color must be inserted individually.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click the Keyer button for the key you want to perform the event on. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Click the Component button and select the HSL component you want to assign a value to. A value should be applied to all three components. 5. Enter a value for the selected component in the Value (%) field.
DVE Key Border Color (Preset)	Switcher > Keyer > DVE Border Color (Preset)	<p>Select the preset color you want to apply to the border of the DVE key of the selected key for the selected area.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click the Keyer button for the key you want to perform the event on. 3. Click the Color button and select the preset color you want to apply to the border.
DVE Key Border	Switcher > Keyer > DVE Param	<p>Select the size of border for the DVE key on the selected key for the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Keyer button for the key you want to perform the event on. 3. Click the Parameter button and select Edge Size. 4. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 5. Enter a size for the border in the Value (%) field.

Event	Location	Description
DVE Key Crop (Bottom Edge)	Switcher > Keyer > DVE Param	<p>Select the amount of cropping on the bottom edge of the DVE key on the selected key for the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Keyer button for the key you want to perform the event on. 3. Click the Parameter button and select Bottom Edge. 4. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 5. Enter the amount of cropping in the Value (%) field.
DVE Key Crop (Dual Edge)	Switcher > Keyer > DVE Crop Param	<p>Select the amount of cropping on both horizontal or vertical edges of the DVE key of the selected key for the selected area.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click the Keyer button for the key you want to perform the event on. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Click the Parameter button and select the edges you want to crop. 5. Enter the amount of Left or Top cropping you want to apply in the Value % field. 6. Enter the amount of Right or Bottom cropping you want to apply in the Other Value % field.
DVE Key Crop (Left Edge)	Switcher > Keyer > DVE Param	<p>Select the amount of cropping on the left edge of the DVE key on the selected key for the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Keyer button for the key you want to perform the event on. 3. Click the Parameter button and select Left Edge. 4. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 5. Enter the amount of cropping in the Value (%) field.
DVE Key Crop (Right Edge)	Switcher > Keyer > DVE Param	<p>Select the amount of cropping on the right edge of the DVE key on the selected key for the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Keyer button for the key you want to perform the event on. 3. Click the Parameter button and select Right Edge. 4. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 5. Enter the amount of cropping in the Value (%) field.
DVE Key Crop (Top Edge)	Switcher > Keyer > DVE Param	<p>Select the amount of cropping on the top edge of the DVE key on the selected key for the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Keyer button for the key you want to perform the event on. 3. Click the Parameter button and select Top Edge. 4. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 5. Enter the amount of cropping in the Value (%) field.

Event	Location	Description
DVE Key Edge Softness	Switcher > Keyer > DVE Param	<p>Select the amount of softness to apply to the edge of the DVE key on the selected key for the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Keyer button for the key you want to perform the event on. 3. Click the Parameter button and select Edge Softness. 4. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 5. Enter an amount of softness for the DVE key or border in the Value (%) field.
DVE Key Size	Switcher > Keyer > DVE Param	<p>Select the size of the DVE key on the selected key for the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Keyer button for the key you want to perform the event on. 3. Click the Parameter button and select Size. 4. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 5. Enter a new size in the Value (%) field.
DVE Key X-Position	Switcher > Keyer > DVE Param	<p>Select the x-axis position of the DVE key on the selected key for the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Keyer button for the key you want to perform the event on. 3. Click the Parameter button and select X-Pos. 4. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 5. Enter a new position in the Value (%) field.
DVE Key Y-Position	Switcher > Keyer > DVE Param	<p>Select the y-axis position for the DVE key on the selected key for the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Keyer button for the key you want to perform the event on. 3. Click the Parameter button and select Y-Pos. 4. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 5. Enter a new position in the Value (%) field.
Fly Key (DVE)	Switcher > Keyer > Keyer Fly	<p>Assign DVE resources (Fly) to the selected key for the selected area.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click the Keyer button for the key you want to perform the event on. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Click the Value button and select whether DVE resources are assigned to the key (On) or not (Off).
Key, Make Linear	Switcher > Keyer > Keyer Make Linear	<p>Make the selected key linear on the selected area.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click the Keyer button for the key you want to make linear.

Event	Location	Description
Key Active	Switcher > Keyer > Keyer Active	<p>Transition a key (or include it in the next transition) on or off-air for the selected area.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click the Keyer button for the key you want to perform the event on. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Click the Parameter button and select a cut (Cut Key) or auto transition (Trans Key) for the key, or have to key included in the next transition (Include Key). 5. Click the Value button to select whether the key is transitioned on-air / included in the next transition to go on-air (On) or off-air / included in the next transition to go off-air (Off).
Key Copy	Switcher > Keyer > Keyer Copy	<p>Copy the contents of one key to another key the same or a different area.</p> <ol style="list-style-type: none"> 1. Click the Target ME button and select where you want to copy the key to. 2. Click the Target Keyer button for the key you want to copy to. 3. Click the Source ME button and select where you want to copy the key from. 4. Click the Source Keyer button for the key you want to copy from.
Key Invert	Switcher > Keyer > Keyer Invert	<p>Turn the key invert feature on or off for the selected key for the selected area.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click the Keyer button for the key you want to reverse the polarity of the key alpha so that the holes in the background are cut by dark areas of the key alpha instead of bright areas. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Click a Value button to turn key invert on (On) or off (Off).
Key Mode	Switcher > Keyer > Keyer Mode	<p>Select the mode for the selected key for the selected area.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click the Keyer button for the key you want to perform the event on. 3. Click a Mode button to have the key set as shaped/unshaped from the key (Normal), as additive for a shaped source (Additive), or alpha to fully opaque/white (Full).
Key Reset	Switcher > Keyer > Keyer Reset Params	<p>Reset the parameters for the selected key for the selected area.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click the Keyer button for the key you want to reset the clip, gain, transparency, invert, and mask for.
Key Settings (Clip, Gain, Transparency)	Switcher > Keyer > Keyer Settings	<p>Select clip, gain, and transparency settings for the selected key for the selected area.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click the Keyer button for the key you want to perform the event on. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Enter a value for the clip, gain, or transparency for the key in the Value field.

Event	Location	Description
Key Swap	Switcher > Keyer > Keyer Swap	<p>Swap the contents of one key with another key the same or a different area.</p> <ol style="list-style-type: none"> 1. Click the 1st ME button and select where the first key you want to swap is. 2. Click the 1st Keyer button for the first key you want to swap. 3. Click the 2nd ME button and select where the second key you want to swap is. 4. Click the 2nd Keyer button for the second key you want to swap.
Key Type	Switcher > Keyer > Keyer Type	<p>Assign a key type for a key for the selected area.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click the Keyer button for the key you want to perform the event on. 3. Click a Type button to assign the key type to the selected key.
Mask, Invert	Switcher > Keyer > Mask Invert	<p>Invert the mask of the selected key for the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Keyer button for the key you want to perform the event on. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Click the Value button and select whether to invert the masked area with the unmasked area (On) or not (Off).
Mask (Box) — Bottom Edge Position	Switcher > Keyer > Box Mask Param	<p>Select the position for the bottom edge of the box mask on the selected key for the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Keyer button for the key you want to perform the event on. 3. Click the Parameter button and select Bottom Edge. 4. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 5. Enter a new position in the Value (%) field.
Mask (Box) — Edge Softness	Switcher > Keyer > Box Mask Param	<p>Select the amount of softness to apply to the edges of the box mask on the selected key for the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Keyer button for the key you want to perform the event on. 3. Click the Parameter button and select Edge Softness. 4. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 5. Enter a new softness amount in the Value (%) field.
Mask (Box) — Left Edge Position	Switcher > Keyer > Box Mask Param	<p>Select the position for the left edge of the box mask on the selected key for the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Keyer button for the key you want to perform the event on. 3. Click the Parameter button and select Left Edge. 4. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 5. Enter a new position in the Value (%) field.

Event	Location	Description
Mask (Box) — Right Edge Position	Switcher > Keyer > Box Mask Param	<p>Select the position for the right edge of the box mask on the selected key for the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Keyer button for the key you want to perform the event on. 3. Click the Parameter button and select Right Edge. 4. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 5. Enter a new position in the Value (%) field.
Mask (Box) — Size	Switcher > Keyer > Box Mask Param	<p>Select the size of the box mask on the selected key for the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Keyer button for the key you want to perform the event on. 3. Click the Parameter button and select Size. 4. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 5. Enter a new size in the Value (%) field.
Mask (Box) — Top Edge Position	Switcher > Keyer > Box Mask Param	<p>Select the position for the top edge of the box mask on the selected key for the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Keyer button for the key you want to perform the event on. 3. Click the Parameter button and select Top Edge. 4. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 5. Enter a new position in the Value (%) field.
Mask (Box) — X-Position	Switcher > Keyer > Box Mask Param	<p>Select the x-axis position of the box mask on the selected key for the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Keyer button for the key you want to perform the event on. 3. Click the Parameter button and select X-Pos. 4. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 5. Enter a new position in the Value (%) field.
Mask (Box) — Y-Position	Switcher > Keyer > Box Mask Param	<p>Select the y-axis position for the box mask on the selected key for the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Keyer button for the key you want to perform the event on. 3. Click the Parameter button and select Y-Pos. 4. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 5. Enter a new position in the Value (%) field.
Mask (Pattern) — Aspect Ratio	Switcher > Keyer > Pattern Mask Param	<p>Select the aspect ratio for the pattern mask for the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Parameter button and select Aspect. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Enter an aspect ratio in the Value (%) field.

Event	Location	Description
Mask (Pattern) — Border Size	Switcher > Keyer > Pattern Mask Param	<p>Select the size of border for the pattern mask on the selected key for the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Parameter button and select Border Size. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Enter a size for the border in the Value (%) field.
Mask (Pattern) — Edge Softness	Switcher > Keyer > Pattern Mask Param	<p>Select the amount of softness to apply to the edge of the mask for the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Parameter button and select Softness. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Enter an amount of softness for the pattern or border in the Value (%) field.
Mask (Pattern) — Horizontal Multiplication	Switcher > Keyer > Pattern Mask Param	<p>Select the number of times you want to multiply the pattern mask horizontally for the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Parameter button and select Horizontal Mult. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Enter the number of times the pattern is multiplied in the Value field.
Mask (Pattern) — Reset	Switcher > Keyer > Pattern Mask Reset	<p>Reset the mask for the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click Reset Params.
Mask (Pattern) — Rotation	Switcher > Keyer > Pattern Mask Param	<p>Select the rotation for the pattern mask for the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Parameter button and select Rotation. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Enter a rotation in the Value (%) field.
Mask (Pattern) — Size	Switcher > Keyer > Pattern Mask Param	<p>Select the size of the pattern mask for the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Parameter button and select Size. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Enter a new size in the Value (%) field.
Mask (Pattern) — Vertical Multiplication	Switcher > Keyer > Pattern Mask Param	<p>Select the number of times you want to multiply the pattern mask vertically for the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Parameter button and select Vertical Mult. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Enter the number of times the pattern is multiplied in the Value field.

Event	Location	Description
Mask (Pattern) — X-Position	Switcher > Keyer > Pattern Mask Param	<p>Select the x-axis position of the pattern mask for the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Parameter button and select X-Pos. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Enter a new position in the Value (%) field.
Mask (Pattern) — Y-Position	Switcher > Keyer > Pattern Mask Param	<p>Select the y-axis position for the pattern mask for the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Parameter button and select Y-Pos. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Enter a new position in the Value (%) field.
Mask	Switcher > Keyer > Mask Type	<p>Apply a mask to the selected key for the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Keyer button for the key you want to perform the event on. 3. Click a Mask Type button to apply a pattern mask (Pattern), box mask (Box), or turn the mask off (Off).

Media-Store

Event	Location	Description
Auto Play	Switcher > Media-Store > Attributes	<p>Select whether an animation plays automatically when taken on-air for the selected Media-Store channel.</p> <ol style="list-style-type: none"> 1. Click the MediaStore Channel button for the Media-Store channel you want to perform the event on. 2. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 3. Click the Parameter button and select Auto Play. 4. Click the Value button and select whether the animation plays automatically (On) or not (Off).
Capture Alpha	Switcher > Media-Store > Capture Alpha	<p>Select whether to include the alpha with a capture on the selected Media-Store channel.</p> <ol style="list-style-type: none"> 1. Click the MediaStore Channel button for the Media-Store channel you want to perform the event on. 2. Click the Capture Alpha button and select whether the alpha is captured with the source (Yes) or not (No).
Capture Alpha Source	Switcher > Media-Store > Capture Alpha Source	<p>Select the alpha source you want to capture for the selected Media-Store channel.</p> <ol style="list-style-type: none"> 1. Click the MediaStore Channel button for the Media-Store channel you want to perform the event on. 2. Click Source and select the alpha source that you want to capture.

Event	Location	Description
Capture	Switcher > Media-Store > Capture	<p>Capture a still to the selected Media-Store channel.</p> <ol style="list-style-type: none"> 1. Click the MediaStore Channel button for the Media-Store channel you want to perform the event on. 2. Click a Capture Type button to select whether the Media-Store captures the media to a file name (Capture) or the next available capture number (Capture+). 3. If you selected Capture, enter the name you want use for the capture file in the Capture File Name field. If a file with the same name exists it will be overwritten.
Capture Mode	Switcher > Media-Store > Capture Display	<p>Select the capture mode for the selected Media-Store channel.</p> <ol style="list-style-type: none"> 1. Click the MediaStore Channel button for the Media-Store channel you want to perform the event on. 2. Click a Capture Display button to select whether the capture is in electronic-to-electronic "E/E" (End to End) or playback "P/B" (Playback) mode.
Capture Source	Switcher > Media-Store > Capture Source	<p>Select the video source you want to capture for the selected Media-Store channel.</p> <ol style="list-style-type: none"> 1. Click the MediaStore Channel button for the Media-Store channel you want to perform the event on. 2. Click Source and select the video source that you want to capture.
Clear Channel	Switcher > Media-Store > Channel Action	<p>Clear the selected Media-Store channel.</p> <ol style="list-style-type: none"> 1. Click the MediaStore Channel button for the Media-Store channel you want to perform the event on. 2. Click Clear Channel.
Cut Frame	Switcher > Media-Store > Attributes	<p>Select the point, in frames, from the start of the media item that the MediaWipe background cut occurs for the selected Media-Store channel.</p> <ol style="list-style-type: none"> 1. Click the MediaStore Channel button for the Media-Store channel you want to perform the event on. 2. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 3. Click the Parameter button and select Cut Frame. 4. Enter the frame in the media item that you want to cut to occur for the MediaWipe in the Value field.
Delete Capture	Switcher > Media-Store > Delete Media Capture	<p>Delete a captured still.</p> <ol style="list-style-type: none"> 1. Enter the number of the capture file you want to delete in the Capture File field.
Media-Store Load	Switcher > Media-Store > Load	<p>Load a media item into the selected Media-Store channel.</p> <ol style="list-style-type: none"> 1. Click the MediaStore Channel button for the Media-Store channel you want to perform the event on. 2. Click the Location button to select whether the media item you want to load is located on the internal storage (Internal) or on the USB (USB). 3. Enter the number of the media item you want to load in the Media Number field.

Event	Location	Description
Looping	Switcher > Media-Store > Attributes	<p>Select whether an animation will loop at the end for the selected Media-Store channel.</p> <ol style="list-style-type: none"> 1. Click the MediaStore Channel button for the Media-Store channel you want to perform the event on. 2. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 3. Click the Parameter button and select Looping. 4. Click the Value button and select whether the animation loops at the end (On) or not (Off).
Move To Frame	Switcher > Media-Store > Attributes	<p>Move to a specific frame in the media item for the selected Media-Store channel.</p> <ol style="list-style-type: none"> 1. Click the MediaStore Channel button for the Media-Store channel you want to perform the event on. 2. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 3. Click the Parameter button and select Move To Frame. 4. Enter the frame that you want to jump to in the media item in the Value field.
Mute	Switcher > Media-Store > Attributes	<p>Select whether the associated audio is turned on or off during playback for the selected Media-Store channel.</p> <ol style="list-style-type: none"> 1. Click the MediaStore Channel button for the Media-Store channel you want to perform the event on. 2. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 3. Click the Parameter button and select Mute. 4. Click the Value button and select whether the audio plays (On) or not (Off).
Play	Switcher > Media-Store > Channel Action	<p>Start an animation playing for the selected Media-Store channel.</p> <ol style="list-style-type: none"> 1. Click the MediaStore Channel button for the Media-Store channel you want to perform the event on. 2. Click Toggle Play.
Play Speed	Switcher > Media-Store > Playback Speed	<p>Select the speed for an animation to play at on the selected Media-Store channel.</p> <ol style="list-style-type: none"> 1. Click the MediaStore Channel button for the Media-Store channel you want to perform the event on. 2. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 3. Click the Parameter button and select Playback Speed. 4. Enter the speed, faster or slower than 100%, that you want the animation to play at in the Value (%) field.
Reset Media	Switcher > Media-Store > Channel Action	<p>Reset the selected Media-Store channel.</p> <ol style="list-style-type: none"> 1. Click the MediaStore Channel button for the Media-Store channel you want to perform the event on. 2. Click Reset Media.

Event	Location	Description
Reverse	Switcher > Media-Store > Attributes	<p>Select whether an animation plays in reverse for the selected Media-Store channel.</p> <ol style="list-style-type: none"> 1. Click the MediaStore Channel button for the Media-Store channel you want to perform the event on. 2. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 3. Click the Parameter button and select Reverse. 4. Click the Value button and select whether the animation plays in reverse (On) or not (Off).
Rewind	Switcher > Media-Store > Channel Action	<p>Rewind an animation to the first frame for the selected Media-Store channel.</p> <ol style="list-style-type: none"> 1. Click the MediaStore Channel button for the Media-Store channel you want to perform the event on. 2. Click Move to Frame 1.
Shaped	Switcher > Media-Store > Attributes	<p>Select whether the alpha of the media item should be shaped or unshaped for the selected Media-Store channel.</p> <ol style="list-style-type: none"> 1. Click the MediaStore Channel button for the Media-Store channel you want to perform the event on. 2. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 3. Click the Parameter button and select Shaped. 4. Click the Value button and select whether the alpha of the media item is shaped (On) or not (Off).
Thumb Frame	Switcher > Media-Store > Attributes	<p>Select the point, in frames, from the start of the animation that is used as the thumbnail for the media item.</p> <ol style="list-style-type: none"> 1. Click the MediaStore Channel button for the Media-Store channel you want to perform the event on. 2. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 3. Click the Parameter button and select Thumb Frame. 4. Enter the frame in the media item that you want to use as the thumbnail.
X-Position	Switcher > Media-Store > Attributes	<p>Select the x-axis position for the media item for the selected Media-Store channel.</p> <ol style="list-style-type: none"> 1. Click the MediaStore Channel button for the Media-Store channel you want to perform the event on. 2. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 3. Click the Parameter button and select X-Pos. 4. Enter a new position in the Value field.
Y-Position	Switcher > Media-Store > Attributes	<p>Select the y-axis position for the media item for the selected Media-Store channel.</p> <ol style="list-style-type: none"> 1. Click the MediaStore Channel button for the Media-Store channel you want to perform the event on. 2. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 3. Click the Parameter button and select Y-Pos. 4. Enter a new position in the Value field.

Matte

Event	Location	Description
Matte Color, Reset	Switcher > Matte > Matte Color Reset	Reset the matte color for the selected ME or aux. <ol style="list-style-type: none"> Click the ME/Matte button for the ME or aux that you want to perform the event on. For an ME, click the Matte button and select Matte.
Matte Color (HSL)	>Switcher > Matte > Matte Color (HSL)	Select the custom matte color for the selected ME or aux. Each component of the HSL color must be inserted individually. <ol style="list-style-type: none"> Click the ME/Matte button for the ME or aux that you want to perform the event on. Click the Matte button and select Matte. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. Click the Component button and select the HSL component you want to assign a value to. A value should be applied to all three components. Enter a value for the selected component in the Value (%) field.
Matte Color (Preset)	>Switcher > Matte > Matte Color (Preset)	Select a preset matte color for the selected ME or aux. <ol style="list-style-type: none"> Click the Matte button and select Matte. Click the Color button and select the color you want to use.

Sequencer

Event	Location	Description
Load	Sequencer > Load	Load a sequence into the selected Sequencer. <ol style="list-style-type: none"> Click the Sequencer button and select the Sequencer you want to perform the event on. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. In the Value field, enter the sequence number for the sequence you want to load in the selected Sequencer.
Reload	Sequencer > Reload	Reload the sequence currently loaded into the selected Sequencer. <ol style="list-style-type: none"> Click the Sequencer button and select the Sequencer you want to perform the event on.
Clear	Sequencer > Clear	Unload the sequence currently loaded into the selected Sequencer. <ol style="list-style-type: none"> Click the Sequencer button and select the Sequencer you want to perform the event on.
Next	Sequencer > Next	Run the next event in the selected Sequencer. <ol style="list-style-type: none"> Click the Sequencer button and select the Sequencer you want to perform the event on.
Up	Sequencer > Up	Move the next event highlight (green) up one event in the sequence loaded into the selected Sequencer. <ol style="list-style-type: none"> Click the Sequencer button and select the Sequencer you want to perform the event on.
Down	Sequencer > Down	Move the next event highlight (green) down one event in the sequence loaded into the selected Sequencer. <ol style="list-style-type: none"> Click the Sequencer button and select the Sequencer you want to perform the event on.

Event	Location	Description
Link	Sequencer > Link	<p>Turn Link on or off for the selected Sequencer.</p> <ol style="list-style-type: none"> 1. Click the Sequencer button and select the Sequencer you want to perform the event on. 2. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 3. Click a Value button to turn link On or Off.

Special

Event	Location	Description
Row ME Assignment	Special > Row ME Assignment	<p>Assign a control panel row to an ME, MiniME™, or Canvas on a particular panel.</p> <ol style="list-style-type: none"> 1. Click the Panel button for the control panel that you want to assign a row from. 2. Click the Row button for the row on the control panel that you want to assign to an ME. 3. Click the ME button as select the area that you want to assign the control panel row to.

Switcher Operation

Event	Location	Description
Bus Source Select	Switcher > Bus Source	<p>Select a source on the selected bus for the selected area.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to select a bus on. 2. Click the Bus/Keyer button and select the bus that you want to select a source on. 3. If you selected a key bus, click a Bus button to select whether you are selecting a source for the fill (Video) or the alpha (Alpha) of the key. 4. Click the Source button and select the source that you want on the selected bus.
ME Copy	Switcher > ME Copy	<p>Copy the contents of one area to another.</p> <ol style="list-style-type: none"> 1. Click the Target ME button and select the location that you want to copy to. 2. Click the Source ME button and select the location that you want to copy from.
Memory Recall	Switcher > Memory Recall	<p>Recall a memory for the selected area.</p> <ol style="list-style-type: none"> 1. Click the Include button and select all the locations that you want to perform the memory recall on. 2. Click the Bank button and select the bank that you want to recall the memory on. 3. Click the Memory button and select the memory that you want to recall.
RState, Load	Switcher > Load RState	<p>Load the custom reset settings for the selected area.</p> <ol style="list-style-type: none"> 1. Click the Include button and select all the locations that you want to recall the custom reset settings on.
Memory Recall	Switcher > Memory Recall	<p>Recall a memory for the selected area.</p> <ol style="list-style-type: none"> 1. Click the Include button and select all the locations that you want to perform the memory recall on. 2. Click the Bank button and select the bank that you want to recall the memory on. 3. Click the Memory button and select the memory that you want to recall.

Transitions

Event	Location	Description
Combined Transition Event		
Transition Action - Dissolve	Switcher > Transition > Transition Action	<p>Set up a dissolve transition with a single custom control event.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click Dissolve. 3. Click the Toggle, Include On, and Include Off buttons to set up what is included with the next transition. Something must always be selected for the toggle inclusion. Key toggle and on/off inclusions are mutually exclusive. <ul style="list-style-type: none"> • Toggle — select the background and any keys that you want included with the transition. This is the same as using the next trans buttons on the Transition area of a control panel. • Include On — select that keys that you want to transition on-air with the next transition. If a key is already on-air it is ignored. • Include Off — select that keys that you want to transition off-air with the next transition. If a key is already off-air it is ignored. 4. Click an Auto Trans button to select whether the transition is performed with the custom control (On) or if the custom control only sets up the next transition but does not perform it (Off). 5. Enter a rate for transition in the Trans Rate (fr) field. A rate of 0 is performed as a cut. 6. Click a Diss/Flash button to select whether the transition is performed as a dissolve (Dissolve) or a WhiteFlash (Flash). The existing onset, offset, and color values for the ME are used for the WhiteFlash.
Transition Action - Wipe	Switcher > Transition > Transition Action	<p>Set up a wipe transition with a single custom control event.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click Wipe. 3. Click the Toggle, Include On, and Include Off buttons to set up what is included with the next transition. Something must always be selected for the toggle inclusion. Key toggle and on/off inclusions are mutually exclusive. <ul style="list-style-type: none"> • Toggle — select the background and any keys that you want included with the transition. This is the same as using the next trans buttons on the Transition area of a control panel. • Include On — select that keys that you want to transition on-air with the next transition. If a key is already on-air it is ignored. • Include Off — select that keys that you want to transition off-air with the next transition. If a key is already off-air it is ignored. 4. Click an Auto Trans button to select whether the transition is performed with the custom control (On) or if the custom control only sets up the next transition but does not perform it (Off). 5. Enter a rate for transition in the Trans Rate (fr) field. A rate of 0 is performed as a cut. 6. Click the Pattern button and select the wipe pattern you want to use for the transition.

Event	Location	Description
Transition Action - DVE	Switcher > Transition > Transition Action	<p>Set up a DVE wipe transition with a single custom control event.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click DVE. 3. Click the Toggle, Include On, and Include Off buttons to set up what is included with the next transition. Something must always be selected for the toggle inclusion. Key toggle and on/off inclusions are mutually exclusive. <ul style="list-style-type: none"> • Toggle — select the background and any keys that you want included with the transition. This is the same as using the next trans buttons on the Transition area of a control panel. • Include On — select that keys that you want to transition on-air with the next transition. If a key is already on-air it is ignored. • Include Off — select that keys that you want to transition off-air with the next transition. If a key is already off-air it is ignored. 4. Click an Auto Trans button to select whether the transition is performed with the custom control (On) or if the custom control only sets up the next transition but does not perform it (Off). 5. Enter a rate for transition in the Trans Rate (fr) field. A rate of 0 is performed as a cut. 6. Click the DVE Effect button and select the DVE wipe pattern you want to use for the transition.
Transition Action - MediaWipe	Switcher > Transition > Transition Action	<p>Set up a MediaWipe transition with a single custom control event.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click MediaWipe. 3. Click the Toggle, Include On, and Include Off buttons to set up what is included with the next transition. Something must always be selected for the toggle inclusion. Key toggle and on/off inclusions are mutually exclusive. <ul style="list-style-type: none"> • Toggle — select the background and any keys that you want included with the transition. This is the same as using the next trans buttons on the Transition area of a control panel. • Include On — select that keys that you want to transition on-air with the next transition. If a key is already on-air it is ignored. • Include Off — select that keys that you want to transition off-air with the next transition. If a key is already off-air it is ignored. 4. Click an Auto Trans button to select whether the transition is performed with the custom control (On) or if the custom control only sets up the next transition but does not perform it (Off). 5. Click the Layer button to select what the MediaWipe animation covers. 6. Click a Location button for the drive that the animation to use for the MediaWipe is stored on. 7. Enter the media number for the animation you want use for the MediaWipe in the Media Number field. 8. Click a Channel number to select the Media-Store channel you want to use for the MediaWipe.
Individual Transition Events		
Auto Trans	Switcher > Transition > ME Trans Action	<p>Performs an auto transition on the selected area.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click the Action button and select Auto Trans.

Event	Location	Description
Cut	Switcher > Transition > ME Trans Action	Performs a cut on the selected ME. <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click the Action button and select Cut.
DVE Wipe, Reset	Switcher > Transition > DVE Wipe Reset	Reset the parameters or direction and flip-flop for the DVE wipe transition of the selected ME. <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click Reset to reset the DVE wipe parameters.
DVE Wipe Direction (Flip-Flop)	Switcher > Transition > DVE Wipe Direction	Select whether the DVE wipe reverses direction for every second transition of the selected ME. <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 3. Click Flip-Flip. 4. Click On or Off to select whether Flip-Flop is on (On) or not (Off).
DVE Wipe Direction	Switcher > Transition > DVE Wipe Direction	Select the direction for the DVE wipe transition of the selected ME. <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 3. Click Direction. 4. Click Forward or Reverse to select whether the DVE wipe moves in a forward (Forward) or reverse (Reverse) direction.
DVE Wipe Pattern	Switcher > Transition > DVE Wipe Effect	Select the pattern you want to use for a DVE wipe transition of the selected ME. <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Effect button and select the pattern you want to use for the DVE wipe.
MediaWipe — Channel	Switcher > Transition > Media Wipe Channel	Select which Media-Store channel will be used for the MediaWipe transition of the selected ME. <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click M1 or M2 to assign that Media-Store channel to the MediaWipe.
MediaWipe Cut Point, Set	Switcher > Transition > ME Trans Action	Sets the cut point for a MediaWipe transition for the selected area. You must select the point in the transition that you want to place the cut before running this event. <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click the Action button and select Set Media Cut.
MediaWipe — Direction, Flip-Flop	Switcher > Transition > DVE Wipe Direction	Select whether the MediaWipe reverses direction for every second transition of the selected ME. <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 3. Click Flip-Flip. 4. Click the Value button and select whether Flip-Flop is on (On) or not (Off).

Event	Location	Description
MediaWipe — Direction	Switcher > Transition > DVE Wipe Direction	<p>Select the direction for the MediaWipe transition of the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 3. Click Direction. 4. Click the Value button and select whether the MediaWipe moves in a forward (Forward) or reverse (Reverse) direction.
MediaWipe — Layer	Switcher > Transition > ME Media Trans Layer	<p>Select which Media-Store channel will be used for the MediaWipe transition of the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Layer button to select what the MediaWipe animation covers.
MediaWipe Trans End Point, Set	Switcher > Transition > ME Trans Action	<p>Sets the ending point for a MediaWipe transition for the selected area. Use the fader to move through the animation to the point you want to end the transition and run this CC to save that point.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click the Action button and select Set Media Trans End.
MediaWipe Trans Start Point, Set	Switcher > Transition > ME Trans Action	<p>Sets the starting point for a MediaWipe transition for the selected area. Use the fader to move through the animation to the point you want to start the transition and run this CC to save that point.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click the Action button and select Set Media Trans Start.
MediaWipe Trans Thumbnail	Switcher > Transition > ME Trans Action	<p>Sets the starting point for a MediaWipe transition for the selected area.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click the Action button and select Set Media Thumb.
ME Dissolve Type	Switcher > Transition > ME Dissolve Type	<p>Select the type of dissolve transition (WhiteFlash or Dissolve) you want to use.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click a Type button to select a Dissolve (Dissolve) or WhiteFlash (Flash) transition.
ME Trans Rate	Switcher > Transition > ME Trans Parameter	<p>Set or reset the background transition rate of the selected area.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click the Parameter button and select ME Trans Rate. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Enter a new transition rate, in frames, in the Value (fr) field.
ME Trans Type	Switcher > Transition > ME Trans Type	<p>Select the transition type for a background transition of the selected area.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click the Type button for the type of transition you want to use.
ME WhiteFlash Color	Switcher > Transition > ME Flash Dissolve Color (Preset)	<p>Select color for the WhiteFlash transition.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click the Color button and select the preset color you want to use.

Event	Location	Description
ME WhiteFlash Offset	Switcher > Transition > ME Trans Value	<p>Select time for the offset of the WhiteFlash transition.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click Flash Offset. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Enter a new offset position in the Value (%) field.
ME WhiteFlash Onset	Switcher > Transition > ME Trans Value	<p>Select time for the onset of the WhiteFlash transition.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click Flash Onset. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Enter a new onset position in the Value (%) field.
Reset	Switcher > Transition > ME Trans Action	<p>Resets the transition area of the selected area.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click the Action button and select Reset.
Roll Clip	Switcher > Transition > Roll Clip	<p>Turn the Roll Clip feature on or off for the selected area.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click the Value button and select whether roll clip is on (On) or not (Off).
Trans Clear	Switcher > Transition > ME Trans Action	<p>Configures the next transition area of the selected area to take all keys off-air with the next transition.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click the Action button and select Trans Clear.
Trans Delay	Switcher > Transition > ME Trans Action	<p>Applies the pre-delay to the transition.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click the Action button and select Delayed Auto Trans.
Trans Elements	Switcher > Transition > ME Trans Element	<p>Select the elements to be included in the next transition of the selected area.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click the Elements button and select background and/or the keys that you want to include in the next transition.
Trans Limit — On/Off	Switcher > Transition > ME Trans Limit	<p>Turn the transition limit feature on or off for the selected area.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 3. Click the Value button and select whether trans limit is on (On) or not (Off).
Trans Limit — Reset	Switcher > Transition > ME Trans Action	<p>Resets the transition limit point of the selected area.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area that you want to perform the event on. 2. Click the Action button and select Reset Limit.

Event	Location	Description
Trans Limit — Set	Switcher > Transition > ME Trans Action	<p>Sets the transition limit point of the selected area. You must select the point in the transition that you want to place the limit before running this event.</p> <ol style="list-style-type: none"> Click the ME button and select the area that you want to perform the event on. Click the Action button and select Set Limit.
Trans Limit — Value	Switcher > Transition > ME Trans Value	<p>Select the limit point for the trans limit of the selected area.</p> <ol style="list-style-type: none"> Click the ME button and select the area that you want to perform the event on. Click Trans Limit. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. Enter the point in the transition that you want to place the trans limit in the Value (%) field.
Wipe Direction (Flip-Flop)	Switcher > Transition > Wipe Direction	<p>Select whether the wipe reverses direction for every second transition of the selected ME.</p> <ol style="list-style-type: none"> Click the ME button for the ME that you want to perform the event on. Click the Pattern button and select Wipe. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. Click the Parameter button and select Flip-Flip. Click the Value button and select whether Flip-Flop is on (On) or off (Off).
Wipe Direction	Switcher > Transition > Wipe Direction	<p>Select the direction for the wipe transition of the selected ME.</p> <ol style="list-style-type: none"> Click the ME button for the ME that you want to perform the event on. Click the Pattern button and select Wipe. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. Click the Parameter button and select Direction. Click the Value button and select whether the wipe moves in a forward (Forward) or reverse (Reverse) direction.
Wipe Pattern — Aspect Ratio	Switcher > Transition > Wipe Param	<p>Select the aspect ratio for the wipe pattern you want to use for a wipe transition of the selected ME.</p> <ol style="list-style-type: none"> Click the ME button for the ME that you want to perform the event on. Click the Parameter button and select Aspect. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. Enter an aspect ratio in the Value (%) field.
Wipe Pattern — Border Color (HSL)	Switcher > Transition > Wipe Border Color (HSL)	<p>Select the custom color you want to apply to the border of the pattern for the wipe transition of the selected ME. Each component of the HSL color must be inserted individually.</p> <ol style="list-style-type: none"> Click the ME button for the ME that you want to perform the event on. Click the Matte button and select Wipe Border. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. Click the Component button and select the HSL component you want to assign a value to. A value should be applied to all three components. Enter a value for the selected component in the Value (%) field.

Event	Location	Description
Wipe Pattern — Border Color (Preset)	Switcher > Transition > Wipe Border Color (Preset)	<p>Select the preset color you want to apply to the border of the pattern for the wipe transition of the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Matte button and select Wipe Border. 3. Click the Color button and select the preset color you want to apply to the border.
Wipe Pattern — Border Size	Switcher > Transition > Wipe Param	<p>Select the size of border for the wipe pattern you want to use for a wipe transition of the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Parameter button and select Border Size. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Enter a size for the border in the Value (%) field.
Wipe Pattern — Edge Softness	Switcher > Transition > Wipe Param	<p>Select the amount of softness to apply to the edge of the pattern or border for the wipe pattern you want to use for a wipe transition of the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Parameter button and select Softness. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Enter an amount of softness for the pattern or border in the Value (%) field.
Wipe Pattern — Horizontal Multiplication	Switcher > Transition > Wipe Param	<p>Select the number of times you want to multiply the wipe pattern horizontally for the wipe transition of the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Parameter button and select Horizontal Mult. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Enter the number of times the pattern is multiplied in the Value field.
Wipe Pattern — Pattern	Switcher > Transition > Wipe Effect	<p>Select the pattern you want to use for a wipe transition of the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Pattern button and select the pattern you want to use for the wipe.
Wipe Pattern — Rotation	Switcher > Transition > Wipe Param	<p>Select the rotation for the wipe pattern you want to use for a wipe transition of the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Parameter button and select Rotation. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Enter a rotation in the Value (%) field.
Wipe Pattern — Size	Switcher > Transition > Wipe Param	<p>Select the size for the wipe pattern you want to use for a wipe transition of the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Parameter button and select Size. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Enter a new size in the Value (%) field.

Event	Location	Description
Wipe Pattern — Vertical Multiplication	Switcher > Transition > Wipe Param	<p>Select the number of times you want to multiply the wipe pattern vertically for the wipe transition of the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Parameter button and select Vertical Mult. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Enter the number of times the pattern is multiplied in the Value field.
Wipe Pattern — X-Position	Switcher > Transition > Wipe Param	<p>Select the x-axis position for the wipe pattern you want to use for a wipe transition of the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Parameter button and select X-Pos. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Enter a new position in the Value (%) field.
Wipe Pattern — Y-Position	Switcher > Transition > Wipe Param	<p>Select the y-axis position for the wipe pattern you want to use for a wipe transition of the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Parameter button and select Y-Pos. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Enter a new position in the Value (%) field.
Wipe Reset	Switcher > Transition > Wipe Reset	<p>Reset the parameters or direction and flip-flop for the wipe transition of the selected ME.</p> <ol style="list-style-type: none"> 1. Click the ME button for the ME that you want to perform the event on. 2. Click Reset Params to reset the wipe parameters or Reset Direction to reset the wipe direction and flip-flop.

UltraScene

Event	Location	Description
Recall UltraScene	UltraScene > UltraScene Recall/Store	<p>Recall an UltraScene memory.</p> <ol style="list-style-type: none"> 1. Click the UltraScene button and select the UltraScene memory you want to recall 2. Click Recall Memory.
Store UltraScene	UltraScene > UltraScene Recall/Store	<p>Store an UltraScene memory.</p> <ol style="list-style-type: none"> 1. Click the UltraScene button and select the UltraScene memory location you want to store to. 2. Click Store Memory.

Personality Custom Controls

Personality

Event	Location	Description
Personality — Auto Remove Key	Switcher Personality > Auto Remove Key	<p>Have a key removed from the Next Transition area, so that it is not included in the next transition, after it has been transitioned off-air using the KEY X CUT or KEY X AUTO buttons.</p> <ol style="list-style-type: none"> Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. Click the Value button and select whether the personality option is on (On) or not (Off).
Personality — Auto Trans Second Press (Key)	Switcher Personality > Key Auto Trans 2nd Press	<p>Select how the switcher reacts when the KEY AUTO button is pressed during a transition.</p> <ol style="list-style-type: none"> Click the Second Auto button and select how the switcher reacts to pressing the button during a transition. <ul style="list-style-type: none"> Ignore — the buttons are ignored during the transition Halt Forward — halt the transition and move forward through the transition when pressed again Halt Reverse — halt the transition and move backwards through the transition when pressed again Reverse — reverse the transition immediately Cut — cut the transition to the end
Personality — Auto Trans Second Press (ME)	Switcher Personality > ME Auto Trans 2nd Press	<p>Select how the switcher reacts when the AUTO TRANS button is pressed during a transition.</p> <ol style="list-style-type: none"> Click the Second Auto button and select how the switcher reacts to pressing the button during a transition. <ul style="list-style-type: none"> Ignore — the buttons are ignored during the transition Halt Forward — halt the transition and move forward through the transition when pressed again Halt Reverse — halt the transition and move backwards through the transition when pressed again Reverse — reverse the transition immediately Cut — cut the transition to the end
Personality — Next Trans Reset	Switcher Personality > Auto Reset Trans	<p>Have the transition area reset to a default background dissolve after each transition.</p> <ol style="list-style-type: none"> Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. Click the Value button and select whether the personality option is on (On) or not (Off).
Personality — Roll Clip	Switcher Personality > Roll Clip Force	<p>Select whether the Roll Clip functionality is always on.</p> <ol style="list-style-type: none"> Click the ME button and select the area that you want to adjust the roll clip for. Click a Roll Clip button to select whether Roll Clip is always on (Force) or must be turned on manually (User).

Installation Custom Controls

Switcher Installation

Event	Location	Description
AES Output	Switcher Installation > Output > AES	Assign an audio stream to an AES output. 1. Click the AES button for the AES output you want to assign an audio stream to. 2. Click the Value button and select the audio stream you want to assign to the AES output.
Ancillary Data Mode	Switcher Installation > Ancillary Mode	Select how the switcher will strip or pass ancillary data. 1. Click a Value button to select whether ancillary data is stripped (Strip), or passed (Pass).
Clean Feed	Switcher Installation > ME > ME Clean Feed	Select the clean feed location for the selected ME. 1. Click the ME button for the ME that you want to perform the event on. 2. Click the Before Keyer button and select the key you want the clean feed output to be taken before.
Color Corrector Color Reset	Switcher Installation > Proc Amp/Color Corrector > Color Corrector R/G/B Reset	Reset the values for the selected color corrector color channel(s). 1. 2. Click the Color button and select the individual color component (Red , Green , Blue) you want to adjust, or RGB for all of them.
Color Corrector Enable	Switcher Installation > Proc Amp/Color Corrector > Color Corrector Enable	Enable a Color Corrector for a video input or output. 1. 2. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 3. Click a Value button to select whether to enable the color corrector (On) or disable the color corrector (Off).
Color Corrector Gain	Switcher Installation > Proc Amp/Color Corrector > Color Corrector Param	Adjust the Gain for the selected color corrector. 1. 2. Click the Color button and select the individual color component (Red , Green , Blue) you want to adjust, or RGB for all of them. 3. Click the Parameter button and select Gain . 4. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 5. Enter the new gain value in the Value field.
Color Corrector Gamma	Switcher Installation > Proc Amp/Color Corrector > Color Corrector Param	Adjust the Offset for the selected color corrector. 1. 2. Click the Color button and select the individual color component (Red , Green , Blue) you want to adjust, or RGB for all of them. 3. Click the Parameter button and select Gamma Value . 4. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 5. Enter the new gamma value in the Value field.

Event	Location	Description
Color Corrector Gamma Offset	Switcher Installation > Proc Amp/Color Corrector > Color Corrector Param	Adjust the Gamma Offset for the selected color corrector. <ol style="list-style-type: none"> 1. 2. Click the Color button and select the individual color component (Red, Green, Blue) you want to adjust, or RGB for all of them. 3. Click the Parameter button and select Gamma Offset. 4. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 5. Enter the new gamma offset value in the Value field.
Color Corrector Lower Offset	Switcher Installation > Proc Amp/Color Corrector > Color Corrector Param	Adjust the Lower Offset for the selected color corrector. <ol style="list-style-type: none"> 1. 2. Click the Color button and select the individual color component (Red, Green, Blue) you want to adjust, or RGB for all of them. 3. Click the Parameter button and select Lower Offset. 4. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 5. Enter the new lower offset value in the Value field.
Color Corrector Offset	Switcher Installation > Proc Amp/Color Corrector > Color Corrector Param	Adjust the Offset for the selected color corrector. <ol style="list-style-type: none"> 1. 2. Click the Color button and select the individual color component (Red, Green, Blue) you want to adjust, or RGB for all of them. 3. Click the Parameter button and select Offset. 4. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 5. Enter the new offset value in the Value field.
Color Corrector Reset	Switcher Installation > Proc Amp/Color Corrector > Color Corrector Reset	Reset the values for the selected color corrector. <ol style="list-style-type: none"> 1.
Color Gamut, Input	Switcher Installation > Input > Input Color Gamut	Select the color gamut that video input is in. <ol style="list-style-type: none"> 1. Click the Input button and select the input BNC that you want to set the color gamut for. 2. Click a Value button to select the whether the input is in BT.709 (709) or BT.2020 (2020).
Color Gamut, Output	Switcher Installation > Output > Output Color Gamut	Select the color gamut that video output is in. <ol style="list-style-type: none"> 1. Click the Output button and select the output BNC that you want to set the color gamut for. 2. Click a Value button to select the whether the output is in BT.709 (709) or BT.2020 (2020).
Color Gamut, Switcher	Switcher Installation > Reference > Switcher Color Gamut	Select the color gamut that the switcher will operate in. <ol style="list-style-type: none"> 1. Click a Gamut button to select the whether the switcher operates in BT.709 (709) or BT.2020 (2020).
Disable Audio Memories	Switcher Installation > Disable Audio Memories	Disable the inclusion of audio attributes in memories. <ol style="list-style-type: none"> 1. Click a Value button to select whether audio is included with memory recalls (On), or not (Off).
Dynamic Range, Input	Switcher Installation > Input > Input Dynamic Range	Select the dynamic range that a video input is in. <ol style="list-style-type: none"> 1. Click the Input button and select the input BNC that you want to set the dynamic range for. 2. Click a Value button to select the dynamic range that the input is in.

Event	Location	Description
Dynamic Range, Output	Switcher Installation > Output > Output Dynamic Range	<p>Select the dynamic range that a video output is in.</p> <ol style="list-style-type: none"> 1. Click the Output button and select the output BNC that you want to set the dynamic range for. 2. Click a Value button to select the dynamic range that the output is in.
Dynamic Range, Switcher	Switcher Installation > Reference > Switcher Dynamic Range	<p>Select the dynamic range that the switcher will operate in.</p> <ol style="list-style-type: none"> 1. Click a Dynamic Range button to select the dynamic range that the switcher operates in.
Frame Delay	Switcher Installation > Input > Frame Delay	<p>Assign a Frame Delay to an input.</p> <ol style="list-style-type: none"> 1. Click the Input button and select the input BNC that you want to assign an frame delay to. 2. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 3. In the Value field, enter the value of the frame delay you want to apply.
FSFC Assignment	Switcher Installation > Input FSFC Assign	<p>Assign an FSFC to an input BNC. This event is only available if you have fewer FSFCs than inputs.</p> <ol style="list-style-type: none"> 1. Click the FSFC button and select the FSFC resource that you want to assign to an input. 2. Click the Assignment button and select the input that you want to assign the selected FSFC to.
Input FSFC Assignment	Switcher Installation > Input > Input Type	<p>Assign an FSFC to an input.</p> <ol style="list-style-type: none"> 1. Click the Input button and select the input BNC that you want to assign an FSFC to. 2. Click a ValueType button to assign an FSFC to the input or select (SDI Off) to turn the FSFC off.
Input FSFC Framing	Switcher Installation > Input > Input Framing	<p>Select the video framing that is applied to the converted video input.</p> <ol style="list-style-type: none"> 1. Click the Input button and select the input BNC that you want to assign the framing to. 2. Click a Type button for the input FSFC that is being used. 3. Click a Value button to assign a type of framing to the input.
ME Follow	Switcher Installation > ME > ME Follow	<p>Select whether an ME or MiniME™ follows another ME or MiniME™.</p> <ol style="list-style-type: none"> 1. Click the ME button and select the area you want to have follow another area. 2. Click a Follow button to select the ME or MiniME™ that you want to follow the selected area.
Output Assignment	Switcher Installation > Output > Output Assignment	<p>Assign a source to the selected output BNC.</p> <ol style="list-style-type: none"> 1. Click the Output button and select the output BNC that you want to assign a source to. 2. Click the Source button and select the source that you want to assign to the selected output BNC.
Proc Amp/Color Corrector Reset	Switcher Installation > Proc Amp/Color Corrector > Proc Amp / Color Corrector Reset	<p>Reset the values for the selected proc amp or color corrector.</p> <ol style="list-style-type: none"> 1.
Proc Amp Enable	Switcher Installation > Proc Amp/Color Corrector > Proc Amp Enable	<p>Enable a Proc Amp for a video input or output.</p> <ol style="list-style-type: none"> 1. 2. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 3. Click a Value button to select whether to enable the proc amp (On) or disable the proc amp (Off).

Event	Location	Description
Proc Amp Gain	Switcher Installation > Proc Amp/Color Corrector > Proc Amp Param	Adjust the gain of a color component for the selected proc amp. <ol style="list-style-type: none"> 1. 2. Click the Component button and select the color component you want to adjust the gain for. 3. Click the Parameter button and select Gain. 4. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 5. Enter the new gain value in the Value field.
Proc Amp Gamma	Switcher Installation > Proc Amp/Color Corrector > Proc Amp Param	Adjust the Gamma for the selected proc amp. <ol style="list-style-type: none"> 1. 2. Click the Component button and select YCrCb. 3. Click the Parameter button and select Gamma. 4. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 5. Enter the new gamma value in the Value field.
Proc Amp Gamma Offset	Switcher Installation > Proc Amp/Color Corrector > Proc Amp Param	Adjust the Gamma for the selected proc amp. <ol style="list-style-type: none"> 1. 2. Click the Component button and select YCrCb. 3. Click the Parameter button and select Gamma Offset. 4. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 5. Enter the new gamma offset value in the Value field.
Proc Amp Hue Rotation	Switcher Installation > Proc Amp/Color Corrector > Proc Amp Hue Rot	Adjust the Hue for the selected proc amp. <ol style="list-style-type: none"> 1. 2. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 3. Enter a new hue rotation value in the Value field.
Proc Amp Offset	Switcher Installation > Proc Amp/Color Corrector > Proc Amp Param	Adjust the offset of a color component for the selected proc amp. <ol style="list-style-type: none"> 1. 2. Click the Component button and select the color component you want to adjust the offset for. 3. Click the Parameter button and select Offset. 4. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 5. Enter the new offset value in the Value field.
Proc Amp Reset	Switcher Installation > Proc Amp/Color Corrector > Proc Amp Reset	Reset the values for the selected proc amp. <ol style="list-style-type: none"> 1.
Rotation Mode, Output	Switcher Installation > Output > Output Rotation Mode	Enable video rotation on a selected output. <ol style="list-style-type: none"> 1. Click the Output button and select the output BNC that you want to apply rotation to. 2. Click a Value button to select the amount of rotation to apply to the output.

Event	Location	Description
Rotation Zoom, Output	Switcher Installation > Output > Output Rotation	<p>Adjust the size of the rotated output image.</p> <ol style="list-style-type: none"> 1. Click the Output button and select the output BNC that you want to adjust the rotation for. 2. Click Zoom. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Enter new size in the Value field.
Rotation X-Position, Output	Switcher Installation > Output > Output Rotation	<p>Adjust the rotated image along the x-axis.</p> <ol style="list-style-type: none"> 1. Click the Output button and select the output BNC that you want to adjust the rotation for. 2. Click X-Pos. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Enter new x-axis offset in the Value field.
Rotation Y-Position, Output	Switcher Installation > Output > Output Rotation	<p>Adjust the rotated image along the y-axis.</p> <ol style="list-style-type: none"> 1. Click the Output button and select the output BNC that you want to adjust the rotation for. 2. Click Y-Pos. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Enter new y-axis offset in the Value field.
Source Substitution, Bus	Switcher Installation > Source Substitution > Source Bus Subst	<p>Set a bus source substitution for the substitution table.</p> <ol style="list-style-type: none"> 1. Click the Source button and select the source that you want to set a substitution for. 2. Click the ME button and select the area that the bus you want to set up the substitution for is on. 3. Click the Bus/Keyer button and select the bus (Background or Preset) or keyer for the substitution. 4. If you selected Keyer, click the Bus button and select the video (Video) or alpha (Alpha) bus that you want to substitute for 5. Click the Subst button and select the source you want to substitute for the selected source.
Source Substitution, Delete	Switcher Installation > Source Substitution > Delete Subst Table	Delete the entire substitution table.
Source Substitution, ME	Switcher Installation > Source Substitution > Source ME Subst	<p>Set an ME source substitution for the substitution table.</p> <ol style="list-style-type: none"> 1. Click the Source button and select the source that you want to set a substitution for. 2. Click the ME button and select the ME or MiniME™ that you want to assign a substitution source to. 3. Click the Subst button and select the source you want to substitute for the selected source.
Switching Field	Switcher Installation > Field Dominance	<p>Select the field that a video transition will be performed on.</p> <ol style="list-style-type: none"> 1. Click a Switch Field button to select whether video transitions are performed on field 1 only (Field 1), field 2 only (Field 2), or the current field (Both).

Event	Location	Description
TSL Address	Switcher Installation > Input > TSL Address	Assign a TSL id to an input. <ol style="list-style-type: none"> 1. Click the Input button and select the input BNC that you want to set the TSL id for. 2. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 3. Enter the TSL id in the Value field.
TSL Tally MultiViewer Display Mode (Name)	Switcher Installation > Input > TSL Tally Mode	Assign a TSL id to an input. <ol style="list-style-type: none"> 1. Click the Input button and select the input BNC that you want to set the TSL mode for. 2. Click a TSL Tally button to select whether the MultiViewer shows the Mnemonic name (Name Only), TSL name (Tally Only), or both (Both).
Video Mode	Switcher Installation > Reference > Video Format	Select the video format that the switcher will operate in. <ol style="list-style-type: none"> 1. Click the Video Mode button and select the video format for the switcher.

MultiViewer

Event	Location	Description
MultiViewer Box — Apply to All	MultiViewer > Box > MV Box Apply To All	Apply the configurations for the selected box to all boxed on the selected MultiViewer. <ol style="list-style-type: none"> 1. Click a MultiViewer button to select which MultiViewer you want to perform the event on. 2. Click the Box button and select the box that you want perform the event on. 3. Click Apply to All.
MultiViewer Box — Aspect Ratio Markers	MultiViewer > Box > MV Box Aspect Ratio	Select whether aspect ratio markers are shown for the selected box on the selected MultiViewer. <ol style="list-style-type: none"> 1. Click a MultiViewer button to select which MultiViewer you want to perform the event on. 2. Click the Box button and select the box that you want perform the event on. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Click a Value button and select whether aspect ratio markers are shown (On) or not (Off).
MultiViewer Box — Border	MultiViewer > Box > MV Box Border Mode	Select the type of border you want to apply to the selected box on the selected MultiViewer. <ol style="list-style-type: none"> 1. Click a MultiViewer button to select which MultiViewer you want to perform the event on. 2. Click the Box button and select the box that you want perform the event on. 3. Click a Border Mode button and select whether the border around the selected box is white (White), black (Black), or if there is no border (Off).

Event	Location	Description
MultiViewer Box — Green Tally (Preview)	MultiViewer > Box > MV Box Preview Tally	<p>Select whether a green (preview) tally is shown for the selected box on the selected MultiViewer.</p> <ol style="list-style-type: none"> 1. Click a MultiViewer button to select which MultiViewer you want to perform the event on. 2. Click the Box button and select the box that you want perform the event on. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Click a Value button and select whether a green tally is shown on the selected box (On) or not (Off).
MultiViewer Box — Label	MultiViewer > Box > MV Box Label	<p>Select whether the source label is on or off for the selected box on the selected MultiViewer.</p> <ol style="list-style-type: none"> 1. Click a MultiViewer button to select which MultiViewer you want to perform the event on. 2. Click the Box button and select the box that you want perform the event on. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Click a Value button and select whether the label on the selected box is on (On) or not (Off).
MultiViewer Box — Label Mode	MultiViewer > Box > MV Box Label Mode	<p>Select what source name is shown on the label for the selected box on the selected MultiViewer. This event only applies to the Carbonite eXtreme.</p> <ol style="list-style-type: none"> 1. Click a MultiViewer button to select which MultiViewer you want to perform the event on. 2. Click the Box button and select the box that you want perform the event on. 3.
MultiViewer Box — Label Position	MultiViewer > Box > MV Box Label Position	<p>Select the position of the source label for the selected box on the selected MultiViewer.</p> <ol style="list-style-type: none"> 1. Click a MultiViewer button to select which MultiViewer you want to perform the event on. 2. Click the Box button and select the box that you want perform the event on. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Click a Value button and select whether the label on the selected box is at the top (Top) or bottom (Bottom).
MultiViewer Box — Label Transparency	MultiViewer > MV Label Transp	<p>Select transparency for the background behind the source labels on the selected MultiViewer.</p> <ol style="list-style-type: none"> 1. Click a MultiViewer button to select which MultiViewer you want to perform the event on. 2. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 3. Enter the amount of transparency in the Value (%) field.

Event	Location	Description
MultiViewer Box — Red Tally (On-Air)	MultiViewer > Box > MV Box On-Air Tally	<p>Select whether a red (on-air) tally is shown for the selected box on the selected MultiViewer.</p> <ol style="list-style-type: none"> 1. Click a MultiViewer button to select which MultiViewer you want to perform the event on. 2. Click the Box button and select the box that you want perform the event on. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Click a Value button and select whether a red tally is shown on the selected box (On) or not (Off).
MultiViewer Box — Video Source	MultiViewer > Box > MV Box Source	<p>Assign a source to one of the boxes on the selected MultiViewer.</p> <ol style="list-style-type: none"> 1. Click a MultiViewer button to select which MultiViewer you want to perform the event on. 2. Click the Box button and select the box that you want perform the event on. 3. Click the Value button and select the source that you want to assign to the box.
MultiViewer — Clip	MultiViewer > MV Keyer Clip	<p>Select the amount of clipping to be applied to the overlay source on the selected MultiViewer.</p> <ol style="list-style-type: none"> 1. Click a MultiViewer button to select which MultiViewer you want to perform the event on. 2. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 3. Enter the amount of clipping to be applied in the Value field.
MultiViewer Clock — Background Color (HSL)	MultiViewer > Clock > MV Clock (HSL Color)	<p>Select the custom color for the background of the clock on the selected MultiViewer.</p> <ol style="list-style-type: none"> 1. Click a MultiViewer button to select which MultiViewer you want to perform the event on. 2. Click the Clock Area button and select Background. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Click the Component button and select the HSL component you want to assign a value to. A value should be applied to all three components. 5. Enter a value for the selected component in the Value (%) field.
MultiViewer Clock — Background Color (Preset)	MultiViewer > Clock > MV Clock (Preset Color)	<p>Select a preset color for the background of the clock on the selected MultiViewer.</p> <ol style="list-style-type: none"> 1. Click a MultiViewer button to select which MultiViewer you want to perform the event on. 2. Click Background. 3. Click the Color button and select the color you want to use.
MultiViewer Clock — Countdown Timer Direction	MultiViewer > Clock > Countdown Timer Direction	<p>Select the direction you want to countdown timer to count in.</p> <ol style="list-style-type: none"> 1. Click the Timer button and select the timer you want to configure. 2. Click a Timer Direction button to select whether the timer counts down from a preset value (Down), up from zero (Up), or down from a preset value and then up from zero (Down > Up).
MultiViewer Clock — Countdown Timer Reset	MultiViewer > Clock > Countdown Timer Reset	<p>Reset the selected timer.</p> <ol style="list-style-type: none"> 1. Click the Timer Reset button and select the timer you want to reset.

Event	Location	Description
MultiViewer Clock — Countdown Timer State	MultiViewer > Clock > Countdown Timer State	<p>Select the direction you want to countdown timer to count in.</p> <ol style="list-style-type: none"> 1. Click the Timer button and select the timer you want to configure. 2. Click a Timer State button to select whether to send the pause (Pause), or start (Run) command to the timer.
MultiViewer Clock — Foreground Color (HSL)	MultiViewer > Clock > MV Clock (HSL Color)	<p>Select the custom color for the lettering of the clock on the selected MultiViewer.</p> <ol style="list-style-type: none"> 1. Click a MultiViewer button to select which MultiViewer you want to perform the event on. 2. Click the Clock Area button and select Foreground. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Click the Component button and select the HSL component you want to assign a value to. A value should be applied to all three components. 5. Enter a value for the selected component in the Value (%) field.
MultiViewer Clock — Foreground Color (Preset)	MultiViewer > Clock > MV Clock (Preset Color)	<p>Select a preset color for the lettering of the clock on the selected MultiViewer.</p> <ol style="list-style-type: none"> 1. Click a MultiViewer button to select which MultiViewer you want to perform the event on. 2. Click Foreground. 3. Click the Color button and select the color you want to use.
MultiViewer Clock — Format	MultiViewer > Clock > MV Clock Format	<p>Select the hour format for the clock on the selected MultiViewer.</p> <ol style="list-style-type: none"> 1. Click a MultiViewer button to select which MultiViewer you want to perform the event on. 2. Click a Value button and select whether the clock shows 24-hour (24-Hours), 12-hour with am/pm (12-Hour AM/PM), or simple 12-hour (12-Hour) clock.
MultiViewer Clock — Mode	MultiViewer > Clock > MV Clock Mode	<p>Select whether the clock shows timecode or system time on the selected MultiViewer.</p> <ol style="list-style-type: none"> 1. Click a MultiViewer button to select which MultiViewer you want to perform the event on. 2. Click a Clock Mode button and select whether the clock shows timecode (Timecode), system time (System), a countdown timer (CountDown), or is off (Off).
MultiViewer Clock — MV Timer	MultiViewer > Clock > MV Timer	<p>Select which countdown timer you want a MultiViewer to use.</p> <ol style="list-style-type: none"> 1. Click a MultiViewer button to select which MultiViewer you want to perform the event on. 2. Click the Timer button and select the timer (1-5) that you want to assign to the selected MultiViewer.
MultiViewer Clock — Size	MultiViewer > Clock > MV Clock Param	<p>Select the size of the clock on the selected MultiViewer.</p> <ol style="list-style-type: none"> 1. Click a MultiViewer button to select which MultiViewer you want to perform the event on. 2. Click Clock Size. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Enter the size of the clock in the Value (%) field.

Event	Location	Description
MultiViewer Clock — Timecode Frame Count	MultiViewer > Clock > MV Clock Frame Count	<p>Select whether number of frames for a timecode are shown on the selected MultiViewer.</p> <ol style="list-style-type: none"> 1. Click a MultiViewer button to select which MultiViewer you want to perform the event on. 2. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 3. Click a Value button and select whether the frame count is shown (On) or not (Off).
MultiViewer Clock — Timer Set Time (Minutes)	MultiViewer > Clock > Timer Set Times	<p>Set the starting time in minutes for the timer.</p> <ol style="list-style-type: none"> 1. Click the Timer button and select the timer you want to configure. 2. Click Set Time (Minutes). 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. In the Value field, enter the number of minutes that you want to start the timer at.
MultiViewer Clock — Timer Set Time (Seconds)	MultiViewer > Clock > Timer Set Times	<p>Set the starting time in seconds for the timer.</p> <ol style="list-style-type: none"> 1. Click the Timer button and select the timer you want to configure. 2. Click Set Time (Seconds). 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. In the Value field, enter the number of seconds (0-59) that you want to start the timer at. If you want a value that is larger than 59 seconds you must insert a command for minutes and then a command for seconds.
MultiViewer Clock — X-Position	MultiViewer > Clock > MV Clock Param	<p>Select the horizontal position of the clock on the selected MultiViewer.</p> <ol style="list-style-type: none"> 1. Click a MultiViewer button to select which MultiViewer you want to perform the event on. 2. Click Clock X-Pos. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Enter the horizontal position of the clock in the Value (%) field.
MultiViewer Clock — Y-Position	MultiViewer > Clock > MV Clock Param	<p>Select the vertical position of the clock on the selected MultiViewer.</p> <ol style="list-style-type: none"> 1. Click a MultiViewer button to select which MultiViewer you want to perform the event on. 2. Click Clock Y-Pos. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Enter the vertical position of the clock in the Value (%) field.
MultiViewer — Follow	MultiViewer > MV Follow	<p>Select whether a MultiViewer follows the layout of a Canvas.</p> <ol style="list-style-type: none"> 1. Click a MultiViewer button to select which MultiViewer you want to perform the event on. 2. Click a Follow button to select which Canvas the MultiViewer will follow or select Off to have the MultiViewer operate normally.

Event	Location	Description
MultiViewer — FSFC Label	MultiViewer > MV FSFC Label	<p>Select whether FSFC is shown on the label on the selected MultiViewer when a source has an FSFC applies to it.</p> <ol style="list-style-type: none"> 1. Click a MultiViewer button to select which MultiViewer you want to perform the event on. 2. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 3. Click a Value button to select whether FSFC is shown on the label (On) or not (Off).
MultiViewer — Layout	MultiViewer > MV Layout	<p>Select a layout for the selected MultiViewer.</p> <ol style="list-style-type: none"> 1. Click a MultiViewer button to select which MultiViewer you want to perform the event on. 2. Click the Layout button and select the layout you want to use.
MultiViewer — Overlay	MultiViewer > MV Overlay	<p>Select whether the MultiViewer overlay is turned on or not.</p> <ol style="list-style-type: none"> 1. Click a MultiViewer button to select which MultiViewer you want to perform the event on. 2. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 3. Click a Value button to select whether the overlay is turned on (On) or not (Off).
MultiViewer — Shift	MultiViewer > MV Shift	<p>Select whether the sources on the selected MultiViewer are shifted, or not.</p> <ol style="list-style-type: none"> 1. Click a MultiViewer button to select which MultiViewer you want to perform the event on. 2. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 3. Click a Value button to select whether the MultiViewer shows the shifted sources (On) or not (Off).
MultiViewer — Shift Panel	MultiViewer > MV Shift Panel	<p>Select which control panel the MultiViewer shift is following. When Shift is press on the selected panel, the selected MultiViewer shifts.</p> <ol style="list-style-type: none"> 1. Click a MultiViewer button to select which MultiViewer you want to perform the event on. 2. Click Panel and click the control panel you want to shift to follow or click Off to have shift not follow any panel.
MultiViewer — Tally Display	MultiViewer > MV Tally Display	<p>Select how the tallies are shown on the selected MultiViewer.</p> <ol style="list-style-type: none"> 1. Click a MultiViewer button to select which MultiViewer you want to perform the event on. 2. Click a Tally Display button to select whether tallies are shown as a border around the box (Box), as boxes on either side of the label (Label), or as boxes on either side of the label but swapped (Label Reverse).
MultiViewer — ViewControl Shift	MultiViewer > View Control Shift	<p>Select whether the ViewControl sources are shifted, or not.</p> <ol style="list-style-type: none"> 1. Click a MultiViewer button to select which MultiViewer you want to perform the event on. 2. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 3. Click a Value button to select whether ViewControl shows the shifted sources (On) or not (Off).

Device Custom Controls

Audio Mixer (Device)

Event	Location	Description
Audio Mixer Pan	Devices > Audio Mixer	<p>Set the pan level for the selected channel on the selected device.</p> <ol style="list-style-type: none">1. Click Audio Pan.2. Click the Audio Mixer button and select the device you want to send the command to.3. Click the Channel button and select the channel you want to send the command to.4. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter.5. Enter the new pan level in the Pan Left/Right (%) field.
Audio Mixer Volume	Devices > Audio Mixer	<p>Set the level for the selected channel on the selected device.</p> <ol style="list-style-type: none">1. Click Audio Volume.2. Click the Audio Mixer button and select the device you want to send the command to.3. Click the Channel button and select the channel you want to send the command to.4. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter.5. Enter the new audio level in the Volume (%) field.

Camera

Event	Location	Description
Robotic Camera — Halt All	Devices > Camera	<p>Send the halt command to the selected camera.</p> <ol style="list-style-type: none">1. Click Camera Halt All.2. Click the Camera button and select the device you want to send the command to.
Robotic Camera — Recall Shot	Devices > Camera	<p>Recall a shot on the selected camera at the rate/speed set in the shot.</p> <ol style="list-style-type: none">1. Click Recall Shot.2. Click the Camera button and select the device you want to send the command to.3. Click the Channel button and select the channel you want to send the command to.4. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter.5. Enter the shot number you want to recall from in the Shot field.
Robotic Camera — Recall Shot Fast	Devices > Camera	<p>Recall a shot on the selected camera as quickly as possible.</p> <ol style="list-style-type: none">1. Click Recall Shot (Fast).2. Click the Camera button and select the device you want to send the command to.3. Click the Channel button and select the channel you want to send the command to.4. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter.5. Enter the shot number you want to recall from in the Shot field.

Event	Location	Description
Robotic Camera — Store Shot	Devices > Camera	<p>Store a shot on the selected camera.</p> <ol style="list-style-type: none"> 1. Click Store Shot. 2. Click the Camera button and select the device you want to send the command to. 3. Click the Channel button and select the channel you want to send the command to. 4. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 5. Enter the shot number you want to store to in the Shot field.

GPI

Event	Location	Description
GPI Output — Edge Trigger Setup	Devices > GPO	<p>Set up the type of edge trigger for the GPI output.</p> <ol style="list-style-type: none"> 1. Click GPO Edge Duration 2. Click the GPO button and select the GPI output that you want to configure. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Enter the duration of the edge trigger in the Duration (fr) field.
GPI Output — Level Trigger Setup	Devices > GPO	<p>Set up the type of level trigger for the GPI output.</p> <ol style="list-style-type: none"> 1. Click GPO Level Config 2. Click the GPO button and select the GPI output that you want to configure. 3. Click a Level to select whether the level trigger uses a high (High) or low (Low) level trigger.
GPI Output — Mode	Devices > GPO	<p>Select whether the level trigger GPI output act as a tally.</p> <ol style="list-style-type: none"> 1. Click GPO Mode 2. Click the GPO button and select the GPI output that you want to configure. 3. Click a Mode button to select whether the level trigger GPI output, when assigned to video source, acts as a roll clip (Normal) or as a tally (Tally) for the selected source.
GPI Output — Trigger	Devices > GPO	<p>Trigger a GPI output.</p> <ol style="list-style-type: none"> 1. Click GPO Trigger 2. Click the GPO button and select the GPI output that you want to trigger.
GPI Output — Trigger Type	Devices > GPO	<p>Select the type of trigger for the GPI output.</p> <ol style="list-style-type: none"> 1. Click GPO Trigger Configuration 2. Click the GPO button and select the GPI output that you want to configure. 3. Click a Trigger to select whether the GPI output uses a level (Level) or edge (Edge) trigger.

PBus II

Event	Location	Description
PBus — Recall	Devices > PBus	<p>Recall a register on the selected PBus device.</p> <ol style="list-style-type: none"> 1. Click PBus Recall Register. 2. Click the PBus button and select the device you want to send the command to. 3. Click the Device button and select the channel you want to send the command to. 4. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 5. Enter number of the register you want to recall in the Register field.
PBus — Trigger	Devices > PBus	<p>Trigger a function on the selected PBus device.</p> <ol style="list-style-type: none"> 1. Click PBus Trigger Function. 2. Click the PBus button and select the device you want to send the command to. 3. Click the Device button and select the channel you want to send the command to. 4. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 5. Enter the number of the function you want to trigger in the Function field.

RossTalk

Table 12: RossTalk (XPression)

Event	Location	Description
RossTalk CC	Devices > RossTalk (XPression) > CC	<p>Send the simulated custom control to the selected device.</p> <ol style="list-style-type: none"> 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 2. Enter the bank of the custom control in the Bank field. 3. Enter the number of the custom control in the Custom field.
RossTalk Clear All	Devices > RossTalk (XPression) > Clear All	<p>Send the Clear All command to the selected device.</p> <ol style="list-style-type: none"> 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to.
RossTalk Clear Channel	Devices > RossTalk (XPression) > Clear Channel	<p>Send the Clear Framebuffer command to the selected device.</p> <ol style="list-style-type: none"> 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 2. Enter the framebuffer that you want to perform the action on in the Channel field.
RossTalk Clear Layer	Devices > RossTalk (XPression) > Clear Layer	<p>Send the Clear Framebuffer command for a framebuffer and layer to the selected device.</p> <ol style="list-style-type: none"> 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 2. Enter the framebuffer that you want to perform the action on in the Channel field. 3. Enter the layer that you want to perform the action on in the Layer field.

Event	Location	Description
RossTalk — Cue Channel	Devices > RossTalk (XPression) > Cue (2)	Send the Cue command for a specific item and framebuffer to the selected device. <ol style="list-style-type: none"> 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 2. Enter the take item id of the item you want to perform the action on in the Take ID field. 3. Enter the framebuffer that you want to perform the action on in the Channel field.
RossTalk — Cue Current	Devices > RossTalk (XPression) > Cue	Send the Cue command to the selected device. <ol style="list-style-type: none"> 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to.
RossTalk — Cue Item	Devices > RossTalk (XPression) > Cue (1)	Send the Cue command for a specific item to the selected device. <ol style="list-style-type: none"> 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 2. Enter the take item id of the item you want to perform the action on in the Take ID field.
RossTalk — Cue Layer	Devices > RossTalk (XPression) > Cue (3)	Send the Cue command for a specific item and location to the selected device. <ol style="list-style-type: none"> 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 2. Enter the take item id of the item you want to perform the action on in the Take ID field. 3. Enter the framebuffer that you want to perform the action on in the Channel field. 4. Enter the layer that you want to perform the action on in the Layer field.
RossTalk Custom Command	Devices > RossTalk (XPression) > RossTalk Custom Cmd(CRLF)	Send a manual RossTalk string to XPression. Each string has CRLF (carriage return line feed) appended to the end. <ol style="list-style-type: none"> 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 2. Enter the RossTalk string in the Custom Cmd field.
RossTalk — Focus	Devices > RossTalk (XPression) > Focus	Send the Focus command for a specific item to the selected device. <ol style="list-style-type: none"> 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 2. Enter the take item id of the item you want to perform the action on in the Take ID field.
RossTalk — GPI	Devices > RossTalk (XPression) > GPI	Send the simulated GPI input to the selected device. <ol style="list-style-type: none"> 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 2. Enter the GPI you want to simulate triggering in the GPI field.
RossTalk — Layer Off	Devices > RossTalk (XPression) > layer Off	Send the Layer Off command for a specific framebuffer and layer to the selected device. <ol style="list-style-type: none"> 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 2. Enter the framebuffer that you want to perform the action on in the Channel field. 3. Enter the layer that you want to perform the action on in the Layer field.
RossTalk — Next	Devices > RossTalk (XPression) > Next	Send the Next command to the selected device. <ol style="list-style-type: none"> 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to.
RossTalk — Read Current	Devices > RossTalk (XPression) > Read	Send the Read command to the selected device. <ol style="list-style-type: none"> 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to.

Event	Location	Description
RossTalk — Read Item	Devices > RossTalk (XPression) > Read (1)	Send the Read command for a specific item to the selected device. 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 2. Enter the take item id of the item you want to perform the action on in the Take ID field.
RossTalk — Read Layer	Devices > RossTalk (XPression) > Read (2)	Send the Read command for a specific item and layer to the selected device. 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 2. Enter the take item id of the item you want to perform the action on in the Take ID field. 3. Enter the layer that you want to perform the action on in the Layer field.
RossTalk — Resume Channel	Devices > RossTalk (XPression) > Resume Channel	Send the Resume command for a framebuffer to the selected device. 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 2. Enter the framebuffer that you want to perform the action on in the Channel field.
RossTalk — Resume Layer	Devices > RossTalk (XPression) > Resume Layer	Send the Resume command for a framebuffer and layer to the selected device. 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 2. Enter the framebuffer that you want to perform the action on in the Channel field. 3. Enter the layer that you want to perform the action on in the Layer field.
RossTalk — Sequencer Down	Devices > RossTalk (XPression) > Sequencer Down	Send the Sequencer Down command to the selected device. 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to.
RossTalk — Sequencer Up	Devices > RossTalk (XPression) > Sequencer Up	Send the Sequencer Up command to the selected device. 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to.
RossTalk — Swap Channel	Devices > RossTalk (XPression) > Swap (1)	Send the Swap command for a specific framebuffer to the selected device. 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 2. Enter the framebuffer that you want to perform the action on in the Channel field.
RossTalk — Swap Current	Devices > RossTalk (XPression) > Swap	Send the Swap command to the selected device. 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to.
RossTalk — Swap Layer	Devices > RossTalk (XPression) > Swap (2)	Send the Swap command for a specific framebuffer and layer to the selected device. 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 2. Enter the framebuffer that you want to perform the action on in the Channel field. 3. Enter the layer that you want to perform the action on in the Layer field.
RossTalk — Take Channel	Devices > RossTalk (XPression) > Take (2)	Send the Take command for a specific item and framebuffer to the selected device. 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 2. Enter the take item id of the item you want to perform the action on in the Take ID field. 3. Enter the framebuffer that you want to perform the action on in the Channel field.

Event	Location	Description
RossTalk — Take Item	Devices > RossTalk (XPression) > Take (1)	Send the Take command for a specific item to the selected device. <ol style="list-style-type: none"> 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 2. Enter the take item id of the item you want to perform the action on in the Take ID field.
RossTalk — Take Layer	Devices > RossTalk (XPression) > Take (3)	Send the Take command for a specific item and location to the selected device. <ol style="list-style-type: none"> 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 2. Enter the take item id of the item you want to perform the action on in the Take ID field. 3. Enter the framebuffer that you want to perform the action on in the Channel field. 4. Enter the layer that you want to perform the action on in the Layer field.
RossTalk — Take Offline	Devices > RossTalk (XPression) > Take Offline	Send the Take Offline command for a specific item to the selected device. <ol style="list-style-type: none"> 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 2. Enter the take item id of the item you want to perform the action on in the Take ID field.
RossTalk — Up Next	Devices > RossTalk (XPression) > Up Next	Send the Next command for a specific item to the selected device. <ol style="list-style-type: none"> 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 2. Enter the take item id of the item you want to perform the action on in the Take ID field.

Table 13: RossTalk (Generic)

Event	Location	Description
RossTalk CC	Devices > RossTalk (Generic) > CC	Send the simulated custom control to the selected device. <ol style="list-style-type: none"> 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 2. Enter the bank of the custom control in the Bank field. 3. Enter the number of the custom control in the Custom field.
RossTalk Custom Command (CRLF)	Devices > RossTalk (Generic) > RossTalk Custom Cmd(CRLF)	Send a manual RossTalk string to the selected device. Each string has CRLF (carriage return line feed) appended to the end. <ol style="list-style-type: none"> 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 2. Enter the RossTalk string in the Custom Cmd field.
RossTalk Custom Command (LF)	Devices > RossTalk (Generic) > RossTalk Custom Cmd(LF)	Send a manual RossTalk string to the selected device. Each string has LF (line feed) appended to the end. <ol style="list-style-type: none"> 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 2. Enter the RossTalk string in the Custom Cmd field.
RossTalk Custom Command (CR)	Devices > RossTalk (Generic) > RossTalk Custom Cmd(CR)	Send a manual RossTalk string to the selected device. Each string has CR (carriage return) appended to the end. <ol style="list-style-type: none"> 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 2. Enter the RossTalk string in the Custom Cmd field.

Event	Location	Description
RossTalk Custom Command (no CRLF)	Devices > RossTalk (Generic) > RossTalk Custom Cmd(No CRLF)	Send a manual RossTalk string to the selected device. CRLF (carriage return line feed) is not appended to the end of the string. 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 2. Enter the RossTalk string in the Custom Cmd field.
RossTalk — GPI	Devices > RossTalk (Generic) > GPI	Send the simulated GPI input to the selected device. 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 2. Enter the GPI you want to simulate triggering in the GPI field.

Table 14: RossTalk (Ultrix™)

Event	Location	Description
RossTalk Custom Command	Devices > RossTalk (Ultrix) > RossTalk Custom Cmd	Send a manual RossTalk string to the selected device. 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 2. Enter the RossTalk string in the Custom Cmd field.
RossTalk — MV Clock End	Devices > RossTalk (Ultrix) > MV Clock End	Send the end selected clock command to the selected device. 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 2. Enter the number of the clock you want to perform the action on in the MV Clock field.
RossTalk — MV Clock Pause	Devices > RossTalk (Ultrix) > MV Clock Pause	Send the pause selected clock command to the selected device. 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 2. Enter the number of the clock you want to perform the action on in the MV Clock field.
RossTalk — MV Clock Run	Devices > RossTalk (Ultrix) > MV Clock Run	Send the run selected clock command to the selected device. 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 2. Enter the number of the clock you want to perform the action on in the MV Clock field.
RossTalk — MV Clock Stop	Devices > RossTalk (Ultrix) > MV Clock Stop	Send the stop selected clock command to the selected device. 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 2. Enter the number of the clock you want to perform the action on in the MV Clock field.
RossTalk — Salvo	Devices > RossTalk (Ultrix) > Salvo	Send the fire salvo command to the selected device. 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 2. Enter the salvo you want to fire in the SALVO field.

Table 15: RossTalk (Tria)

Event	Location	Description
RossTalk — Angle	Devices > RossTalk (Tria) > GoTo/Jog/Angle	<p>Select the camera angle to use from the ISO clip loaded into the selected channel.</p> <ol style="list-style-type: none"> 1. Click the Action button and click Angle. 2. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 3. Click the Channel button and click the button for the channel that you want to perform the action on. 4. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 5. In the Value field enter the camera angle you want to use from the clip loaded into the selected channel.
RossTalk — Cue Clip	Devices > RossTalk (Tria) > Play/Cue Clip	<p>Cue a specific clip on a selected channel. Clips are identified by file name.</p> <ol style="list-style-type: none"> 1. Click Cue. 2. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 3. Click the Channel button and click the button for the channel that you want to perform the action on. 4. In the Clip field enter the path and name of the clip to be cued. Clip names must include the path relative to the default H:\video\ directory.
RossTalk — Cue Clip Position	Devices > RossTalk (Tria) > Play/Cue Clip From Position	<p>Cue a specific clip at a specific timecode on a selected channel. Clips are identified by file name.</p> <ol style="list-style-type: none"> 1. Click the Action button and click Cue. 2. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 3. Click the Channel button and click the button for the channel that you want to perform the action on. 4. In the Clip field enter the path and name of the clip to be cued. Clip names must include the path relative to the default H:\video\ directory. 5. In the Hours, Minutes, Seconds, and Frames fields, enter the timecode you want to cue the clip at.
RossTalk — Eject	Devices > RossTalk (Tria) > Play/Stop/Eject	<p>Unload the clip currently loaded into the selected channel.</p> <ol style="list-style-type: none"> 1. Click Eject. 2. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 3. Click the Channel button and click the button for the channel that you want to perform the action on.
RossTalk — Goto	Devices > RossTalk (Tria) > GoTo/Jog/Angle	<p>Send the Goto Position command to jog to a specific position in the clip loaded into the selected channel.</p> <ol style="list-style-type: none"> 1. Click the Action button and click GoTo. 2. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 3. Click the Channel button and click the button for the channel that you want to perform the action on. 4. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 5. In the Value field, enter the timecode (hh:mm:ss:ff) you want to seek to in the clip loaded into the selected channel.

Event	Location	Description
RossTalk — Jog	Devices > RossTalk (Tria) > GoTo/Jog/Angle	<p>Send the command to jog backward or forwards in the clip loaded into channel.</p> <ol style="list-style-type: none"> 1. Click the Action button and click Jog. 2. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 3. Click the Channel button and click the button for the channel that you want to perform the action on. 4. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 5. In the Value field, enter the direction +/- and amount, in frames, you want to jog in the clip loaded into the selected channel.
RossTalk — Loop Mode	Devices > RossTalk (Tria) > Loop Mode	<p>Set the looping mode for the selected channel transport.</p> <ol style="list-style-type: none"> 1. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 2. Click the Channel button and click the button for the channel that you want to perform the action on. 3. Click the Value button as select the looping mode you want to set the selected channel to. The possible modes are Off, Loop, Loop To, Ping Pong, and Ping Pong To.
RossTalk — Play Clip	Devices > RossTalk (Tria) > Play/Cue Clip	<p>Play a specific clip on a selected channel. Clips are identified by file name.</p> <ol style="list-style-type: none"> 1. Click Play. 2. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 3. Click the Channel button and click the button for the channel that you want to perform the action on. 4. In the Clip field enter the path and name of the clip to be played. Clip names must include the path relative to the default H:\video\ directory.
RossTalk — Play Clip Position	Devices > RossTalk (Tria) > Play/Cue Clip From Position	<p>Play a specific clip at a specific timecode on a selected channel. Clips are identified by file name.</p> <ol style="list-style-type: none"> 1. Click the Action button and click Play. 2. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 3. Click the Channel button and click the button for the channel that you want to perform the action on. 4. In the Clip field enter the path and name of the clip to be cued. Clip names must include the path relative to the default H:\video\ directory. 5. In the Hours, Minutes, Seconds, and Frames fields, enter the timecode you want to play the clip at.
RossTalk — Stop	Devices > RossTalk (Tria) > Play/Stop/Eject	<p>Send the Stop command for a specific channel to the selected device.</p> <ol style="list-style-type: none"> 1. Click Stop. 2. Click the RossTalk Device button and select the device you want to send the RossTalk command to. 3. Click the Channel button and click the button for the channel that you want to perform the action on.

Video Server

Event	Location	Description
Video Server — Cue	Video Server > Cue	Send the Cue command and name of clip to cue to the selected device. <ol style="list-style-type: none"> 1. Click the Video Server button and select the device you want to send the command to. 2. Click a Channel button to select the channel you want to send the command to. 3. Enter the identifier of the clip in the Cue field.
Video Server — Get Clips	Video Server > Get Clips	Query the selected device for a list of clips. <ol style="list-style-type: none"> 1. Click the Video Server button and select the device you want to send the command to. 2. Click a Channel button to select the channel you want to send the command to.
Video Server — Jog	Video Server > Jog	Send the jog command to the selected device. The Jog command is not supported by the internal Clip Player at this time. <ol style="list-style-type: none"> 1. Click the Video Server button and select the device you want to send the command to. 2. Click a Channel button to select the channel you want to send the command to. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Enter the amount you want to jog in the Jog field.
Video Server — Loop Off	Video Server > Loop Off	Send the Loop Off command to the selected device. <ol style="list-style-type: none"> 1. Click the Video Server button and select the device you want to send the command to. 2. Click a Channel button to select the channel you want to send the command to.
Video Server — Loop On	Video Server > Loop On	Send the Loop On command to the selected device. <ol style="list-style-type: none"> 1. Click the Video Server button and select the device you want to send the command to. 2. Click a Channel button to select the channel you want to send the command to.
Video Server — Play	Video Server > Play	Send the Play command to the selected device. <ol style="list-style-type: none"> 1. Click the Video Server button and select the device you want to send the command to. 2. Click a Channel button to select the channel you want to send the command to.
Video Server — Record	Video Server > Record	Send the eject command to the device, followed by the record command. The clip is given the name <code>recording_DATE_TIME</code> . <ol style="list-style-type: none"> 1. Click the Video Server button and select the device you want to send the command to. 2. Click a Channel button to select the channel you want to send the command to. 3. Enter a name for the clip in the Record field.

Event	Location	Description
Video Server — Shuttle	Video Server > Shuttle	<p>Send the shuttle command to the selected device. The Shuttle command is not supported by the internal Clip Player at this time.</p> <ol style="list-style-type: none"> 1. Click the Video Server button and select the device you want to send the command to. 2. Click a Channel button to select the channel you want to send the command to. 3. Click the Change Type button and select whether you want to set (Absolute) or reset (Reset) the parameter. Some selections will not be available when you reset the parameter. 4. Enter the speed you want to shuttle in the Shuttle field.
Video Server — Stop	Video Server > Stop	<p>Send the Stop command to the selected device.</p> <ol style="list-style-type: none"> 1. Click the Video Server button and select the device you want to send the command to. 2. Click a Channel button to select the channel you want to send the command to.

Glossary

Interlaced

An Interlaced video format starts at the top of the screen and draws all the odd number scan lines and then all the even number scan lines in sequence. This results in half the image being drawn in one pass and the other half of the image being drawn in the second. These two passes are called Fields, where the first pass is called Field 1 and the second pass is called Field 2. When both Field 1 and Field 2 have been drawn, resulting in a complete image, you have a single Frame.

Progressive

A Progressive scan video format draws each scan line in sequence, starting from the top of the screen and working to the bottom. Unlike Interlaced, with Progressive scan the entire image is drawn at one time, in a single pass. This means that there are no fields in a Progressive scan image.

Auto Key

A pairing of two video signals, a key video and a key alpha, to create a key. In the switcher, you associate the fill and alpha so that the switcher knows which alpha to use when the video is selected.

Auto Transition

An automatic transition in which the manual movement of the fader handle is simulated electronically. The transition starts when the **AUTO TRANS** button is pressed and takes place over a pre-selected time period, measured in frames.

Chroma Key

Chroma Key is a key in which the hole is cut based on a color value, or hue, rather than a luminance value or alpha signal. The color is removed and replaced with background video from another source.

Cut

An instantaneous switch from one video signal to another.

Dissolve

A transition from one video signal to another in which one signal is faded down, while the other is simultaneously faded up. The terms mix or cross-fade are often used interchangeably with dissolve.

Field

One half of a complete picture (or frame) interval containing all of the odd, or all of the even, lines in interlaced scanning. One scan of a TV screen is called a field; two fields are required to make a complete picture (which is a frame).

Force, Mask

An effect that forces the masked region to the foreground but is not bound by the key. For example, if you have a key and apply a mask to it. The masked area is bound by the edges of the key. When force is turned on, the masked area is filled with the video from the key (nothing appears masked) but you can move the mask outside of the key and the key video is still filling the masked region.

Frame

One complete picture consisting of two fields of interlaced scanning lines.

File Transfer Protocol

A network protocol that is used to transfer files from one host computer to another over a TCP-based network.

Gain

Gain represents the range of signal values present in a video signal from a lowest to a highest point (from black to white for example). Increasing gain expands this range, while decreasing gain compresses this range. Clipping occurs if applied gain changes cause output signal values to fall outside the allowable range. Generally, increasing the gain for a specific color component causes the video signal colors to become increasingly saturated with that color. Similarly, decreasing the gain for a specific color component progressively removes that color component from the output video signal.

Gamma

Gamma corrections introduce non-linear corrections to a video signal. A gamma

correction can be described as taking a point on the output versus input video signal line and pulling it perpendicularly away from the line. The result is a Bezier curve between the start, the new point, and the end point. Generally, increasing the gamma value adds more of the component to the video signal in the location of the gamma offset point. Decreasing the gamma value reduces the amount of the component in the video signal in the location of the gamma offset point. Moving the gamma offset point allows you to select which part of the input video signal receives the gamma correction. For example, if you increase the red gamma correction to the part of the video signal that has no red component you will add red to those areas while having little effect on areas that already contain a significant amount of red. This allows you to add a red tint to the image while minimizing the amount of red-clipping that occurs.

General Purpose Interface

A simple high/low signal that is used to trigger an action either on an external device or on the switcher. A GPI can be an input or an output to the switcher.

High Definition

A high definition (720p, 1080i, or 1080p/3G) video signal.

Hue

The characteristic of a color signal that determines whether the color is red, yellow, green, blue, purple, etc. (the three characteristics of a TV color signal are chrominance, luminance, and hue). White, black, and gray are not considered hues.

Hue Rotation

Hue rotate affects the color of the entire video signal by rotating the input video hues. This produces an output video signal with colors that are shifted from their original hues. By rotating colors around the wheel, hue values will shift. For example, a clockwise rotation where yellows become orange, reds become magenta, blues become green. The more rotation applied, the further around the wheel colors are shifted.

Key

An effect produced by cutting a hole in the background video, then filling the hole with video or matte from another source. Key source video cuts the hole, key fill video fills the hole. The video signal used for cut and fill can come from the same, or separate, sources.

Key Alpha

The video signal which cuts a hole in the background video to make a key effect possible. Also called Key Video or Source. In practice, this signal controls when a video mixer circuit will switch from background to key fill video.

Key Invert

An effect that reverses the polarity of the key source so that the holes in the background are cut by dark areas of the key source instead of bright areas.

Key Mask

A keying technique in which a shape is combined with the key source to block out unwanted portions of the key source.

Key Video

A video input which is timed to fill the hole provided by the key source video. An example of key video is the video output of a character generator.

Linear Key

Linear keys make it possible to fully specify the transparency of a key from opaque, through transparent, to fully off. The transparency is specified by the key alpha that is associated with the key video. A keyer capable of a linear key converts the key signal voltage directly to the transparency effect on the screen.

Mnemonics

A green, orange, or yellow display used to show the names of a source above or below the source button or used as a custom command or pattern button.

Offsets

Offsets shift the video signal by a set amount. Depending on the offset applied, different parts or all of the video signal may be affected. Clipping occurs if applied offsets cause output signal values to fall outside the allowable range.

Pre-Delay

A pre-delay is a delay that is inserted into a transition between the triggering of a GPI output and performing the transition. The length of the pre-delay is usually the length of time your video server requires to start playing a clip or your character generator required to load a page.

RossTalk

An ethernet based protocol that allows the control over Ross devices using plain english commands.

Standard-Definition

A standard definition (480i or 576i) video signal.

Self Key

A key effect in which the same video signal serves as both the key signal and key fill.

Shaped Key

An additive key where the Key Alpha cuts a hole based on the monochrome value of the alpha. Shades of gray are translated into either white or black, giving the key a hard edge. Shaped Key alphas are sometimes used with Character Generators to cut very precise holes for the fill.

Split Key

A Split key allows you to assign a different alpha source for a key than the fill/alpha associations that are set up during configuration or to use a separate alpha source for a Self key.

Tally

An indicator which illuminates when the associated button, or control, is selected or is on-air.

Unshaped Key

A multiplicative key where the Key Alpha cuts a hole based on the gradient values of the alpha. Shades of gray are translated into transparency levels, giving the key a soft edge. Unshaped Key alphas can also be considered true linear alphas.

Index

A

- Access Control [18](#)
- Allocated DVEs [95](#)
- Ancillary Data [68](#)
- Ancillary Mode [95](#)
- Animations [44](#)
- Audio [44](#)
- Audio Memories, Disable [38](#)
- Auto Follow [64](#)
 - Custom Pages [64](#)
- Auto Key [63](#)
- Auto Select Keys [33](#)
- Auto Transition [28](#), [30–31](#)
- Aux Bus [24](#)
 - Source Selection [24](#)

B

- BG Source [25](#)
- Border Lighting [36](#)
- Bus Hold [38](#)
- Bus Map, Default [98](#)
- Bus Maps [88](#)
- Buses [21](#)
 - Ultritouch [21](#)

C

- Canvas [24](#)
 - Source Selection [24](#)
- CC, *See* Custom Controls
- CC Events, *See*
- CC Pause [48](#)
- Clear Custom Controls [98](#)
- Clear Memories [98](#)
- Color Background [25](#)
- Color Correction [82](#)
 - Proc Amp [82](#)
 - RGB [82](#)
- Color Schemes [88](#)
- Color Temperature [82](#)
- Colors, Memory Recall [39](#)
- Copy Keys [26](#)
- Copy Logs [96](#)
- Copy MEs [26](#)
- CPU Temperature [95](#)
- Custom Control Event [104](#), [135](#)
 - AES Output [130](#)
 - Ancillary Data Mode [130](#)
 - Audio Pan [141](#)
 - Audio Volume [141](#)
 - Auto Trans [122](#)
 - BKGD DVE Aspect [104](#)
 - BKGD DVE Border Size [105](#)
 - BKGD DVE Crop [105](#)

Custom Control Event (*continued*)

- BKGD DVE Edge Softness [105](#)
- BKGD DVE Size [104](#)
- BKGD DVE X-Position [104](#)
- BKGD DVE Y-Position [104](#)
- Box Mask Edge Position [112](#)
- Box Mask Edge Softness [112](#)
- Bus Source [120](#)
- Cancel All CC [105](#)
- Cancel CC [105](#)
- Chroma Key Auto Adjust [107](#)
- Chroma Key Color [107](#)
- Chroma Key Initialize [106](#)
- Chroma Key Measurement Source [107](#)
- Chroma Key Parameters [107](#)
- Chroma Key Re-Spill Color [107](#)
- Chroma Key Re-Spill Saturation [107](#)
- Clean Feed [130](#)
- Color Corrector Color Reset [130](#)
- Color Corrector Enable [130](#)
- Color Corrector Gain [130](#)
- Color Corrector Gamma [130](#)
- Color Corrector Gamma Offset [131](#)
- Color Corrector Lower Offset [131](#)
- Color Corrector Offset [131](#)
- Color Corrector Reset [131](#)
- Color Gamut [131](#)
- Cut Transition [123](#)
- Delay Auto Trans [125](#)
- Disable Audio Memories [131](#)
- DVE Freeze [108](#)
- DVE Key Aspect [108](#)
- DVE Key Border [108](#)
- DVE Key Border Color (HSL) [108](#)
- DVE Key Border Color (Preset) [108](#)
- DVE Key Crop (Bottom Edge) [109](#)
- DVE Key Crop (Dual Edge) [109](#)
- DVE Key Crop (Left Edge) [109](#)
- DVE Key Crop (Right Edge) [109](#)
- DVE Key Crop (Top Edge) [109](#)
- DVE Key Edge Softness [110](#)
- DVE Key Size [110](#)
- DVE Key X-Position [110](#)
- DVE Key Y-Position [110](#)
- DVE Wipe Direction [123](#)
- DVE Wipe Direction (Flip-Flop) [123](#)
- DVE Wipe Pattern [123](#)
- DVE Wipe, Reset [123](#)
- Dynamic Range [132](#)
- Field Dominance [134](#)
- See also* Switching Field
- Fly Key (DVE) [110](#)
- FSFC Input Assignment [132](#)
- GPI Output — Edge Trigger Setup [142](#)
- GPI Output — Level Trigger Setup [142](#)
- GPI Output — Mode [142](#)
- GPI Output — Trigger [142](#)

Custom Control Event (*continued*)

- GPI Output — Trigger Type [142](#)
- Hold CC [105](#)
- Input Color Gamut [131](#)
- Input Dynamic Range [131](#)
- Input Frame Delay [132](#)
- Input FSFC Assignment [132](#)
- Input FSFC Framing [132](#)
- Key Active [111](#)
- Key Copy [111](#)
- Key Invert [111](#)
- Key Mode [111](#)
- Key Only Transition [106](#)
- Key Settings (Clip, Gain, Transparency) [111](#)
- Key Trans Rate [106](#)
- Key Type [112](#)
- Key, Make Linear [110](#)
- Key, Reset [111](#)
- Loop CC [105](#)
- Mask [115](#)
- Mask (Box) — Left Edge Position [112](#)
- Mask (Box) — Right Edge Position [113](#)
- Mask (Box) — Size [113](#)
- Mask (Box) — Top Edge Position [113](#)
- Mask (Box) — X-Position [113](#)
- Mask (Box) — Y-Position [113](#)
- Mask (Pattern) — Aspect Ratio [113](#)
- Mask (Pattern) — Border Size [114](#)
- Mask (Pattern) — Edge Softness [114](#)
- Mask (Pattern) — Horizontal Multiplication [114](#)
- Mask (Pattern) — Reset [114](#)
- Mask (Pattern) — Rotation [114](#)
- Mask (Pattern) — Size [114](#)
- Mask (Pattern) — Vertical Multiplication [114](#)
- Mask (Pattern) — X-Position [115](#)
- Mask (Pattern) — Y-Position [115](#)
- Mask, Invert [112](#)
- Matte Color (HSL) [119](#)
- Matte Color (Preset) [119](#)
- Matte Color, Reset [119](#)
- ME Copy [120](#)
- ME Dissolve Type [124](#)
- ME Follow [132](#)
- ME Trans Rate [124](#)
- ME Trans Type [124](#)
- ME WhiteFlash Color [124](#)
- ME WhiteFlash Offset [125](#)
- ME WhiteFlash Onset [125](#)
- Media Cut Point, Set [123](#)
- Media Trans End Point, Set [124](#)
- Media Trans Start Point, Set [124](#)
- Media Trans Thumbnail [124](#)
- Media-Store — Auto Play [115](#)
- Media-Store — Capture [116](#)
- Media-Store — Capture Alpha [115](#)
- Media-Store — Capture Alpha Source [115](#)
- Media-Store — Capture Mode [116](#)
- Media-Store — Capture Source [116](#)
- Media-Store — Clear Channel [116](#)
- Media-Store — Cut Frame [116](#)
- Media-Store — Delete Capture [116](#)

Custom Control Event (*continued*)

- Media-Store — Load [116](#)
- Media-Store — Looping [117](#)
- Media-Store — Move To Frame [117](#)
- Media-Store — Mute [117](#)
- Media-Store — Play [117](#)
- Media-Store — Play Speed [117](#)
- Media-Store — Reset Media [117](#)
- Media-Store — Reverse [118](#)
- Media-Store — Rewind [118](#)
- Media-Store — Shaped [118](#)
- Media-Store — Thumb Frame [118](#)
- Media-Store — X-Position [118](#)
- Media-Store — Y-Position [118](#)
- MediaWipe — Channel [123](#)
- MediaWipe — Direction [124](#)
- MediaWipe — Direction, Flip-Flop [123](#)
- MediaWipe — Layer [124](#)
- Memory Recall [120](#)
- MultiViewer — Clip [137](#)
- MultiViewer — Follow [139](#)
- MultiViewer — FSFC Label [140](#)
- MultiViewer — Layout [140](#)
- MultiViewer — Overlay [140](#)
- MultiViewer — Shift [140](#)
- MultiViewer — Shift Panel [140](#)
- MultiViewer — Tally Display [140](#)
- MultiViewer — ViewControl Shift [140](#)
- MultiViewer Box — Apply to All [135](#)
- MultiViewer Box — Aspect Ratio Markers [135](#)
- MultiViewer Box — Border [135](#)
- MultiViewer Box — Green Tally (Preview) [136](#)
- MultiViewer Box — Label [136](#)
- MultiViewer Box — Label Mode [136](#)
- MultiViewer Box — Label Position [136](#)
- MultiViewer Box — Label Transparency [136](#)
- MultiViewer Box — Red Tally (On-Air) [137](#)
- MultiViewer Box — Video Source [137](#)
- MultiViewer Clock — Background Color (HSL) [137](#)
- MultiViewer Clock — Background Color (Preset) [137](#)
- MultiViewer Clock — Countdown Timer Direction [137](#)
- MultiViewer Clock — Countdown Timer Reset [137](#)
- MultiViewer Clock — Countdown Timer State [138](#)
- MultiViewer Clock — Foreground Color (HSL) [138](#)
- MultiViewer Clock — Foreground Color (Preset) [138](#)
- MultiViewer Clock — Format [138](#)
- MultiViewer Clock — Mode [138](#)
- MultiViewer Clock — MV Timer [138](#)
- MultiViewer Clock — Size [138](#)
- MultiViewer Clock — Timecode Frame Count [139](#)
- MultiViewer Clock — Timer Set Time (Minutes) [139](#)
- MultiViewer Clock — Timer Set Time (Seconds) [139](#)
- MultiViewer Clock — X-Position [139](#)
- MultiViewer Clock — Y-Position [139](#)
- Output BNC Assignment [132](#)
- Output Color Gamut [131](#)
- Output Dynamic Range [132](#)
- Output Rotation Mode [133](#)
- Output Rotation X-Position [134](#)
- Output Rotation Y-Position [134](#)
- Output Rotation Zoom [134](#)

Custom Control Event (*continued*)

- Pause CC [105](#)
- PBus — Recall [143](#)
- PBus — Trigger [143](#)
- Personality — Auto Remove Key [129](#)
- Personality — Auto Trans Second Press (Key) [129](#)
- Personality — Auto Trans Second Press (ME) [129](#)
- Personality — Next Trans Reset [129](#)
- Personality — Roll Clip [129](#)
- Play CC [106](#)
- Proc Amp Enable [132](#)
- Proc Amp Gain [133](#)
- Proc Amp Gamma [133](#)
- Proc Amp Gamma Offset [133](#)
- Proc Amp Hue Rotation [133](#)
- Proc Amp Offset [133](#)
- Proc Amp Reset [133](#)
- Proc Amp/Color Corrector Reset [132](#)
- Reset [125](#)
- Resume All CC [106](#)
- Resume CC [106](#)
- Robotic Camera — Halt All [141](#)
- Robotic Camera — Recall Shot [141](#)
- Robotic Camera — Recall Shot Fast [141](#)
- Robotic Camera — Store Shot [142](#)
- Roll Clip [125](#)
- RossTalk — Angle [148](#)
- RossTalk — CC [143](#), [146](#)
- RossTalk — Clear All [143](#)
- RossTalk — Clear Channel [143](#)
- RossTalk — Clear Layer [143](#)
- RossTalk — Cue Channel [144](#)
- RossTalk — Cue Clip [148–149](#)
- RossTalk — Cue Clip Position [148](#)
- RossTalk — Cue Current [144](#)
- RossTalk — Cue Item [144](#)
- RossTalk — Cue Layer [144](#)
- RossTalk — Eject [148](#)
- RossTalk — Focus [144](#)
- RossTalk — Goto [148](#)
- RossTalk — GPI [144](#), [147](#)
- RossTalk — Jog [149](#)
- RossTalk — Layer Off [144](#)
- RossTalk — Loop Mode [149](#)
- RossTalk — MV Clock End [147](#)
- RossTalk — MV Clock Pause [147](#)
- RossTalk — MV Clock Run [147](#)
- RossTalk — MV Clock Stop [147](#)
- RossTalk — Next [144](#)
- RossTalk — Play Clip Position [149](#)
- RossTalk — Read Current [144](#)
- RossTalk — Read Item [145](#)
- RossTalk — Read Layer [145](#)
- RossTalk — Resume Channel [145](#)
- RossTalk — Resume Layer [145](#)
- RossTalk — Salvo [147](#)
- RossTalk — Sequencer Down [145](#)
- RossTalk — Sequencer Up [145](#)
- RossTalk — Stop [149](#)
- RossTalk — Swap Channel [145](#)
- RossTalk — Swap Current [145](#)

Custom Control Event (*continued*)

- RossTalk — Swap Layer [145](#)
- RossTalk — Take Channel [145](#)
- RossTalk — Take Item [146](#)
- RossTalk — Take Layer [146](#)
- RossTalk — Take Offline [146](#)
- RossTalk — Up Next [146](#)
- RossTalk Custom Command [144](#), [146–147](#)
- Row ME Assignment [120](#)
- RState, Load [120](#)
- Sequencer Clear [119](#)
- Sequencer Down [119](#)
- Sequencer Link [120](#)
- Sequencer Load [119](#)
- Sequencer Next [119](#)
- Sequencer Reload [119](#)
- Sequencer Up [119](#)
- Source Bus Substitution [134](#)
- Source ME Substitution [134](#)
- Source Substitution, Delete [134](#)
- State, Insert [106](#)
- Trans Clear [125](#)
- Trans Elements [125](#)
- Trans Limit — On/Off [125](#)
- Trans Limit — Reset [125](#)
- Trans Limit — Set [126](#)
- Trans Limit — Value [126](#)
- Transition Action Dissolve [121](#)
- Transition Action DVE [122](#)
- Transition Action MediaWipe [122](#)
- Transition Action Wipe [121](#)
- TSL Address [135](#)
- TSL Tally MultiViewer Display Mode [135](#)
- UltraScene Recall [128](#)
- UltraScene Store [128](#)
- Video Mode [135](#)
- Video Server — Cue [150](#)
- Video Server — Get Clips [150](#)
- Video Server — Jog [150](#)
- Video Server — Loop Off [150](#)
- Video Server — Loop On [150](#)
- Video Server — Play [150](#)
- Video Server — Record [150](#)
- Video Server — Shuttle [151](#)
- Video Server — Stop [151](#)
- Wipe Direction [126](#)
- Wipe Direction (Flip-Flop) [126](#)
- Wipe Pattern — Aspect Ratio [126](#)
- Wipe Pattern — Border Color (HSL) [126](#)
- Wipe Pattern — Border Color (Preset) [127](#)
- Wipe Pattern — Border Size [127](#)
- Wipe Pattern — Edge Softness [127](#)
- Wipe Pattern — Horizontal Multiplication [127](#)
- Wipe Pattern — Pattern [127](#)
- Wipe Pattern — Rotation [127](#)
- Wipe Pattern — Size [127](#)
- Wipe Pattern — Vertical Multiplication [128](#)
- Wipe Pattern — X-Position [128](#)
- Wipe Pattern — Y-Position [128](#)
- Wipe Reset [128](#)

Custom Controls [16, 21, 48–51, 104–106, 115, 119–121, 128–130, 135, 141–143, 150](#)

Audio Events [141](#)

BKGD DVE Events [104](#)

Camera Events [141](#)

CC Events [105](#)

CC Pause [48](#)

Combined Transition Events [121](#)

Copy/Paste [51](#)

DashBoard [16](#)

Deleting [50](#)

Editing [48](#)

GPI Events [142](#)

Individual Transition Events [121](#)

Installation Events [130](#)

Keyer Events [106](#)

Matte Events [119](#)

Media Events [115](#)

MultiViewer Events [135](#)

Naming [50](#)

Pause Mode [49](#)

PBus Events [143](#)

Personality Events [129](#)

Recording [48](#)

RossTalk Events [143](#)

Run Event [48](#)

Running [49](#)

Sequencer [52](#)

Sequencer Events [119](#)

Special Events [120](#)

Switcher Events [120](#)

UltraScene Events [128](#)

Ultritouch [21](#)

Video Server Events [150](#)

Custom Controls, Default [98](#)

Custom Pages [64–65](#)

Auto Follow [64](#)

Custom Reset [98](#)

Cut Transition [28, 30–31](#)

Cut Transitions [31](#)

D

DashBoard [15–16, 19](#)

Configuration [15](#)

Custom Controls [16](#)

Devices [15](#)

Live Assist [15](#)

MediaManager [16](#)

Panel [19](#)

PaneLINK [15](#)

Personality [16](#)

Status [15](#)

DashBoard Connections [95](#)

DashBoard Menus [15](#)

DashBoard Reboot [15](#)

Date, System Time [81](#)

Default [98](#)

Factory [98](#)

Default Bus Map [98](#)

Delays [79](#)

Delete Media Item [44](#)

Delete Memory [41](#)

Delete Still [46](#)

Deleting a Still [44](#)

Device Control [12](#)

Diagnostics [96](#)

Copy Logs [96](#)

DIP Switches [99](#)

Disable Audio Memories [38](#)

Disable FTP [56](#)

Dissolve Transitions [32](#)

Drop Shadow [36](#)

DVE [34](#)

Cropping [34](#)

Key [34](#)

DVE Freeze [34](#)

DVE Transitions [32](#)

E

Eject Media Item [44](#)

Engine Type [95](#)

Ethernet [55](#)

Events, Custom Control [104](#)

External Reference [95](#)

F

Factory Default [98](#)

Fade to Black [91](#)

Fan#1 OK [95](#)

Fan#2 OK [95](#)

Fan#3 OK [95](#)

Field Dominance [95](#)

Fly Key [34](#)

Follows, ME [68](#)

Format Conversion [76](#)

FPGA Temperature [95](#)

Frame Delay [79](#)

Frame Setup, Ethernet [55](#)

Frame Synchronizer [76](#)

Freeze [34](#)

FSFC [76–77](#)

Input [77–78](#)

QuadFS [77](#)

SDI-FS [77](#)

FTP [56](#)

FTP Disable [56](#)

G

Glow [88](#)

GPI [63, 91](#)

Assign to Source [63](#)

Setup [91](#)

GPO Tally [92](#)

H

Help [16](#)

I

Input FSFC [77–78](#)
Input Media-Store [80](#)
IP Address [95](#)

K

Key Preview [33](#)
Key Swap [26](#)
Keying [33–34](#), [37](#)
 Auto Select [33](#)
 Cropping [34](#)
 DVE [34](#)
 Key Priority [33](#)
 Mask [37](#)
 Self Key [33](#)
 Split [33](#)
 Split Keys [37](#)
Keys [26](#)
 Copy [26](#)

L

Licenses [90](#)
Lighting, Border [36](#)
Live Assist [15](#), [65](#)
 Custom Pages [65](#)
 PaneLINK [15](#)

M

Mask [37](#)
Matte [25](#)
ME [24](#)
 Source Selection [24](#)
ME Copying [26](#)
ME Follows [65](#), [68](#)
 Substitution Table [65](#)
Media-Manager [46](#)
 Delete Media Item [46](#)
Media-Store [44–45](#)
 Animations [44](#)
 Audio [44](#)
 Clear Channel [44](#)
 Delete Database Entry [44](#)
 Eject [44](#)
 File Specifications [45](#)
 Loading [45](#)
MediaManager [16](#), [44](#)
 DashBoard [16](#)
 Disable [44](#)
Memories [38–41](#)
 As Stored Attribute [39](#)
 Attributes [40](#)
 Bus Hold [38](#)
 Delete [41](#)
 No Recall Attribute [39](#)
 Recall Attribute [39](#)
 Recall Colors [39](#)

Memories (*continued*)

 Storing [38](#)
Memories, Default [98](#)
Memory Names [41](#)
Menu Group Access [16](#)
MiniME [24](#), [27](#)
 Source Selection [24](#)
 Transitions [27](#)
MiniME Origin Point [71](#)
Mnemonic Source Names [61](#)
Mnemonics [41](#), [62](#)
 Memory [41](#)
MultiPanel [21](#), [93](#)
 Ultritouch [21](#)
MultiScreen [65–66](#), [70](#), [72](#)
 Substitution Table [65–66](#), [72](#)

N

Network Connection [55](#)
Network Ports [55](#), [101](#)
Next Trans Buttons [28](#), [30–31](#)

O

On-Air Setting [69](#)
Orchestration [56](#)
Origin Position [71](#)
Outputs [67](#)
 Video [67](#)

P

PaneLINK [15](#)
Pause Mode, Custom Control [49](#)
Permissions, Menu Group [16](#)
Personality [16](#), [86](#)
 DashBoard [16](#)
Ports, Network [101](#)
Power Connected [95](#)
Power Off [22](#)
Pre-Tiled Sources [65](#)
Preview, Transitions [28](#), [30–31](#)
Proc Amp [82](#)

Q

QuadFS [77](#)

R

Rate, Transition [27](#)
RBAC [18](#)
Real-Time Clock, System [81](#)
Reboot DashBoard [15](#)
Reference [57–58](#)
 Video Switching Field [58](#)
Reference OK [95](#)
Reference Source [95](#)

Reset [98](#)
 Custom [98](#)
RGB [82](#)
RGB Color Correctors [82](#)
ROLL CLIP [28, 30–31](#)
Ross Platform Manager [56](#)
RossLinq [56](#)
RossTalk Port [95](#)
RPM [56](#)
RState [98](#)
RState, Save [98](#)

S

Save Custom Reset [98](#)
SDI-FS [77](#)
SDR/HDR Conversion [13, 83](#)
Self Key [33](#)
Sequencer [52–54](#)
 Copy/Paste [54](#)
 Creating [52](#)
 Deleting [54](#)
 Editing [52](#)
 Loading [53](#)
 Naming [53](#)
 Running [53](#)
Serial Number [95](#)
Sets [42](#)
 Loading [42](#)
 Storing [42](#)
Shadow [36](#)
Shifted Buses [88](#)
Shutdown [22](#)
SoftPanel [19–20](#)
 Bus Area [20](#)
 Control Area [19](#)
 Menu Area [19](#)
 User Area [19](#)
Software Options [90](#)
Software Version [95](#)
Source Names [61](#)
Specifications [102–103](#)
 GPI I/O [102](#)
 LTC [103](#)
 Serial Port [102](#)
 Tally [102](#)
Splicers [74](#)
Split Key [37](#)
Split Keys [33](#)
Status [21, 95](#)
 Ultritouch [21](#)
Storing Memories [38](#)
Substitution Table [66, 72](#)
 MultiScreen [66, 72](#)
Substitution Tables [65](#)
swInfo.txt [95](#)
Switcher Information File [95](#)
Switcher Mode [95](#)
Switcher Status [95](#)
Switching Field [58](#)
SWR-SDPE [94](#)

System Real-Time Clock [81](#)

T

Tallies [64, 92](#)
 GPO [92](#)
Temperature OK [95](#)
Timecode [95](#)
Trans Limit [27](#)
Trans Preview [28, 30–31](#)
Transitions [27–28, 30–32](#)
 Auto Transition [28, 30–31](#)
 Cut [28, 30–31](#)
 Cuts [31](#)
 Direction [27](#)
 Dissolves [32](#)
 DVE [32](#)
 Flip Flop [27](#)
 from Panel [28, 30–31](#)
 from Touchscreen Menu [27](#)
 MiniME [27](#)
 Pause [27](#)
 Preview [28, 30–31](#)
 Rate [27](#)
 Roll Clip [27](#)
 Trans Preview [27](#)
Transitions Limit [27](#)
TSL UMD [61](#)
TSL UMD Port [95](#)

U

Ultritouch [21](#)
 Buses [21](#)
 Custom Controls [21](#)
 MultiPanel [21](#)
 Navigation Menu [21](#)
 Status [21](#)
User Buttons [89](#)

V

Video Inputs [60–61, 63](#)
 Auto Key [63](#)
 GPI Device Control [63](#)
 Names [61](#)
Video Mode [95](#)
Video Output [68](#)
 Ancillary Data [68](#)
Video Outputs [67](#)
Video Processing and Flow [23](#)
Video Source [24, 88](#)
 Bus Map [88](#)
Video Sources [24](#)
 External [24](#)
 Follows [24](#)
 Internal [24](#)
 Selecting [24](#)
 Selecting on DashBoard [24](#)

W

WCG Conversion [13](#), [83](#)