GRAPHITE
Cloud Production Center

Graphite CPC
User Manual

v1.6

ROSS

www.rossvideo.com

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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*.

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CEO, Ross Video
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Ross Video Code of Ethics

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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: **4855DR-110-01.6**
- Release Date: February, 2024. Printed in Canada

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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.

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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.

Contents

Features

Thank you for buying a Ross Video Graphite Cloud Production Center. The Graphite CPC builds on the Ross Video reputation for designing compact switchers, computer graphics systems, and audio production equipment for every production environment.

RAVE Audio Mixer

RAVE (Ross Audio Video Engine) breaks the mold of uninspired audio capability in all-in-one production systems. RAVE includes internal audio routing and output channel shuffling, together with a 16-bit digital audio production mixer.

The number of audio inputs and outputs depends on the options you have. All audio streams are 16-bit at 48kHz and can be controlled from DashBoard.

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 though one, the other Sequencers will advance.*

Device Control

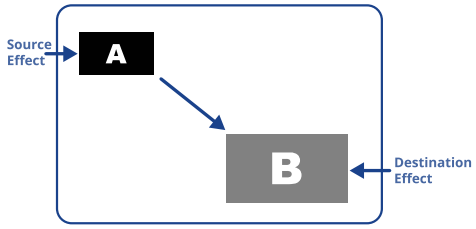
The switcher can control a number of external devices, such as video servers and robotic cameras. For a complete list of supported devices, and information on how to set up and control these devices, visit the Ross Video website (*rossvideo.com/production-switchers/carbonite/interface-list*).

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.

Matte/Wash Generator

A matte generator and complex wash generator per ME, capable of multi-color washes comes standard. Any one of the color generators can be assigned to MATTE, or wipe pattern edges. An additional simple color generator is available for an Aux Bus.

ME Effect System

The ME (Multi-level Effect) systems are standard. The number of MEs depends on the chosen switcher model.

Each ME provides 6 keyers supporting box mask, self-key, linear key, and an DVE key for each ME and is available to each keyer.

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 comes standard with all switchers. All of these memories can be stored in a set providing custom tailored memories for every operator and every show.

MultiViewer

Each MultiViewer allows you to view up to 16 video sources (32 with Shift), in 45 different layouts, from a single output BNC. Any video source on the switcher, including ME Program and Preview can be routed to any box on the MultiViewer. All boxes on the MultiViewer output include mnemonic source names and red and green tallies.

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 adjust.

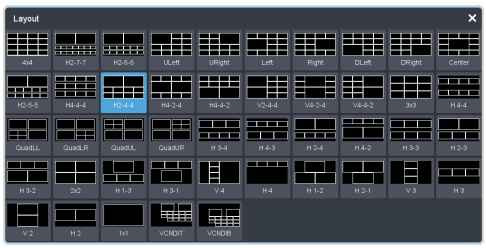


Figure 1: HD Layouts

Figure 2: MultiViewer Grid

ViewControl

The ViewControl touchscreen interface through DashBoard allows you to select sources on switcher buses, perform transitions, and run custom controls to recall memories or control external devices. The MultiViewer Shift function allows you to assign sources to a shifted set of MultiViewer boxes, expanding the number of sources available on ViewControl from 16 to 32.

> ***Tip:*** *It is recommended that the large Preview and Program boxes not be assigned shifted sources as they will follow the bus selecting.*

ViewControl takes the MultiViewer output of the switcher and overlays the DashBoard interface over it. Bringing the MultiViewer output into DashBoard is accomplished either by using multiple SDI/HDMI™ converters or a single SDI to NDI® converter.

Pattern and Matte/Wash 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 supports standard TSL tallies.

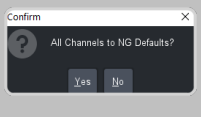
DashBoard

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.

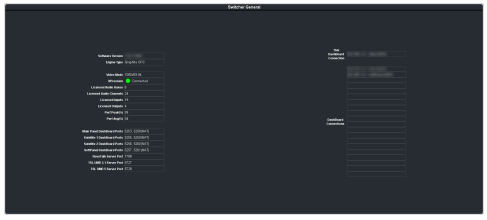
Note: *Graphite CPC requires DashBoard v9.1, or higher.*

Tip: *When a confirmation popup is shown in DashBoard the keyboard shortcut is* `alt y` *or* `alt n`.



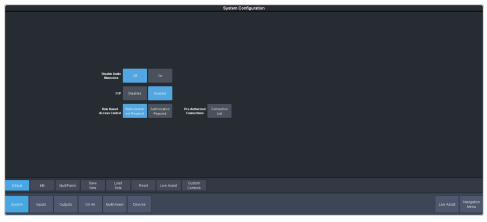
Switcher Status in DashBoard

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



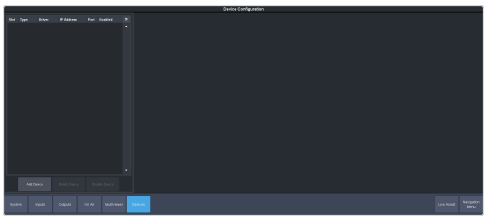
Configuration

The Configuration node provides access to switcher settings such as 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.

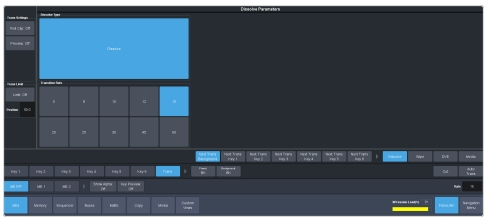


Tip: *Click* ***Disable Device*** *to disable the selected device (does not apply to Audio Mixers).*

Tip: *You can apply a custom name to each device in the* ***Name*** *field. This name appears on the menus and allows you to quickly differentiate different devices of the same type, like cameras.*

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.*

PaneLINK

1. The PaneLink button 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 **PaneLINK** turned off, Live Assist does not switch between tabs.
2. The Performance meter mirrors the Performance meter in XPression and shows the load that is being placed on the system resources by the actions you are performing.

Note: PaneLink only works on the Live Assist page.

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 on the same machine.

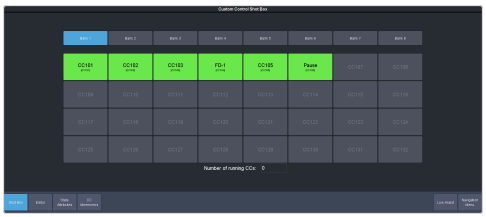
   - **Open Panels** — expand the list and select the open custom panel you want to assign to the list. You must have the custom panel running on DashBoard for it to appear in the list.

     *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.

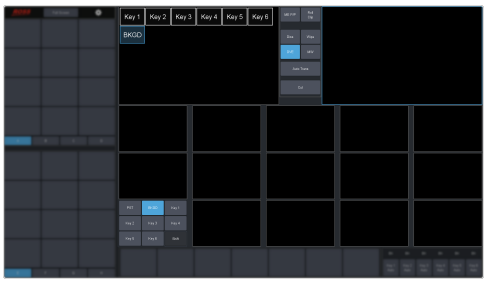
Custom Controls

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.



ViewControl

The ViewControl interface through DashBoard allows you to coordinate the control over the switcher through a touchscreen interface. Through ViewControl you can select sources, perform transitions, and run custom controls.

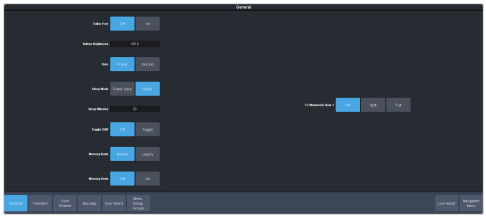


MediaManager

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.

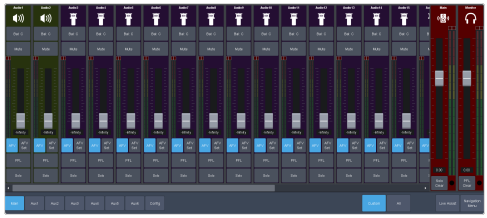


Help

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

Audio Mixer

The audio mixer node in DashBoard provides access to the RAVE audio mixer. An audio channel must be available to the switcher to be controlled by the audio mixer interface. Audio sources can be from the embedded audio on an input video stream or from a separate audio stream coming into the system.



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 Graphite CPC 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.*

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 Graphite CPC.

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 **Pre-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.
   - **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.*

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 77 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.

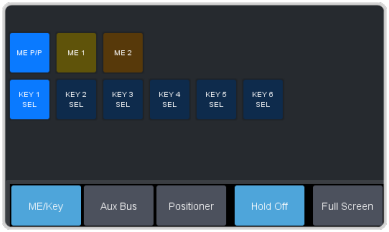
Tip: *The Performance meter is the same as is shown in XPression and on the Live Assist pages.*

User Area

The user area can be assigned to ME/Key, Aux, or the Positioner. Press the **ME/Key**, **Aux Bus**, or **Positioner** button to a select how the user area appears.

ME/Key

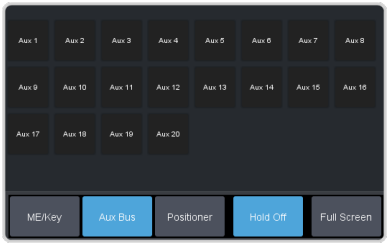
The **ME/Key** button allows you to select what the bus area is assigned to. Click **ME *X*** to assign the panel bus area to that output. Click one of the **Key *X* Sel** buttons to assign the key bus in the panel bus area to that key.



Aux Bus

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.*



Positioner

The **Positioner** button provides a virtual interface to the positioner. The positioner is used in device control, 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.

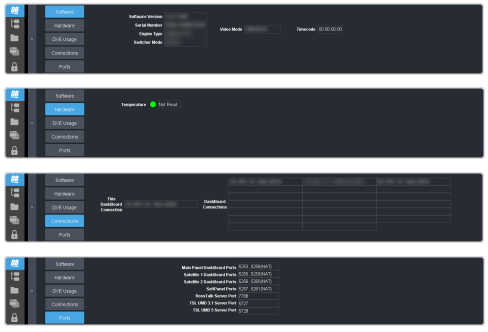
Once you are connected to the switcher, tap the **Connected Devices** button and select the switcher you want to control from the list and tap **Carbonite**. The available tabs for the switcher are listed. Tap one of the available tabs to open it.

Navigation Menu

Tap the **>** button on the left and tap the tab you want to navigate to.

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.

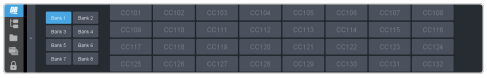
1. Tap the area and bus that you want to select a source on.
2. Tap the source that you want to select or tap **Exit** to close the popup.

> ***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.



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 comes into the switcher through XPression and can include a framebuffer, virtual input, or NDI® stream. There are no processing blocks within the system to add video delay, but the more complex the XPression scenes or numerous the video streams, the more the system resources can be taxed which can degrade video quality.

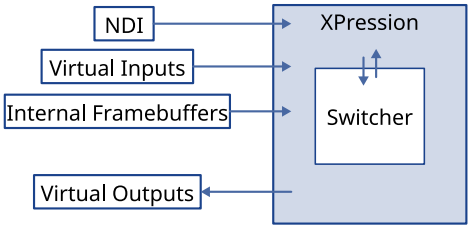


Figure 3: Video Flow Through the Switcher

Audio Processing and Flow

Audio signals come into the system either embedded in the video input streams, from the Media-Store, XPression, microphone, or as an independent NDI® audio stream.

Video Sources

The switcher has access to two basic types of video sources; external and internal.

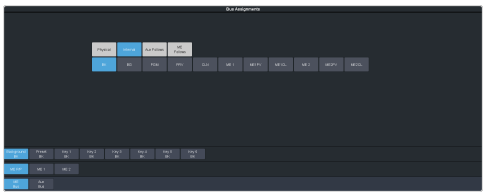
All video sources can be assigned to video source buttons. By pressing a video source button on a bus, the video source assigned to that button is selected on that bus.

- **External** — External video sources come from cameras, video servers, character generators, or other external devices and come into the switcher through an NDI® stream, or XPression framebuffer or virtual input.
- **Internal** — Internal video sources come from internally generated video, such as aux buses, re-entries, 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 ME 1 Background so that a source selected on the background bus of ME 1 is also selected on the Aux Bus.

To Select a Source on a Bus from DashBoard

To select a video source on a bus, you must identify the ME and 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 **ME*X*** or **Aux*X*** to select the specific bus or area you want to select a source on. With an ME 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.
4. Select the background, preset, or keyer bus that you want to select a source on. (ME only)

Note: *Ensure that the source selected on the bus you want to enter onto the ME, aux, or keyer is valid for that destination. If the source is not valid, you will not be able to select the bus on the ME, Aux, or keyer.*

5. Select the type of source you want to assign to the bus and then select the source.
   - **Physical** — the sources assigned to the numbered inputs of the switcher.
   - **Internal** — internally generated sources, including re-entries.
   - **Aux Follows** — use the source that is active on selected aux bus.
   - **ME Follows** — use the source that is active on selected ME bus.

Video Layering

How video is layered in the output of the switcher depends on how an ME is re-entered onto the other, and what keyers are on-air for the ME.

If we assume that each ME has all keyers on-air and that ME 2 is re-entered into ME 1, and ME 1 is re-entered into ME P/P, the layering will start with ME 2 Background and progress to ME P/P and the highest keyer.

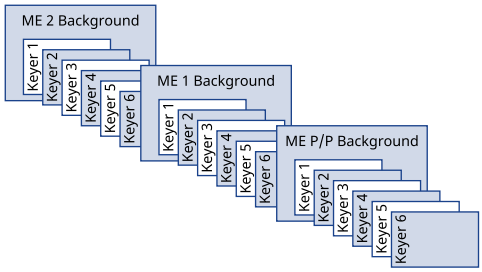


Figure 4: Video Layering

Re-Entry

Re-entry is the term used to describe the process of selecting another ME on an ME. For example, if you select ME 1 on ME 2, ME 1 is said to be re-entered onto ME 2. Re-entry takes the output of an ME and uses it as the background or key on the other ME. If you select an ME on the background bus, the ME becomes background video source of the other ME. If you select an ME on a Key Bus, the ME becomes the key source of the other ME.

Keep the following in mind:

Keep the following in mind when working with re-entries:

- You cannot re-enter an ME, or the Clean Feed of an ME, into itself.

Re-Entry Timing

Any ME can go in any timing slot. MEs can only be re-entered in order from highest ME to ME P/P.

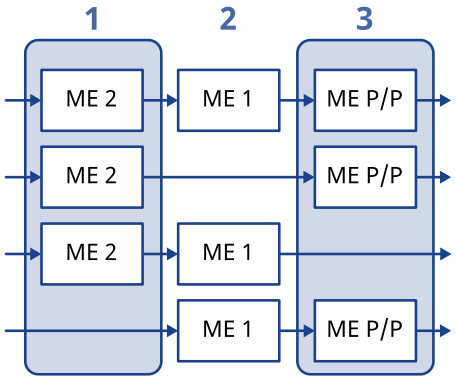


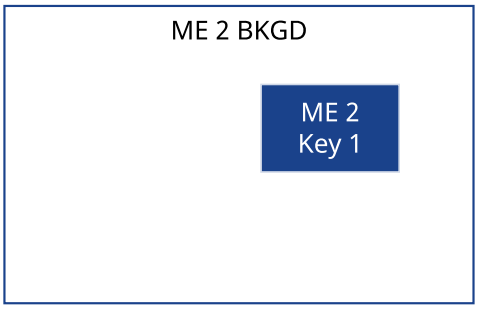
Figure 5: ME Timing Windows

To Re-Enter an ME

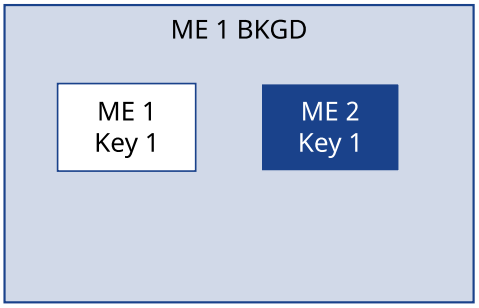
The process to re-enter any bus onto another is the same as re-entering an ME onto another ME.

1. Set up ME 1 with a background and a key.

2. Set up ME 2 with a key.



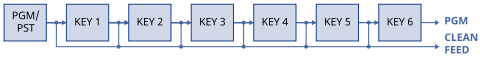
3. Select ME 1 as a source on the Background Bus of ME 2. Notice that the output of ME 1 is now being used as the background of ME 2.



FlexiClean Clean Feed

FlexiClean provides a second program output that is derived from a different location than the standard program output. A frequent application is the recording of shows for later airing without call-in phone numbers inserted.

The clean feed output can come from before or between the keyers.



Video Preview

Video preview allows you to use an additional monitor to preview what the next shot is going to be.

The preview for an ME shows what is selected for the next transition on that ME. This includes the keys and background video sources that will be on-air after the next transition.

MultiViewer

Each MultiViewer allows you to view up to 16 video sources (32 with Shift), in 45 different layouts, from a single output BNC. Any video source on the switcher, including ME Program and Preview can be routed to any box on the MultiViewer. All boxes on the MultiViewer output include mnemonic source names and red and green tallies.

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 adjust.

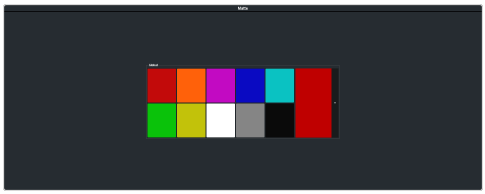
Matte Source

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. 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 ME to another. The entire contents of the destination is replaced with the contents of the source.

When you copy an ME, the switcher tries to assign resources to the destination ME to match the source ME. 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 to another keyer 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, 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 in the following order:

1. From off-air keys that are not the source key.
2. From the source key, if it is not on-air.
3. From on-air keys that are not the source key.
4. From the source key, even if it is on-air.

To Copy a Key

Copy the contents of a keyer 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. 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 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.

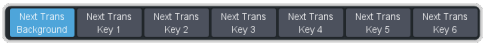
To Perform a Transition

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**.

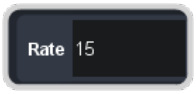
2. Click the **ME *X*** for the area you want to perform the transition on.
3. Select the video sources you want to take on-air on each bus. Background and keys are set up slightly differently but can be performed with the same transition.
   - **Background** — click **Trans** > **Preset** and select 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 18 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.

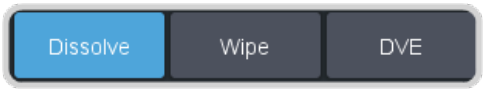


6. In the **Rate** field, enter the rate that you want the transition performed at. This is the speed, in frames, that it takes for the transition to complete. A Cut or manual fader transitions do not use the transition rate.
   - **Background** — enter a new ME transition rate, in frames, in the **Trans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



- **Dissolve** — perform a dissolve auto transition. Refer to *To Set Up a Dissolve* on page 29 for more information.
- **Wipe** — perform a wipe auto transition. Refer to *To Set Up a Wipe* on page 29 for more information.
- **DVE** — perform a DVE auto transition. Refer to *To Set Up a DVE Transition* on page 30 for more information.
- **Media** — perform a MediaWipe auto transition. Refer to *To Set Up a MediaWipe* on page 30 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 keyers 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)

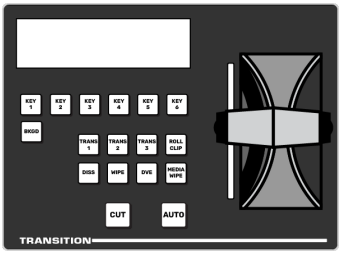
All transitions, with the exception of cuts on the background or key bus, have the same basic setup. The control panel offers physical buttons and mnemonics to setup and perform the transition. Some panels have a memory area that can be used to set the transition rates.

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 transition
   - **WIPE** — perform a wipe transition
   - **DVE** — perform a DVE transition
   - **MEDIA WIPE** — perform a MediaWipe transition

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

4. The display in the **Transition** area shows the current setting for the transition type. Tap one of theses 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 a 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)

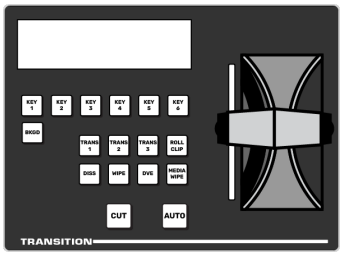
All transitions, with the exception of cuts on the background or key bus, have the same basic setup. The control panel offers physical buttons and mnemonics to setup and perform the transition.

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 transition
   - **WIPE** — perform a wipe transition
   - **DVE** — perform a DVE transition
   - **MEDIA WIPE** — perform a MediaWipe transition

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

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

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

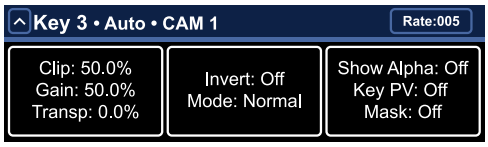
   - **Left** — the left button shows the current pattern for the wipe or DVE transition. Tap the button and swipe left or right on the display to select a different pattern. For a MediaWipe the button shows the name of the media item being used for the transition.
   - **Center** — the center button shows 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 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.*

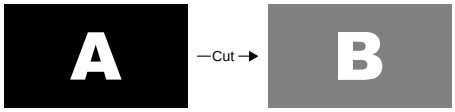
   - **Background** — press **ME RATE** and use the keypad to enter a new rate, in frames, and press **ENTER**.
   - **Key Only** — press **KEY RATE** and use the keypad to enter a new rate, in frames, and press **ENTER**.

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

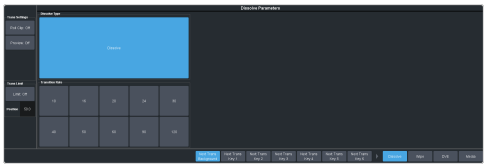
Dissolve Transitions

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



*Tip: Click one of the **Transition Rate** buttons to quickly select the rate for the transition.*

Wipe Transitions

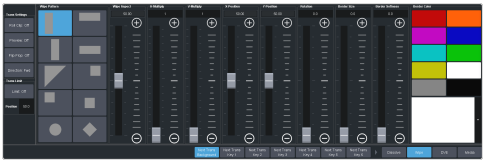
A Wipe is a gradual transition where one video signal is replaced with another according to a wipe pattern. In the example below, a line wipe is being used.

For Key transitions, the key is wiped on or off-air with the transition and the background remains untouched. The duration of a wipe transition depends on either the transition rate for the ME, or the rate at which the fader is moved.

To Set Up a Wipe

A wipe transition requires that you select a wipe pattern, set the direction and number/size of wipe pattern, as well as 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.
2. Click **Trans** > **Wipe**, or press **WIPE** in the **Transition** area on the control panel.



3. In the **Wipe Pattern** area, select the pattern that you want to use for the wipe.
4. Set up the wipe pattern as required.
   - **Wipe Aspect** — adjust the aspect ratio of the wipe pattern. Not all patterns can be adjusted.
   - **H-Multiply** — multiply the pattern horizontally.
   - **V-Multiply** — multiply the pattern vertically.
   - **X-Position** — position the pattern on the x-axis.
   - **Y-Position** — position the pattern on the y-axis.
   - **Rotation** — rotate the pattern. Not all pattern can be rotated.
   - **Border Size** — apply a border to the pattern and adjust the size. At size 0 the border is off.
   - **Border Softness** — apply softness to the border.
   - **Border Color** — select a color for the border. You can choose between the predefined colors or use the color picker to select a custom color.

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 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.

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.

MediaWipe Transitions

A MediaWipe allows you to use an animation to cover a transition. When the transition starts, the switcher plays the selected animation over top of the background and keys that are being transitioned. A MediaWipe can be used to cover a cut, dissolve, wipe, or DVE transition.

For a cut MediaWipe, the transition is performed when the cut point is reached. It is important to use a full-screen image in the animation at the cut point so that the cut is not visible on-air.

Keep the following in mind:

Keep the following in mind when performing MediaWipe:

- Although you can select a still image for a media transition, it is not recommended.
- Only Auto Transition should be used for Media transitions. Using the fader to perform the transition manually could result in jumps in the animation.
- The duration of the transition (Time) is set by the length of the animation and the play speed of the animation.
- You cannot perform a MediaWipe transition on a MiniME™ or .
- Only Media-Store channels 1 and 2 can be used for a MediaWipe.
- The MediaWipe can be set to occur between any of the keys or the background. When you set the layer to a specific key, the MediaWipe animation will cover that key, even if the key is not part of the transition. The animation plays over the key, but the key remains after the animation is finished. Any keys above the MediaWipe layer remain on top of the animation.

To Set Up a MediaWipe

A MediaWipe requires that you select the animation you want to use and then set up how you want to transition performed under the animation. This information is stored with the media item when you press save.

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

3. In the **Media Status** area, click a **Media *X*** button to select the channel you want to assign an animation to.
4. In the **Media Selection** area, click the thumbnail box for the animation you want to assign to the Media-Store channel.

> ***Tip:*** *Enter the media item number for a media item in the field below the thumbnail button assign that button to the media item.*

5. In the **Trans Layer** area, select where the MediaWipe will occur.
   - **Auto** — MediaWipe occurs over highest number key in the transition.
   - **Bkgd** — MediaWipe occurs over the background, but under all keys.
   - **Key1** — MediaWipe occurs over the background and key 1, but under remaining keys.
   - **Key2** — MediaWipe occurs over the background and key 1 and 2, but under remaining keys.

- **Key3** — MediaWipe occurs over the background and keys 1-3, but under key 4.
- **Key4** — MediaWipe occurs over the background and keys 1-4, but under key 5.
- **Key5** — MediaWipe occurs over the background and keys 1-5, but under key 6.
- **Key6** — MediaWipe occurs over the background and all keys.

Important: *If a key is above the MediaWipe layer and included in the MediaWipe transition, it will cut off-air with the transition. This is normally covered by the animation when the layer is above the key.*

6. Click **Edit Media Trans**.

7. In the **Media Over** area, select the type of transition you want to use under the MediaWipe. This also allows you to set up the transition parameters for wipes and DVE transitions.
8. Click **Trans Time** and use the slider or fader in the **Transition** area on the control panel to set the start and end of the transition under the MediaWipe.
   - (Cut only) Use the **Cut Frame** slider to select the point for the cut, or move the fader to the point in the animation where you want the cut to happen and click **Cut at Fader Position**.
   - Use the **Start Trans At** slider to select the point where the transition starts, or move the fader to the point in the animation where you want the transition to start and click **Start Trans at Fader Position**.
   - Use the **Trans Rate** slider to select the duration of the dissolve, or move the fader to the point where you want the transition to end and click **End Trans at Fader Position**.

   Tip: *If you select a negative start point for the transition, the transition will start first and then the animation will play after the start point duration has passed.*
9. Click **Thumbnail** and use the **Thumbnail** slider to select a point in the animation that you want to use as a thumbnail for the MediaWipe. You can also use the fader to select the position and click **Generate Thumbnail at Fader Position**.
10. Click **Save** to save the new setting to the selected media item.
11. Click **Exit Edit Media Trans**.

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.*

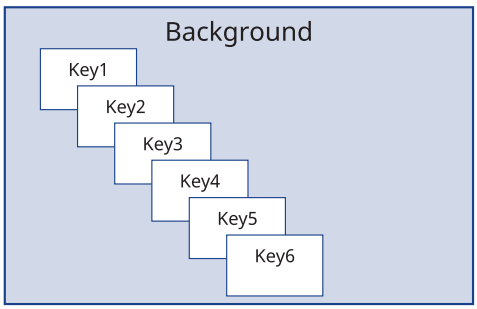


Figure 6: Key Priority

Tip: *The Key Preview (**KEY PV**) button allows you to temporarily force the program output of the selected keyer to the preview output of the switcher. The ME remains in the key preview state for as long as you hold the **KEY PV** button, and returns to normal as soon as you release the button. You can also double-press the **KEY PV** button to latch the ME in the key preview state until the button is pressed again.*

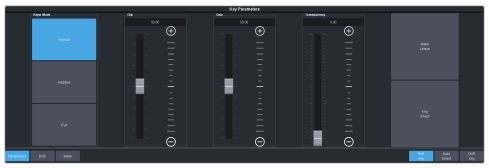
Self Keys

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



Tip: *Click **Show Alpha** to have the preview output of the current ME switch to the alpha signal that is being used by the selected keyer.*

Tip: *Click **Key Preview** to force the program output of the selected keyer to the preview output of the switcher.*

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

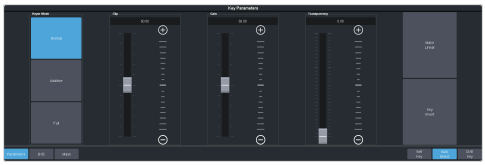
An Auto Select key is a key in which two video signals are required to make the key. The alpha is used to cut the hole in the video and the fill is used to fill the hole. These signals often originate from external devices such as character generators, external still stores, or other graphics systems.

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



*Tip: Click **Show Alpha** to have the preview output of the current ME switch to the alpha signal that is being used by the selected keyer.*

*Tip: Click **Key Preview** to force the program output of the selected keyer to the preview output of the switcher.*

*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).

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 key.

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.

1. Click **Navigation Menu** > **Live Assist** > **MEs** and select the ME and key that you want to set up.
2. Click **Key Video** and select the video signal you want to use for the key.
3. Click **DVE Key** > **Position / Crop**.

*Tip: Click **Show Alpha** to have the preview output of the current ME switch to the alpha signal that is being used by the selected keyer.*

*Tip: Click **Key Preview** to force the program output of the selected keyer to the preview output of the switcher.*

4. Use the **X-Position**, **Y-Position**, and **Size** sliders in the **Positioning** area to position and size the key.
5. Use the **Aspect** slider to adjust the aspect ratio of the key.
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 34 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 **X-Position**, **Y-Position**, and **Size** sliders in the **Positioning** area to position and size the key.
4. Use the **Aspect** slider to adjust the aspect ratio of the key.
5. Use the **Size** and **Softness** sliders in the **Edge Softness** area to apply softness to the edges of to the key.

   Refer to the section *To Apply a Border/Edge Softness to a DVE Key* on page 34 for information.
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.

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

3. Use the **Size** slider to turn on the border and adjust the size of the border around the key.
4. Select a default or custom color for the border (borders only).
   - **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.

Show Alpha

You can route the processed alpha for the selected keyer to the preview output for the ME you are working on.

- Select the keyer that you want to show the alpha for and press and hold the **SHOW ALPHA** button on the control panel. The preview output of the ME shows the processed alpha of the selected key until the button is released.
- Select the keyer that you want to show the alpha for and double-press the **SHOW ALPHA** button. The preview output of the ME shows the processed alpha of the selected key until the button is pressed again.
- Toggle the **Show Alpha** button on from Live Assist.

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.

A Box mask uses a simple box shape to mask out a portion of the key. All key types can be masked.

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.
2. Click **Mask** > **Box**.

3. Click **Mask Force** to force the area inside the mask region to the foreground.

> ***Note:*** *This option is not available on a DVE key.*

4. Click **Mask Invert** to invert the masked area with the unmasked area.
5. Set up the mask as required.

Parameter	Description
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.
Edge Softness	Apply softness to the edges of the mask region.

> ***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** > **MEs** 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 MEs. Up to 100 memory registers per ME can be stored and recalled on the switcher. Each of these memory registers can store as little as the information of one ME, or as much as the current state of the entire switcher, including all MEs, Aux Buses, and DVE settings.

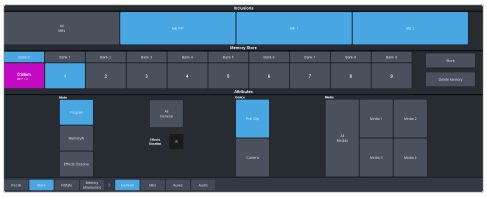
Storing Memories

When you store a memory, you are storing the complete state of that area. This includes the current state of all the components of the ME, including keyer settings, transition rates, wipe and pattern selections, and source selections.

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 ME that you want to store the memory for. When you include an ME in a memory, the current state of that ME 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 MEs selected in the **Inclusions**, the button glows purple and the MEs 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
     - Transition Progress

5. Set the memory attributes that you want recalled with the memory. Refer to *Memory Attributes* on page 37 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.
- Recalling a memory that includes a source assigned to a camera also recalls the shot stored in the memory for that camera if the **Camera** 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 37

Memory Attribute Color Coding

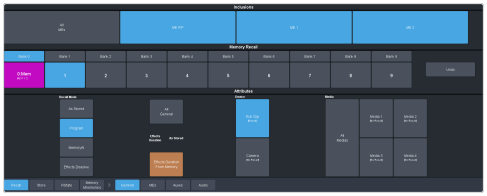
For a memory recall you can set individual attributes to be recalled or not, regardless of how they were stored. How the attribute is recalled is indicated by the color of the attribute button.

Color	Description
Key 1 Bus [As Stored]	**As Stored** — the memory attribute is recalled exactly as it was stored in the memory.
Key 1 Bus [Recall]	**Recall** — the memory attribute is recalled with the memory, even if the attribute was not set to be stored with the memory.
Key 1 Bus [No Recall]	**No Recall** — the memory attribute is not recalled with the memory, even is the attribute was set to be stored with the memory.

To Recall a Memory

How to recall a memory using DashBoard.

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



2. In the **Inclusions** area, select the MEs 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.

3. 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 MEs selected in the **Inclusions**, the button glows purple and the MEs that the register contains a memory for are listed below the memory number.*

4. 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 37 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**.

5. Set the memory attributes that you want recalled with the memory. Refer to *Memory Attributes* on page 37 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 audio faders, 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.

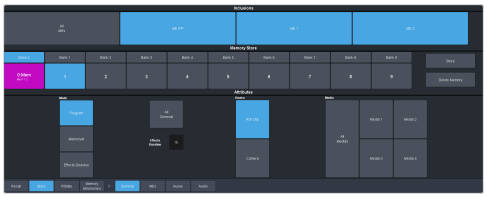
Memory attributes can be set both when the memory is stored, and when it is recalled. This allows you to store a set of attributes with a memory and then recall it as stored, or override the attributes stored in the memory and apply different ones when the memory is recalled. A memory attribute does 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 36.*

- **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** > **ME *X*** for the ME you want to set the attributes for. The attributes for each ME are separate and must be set for each ME you want to include in the memory.

- **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.)
- **Background Bus** — set how the sources selected on the background bus are recalled.
- **PST Bus** — set how the sources selected on the preset bus are recalled.
- **Shared Pattern** — set whether the settings for the shared Key Mask/Wash pattern generator is 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.

4. Click **Auxes**.

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

5. Click **Audio**.

Note: *If **Disable Audio Memories** is set to **On** (Click **Navigation Menu** > **Configuration** > **System** > **Global**) the audio memory attributes are disabled.*

- **Main** — set whether the configuration of the main audio mix is recalled.
- **Monitor** — set whether the configuration of the monitor audio mix is recalled.
- **Aux *X*** — set whether the configuration of the aux audio mix is recalled.

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)

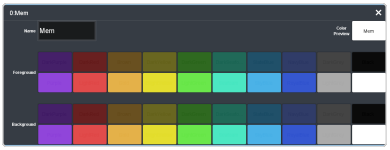
Assign custom mnemonic colors and names to individual memories. These are only visible on the TouchDrive panel when the user select bus is assigned to a memory bank,

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** > **Memory Mnemonics**.

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

Audio Mixer

The audio mixer node in DashBoard provides a graphical interface to all the audio sources and mixer layers. An audio channel must be routed to the switcher to be controllable by the audio mixer interface.

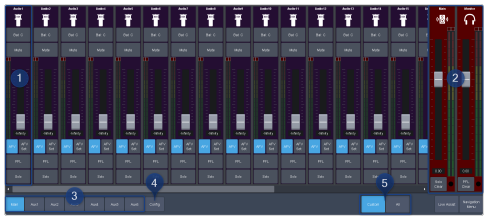
> ***Note:*** *The audio mixer interface is only available in DashBoard.*

Sample Rate Conversion

Integrated sample rate converters can convert audio coming in on NDI® streams to 48kHz.

Audio Mixer Interface

The audio mixer interface allows you to control the mix levels for all the incoming channels to a mix layer, as well as the main level for the output of that layer. The **Main** layer also has a monitor output and level.



1. **Audio Channel Strips** — Each strip controls the input from that audio channel. Strips are color coded for where the audio comes from. The controls available on each strip depend on how the audio fader is configured.
    - **Bal/Pan:** — adjust the balance or pan of the audio source. Whether Balance or Pan is applied to the audio source is determined automatically based on the audio source assigned to the fader.
        - **Balance** — the volume of the left and right stereo channel. For example, as you move the slider to the right the volume of the right channel is increased and the volume of the left channel is decreased.
        - **Pan** — the amount of the left or right input channel that is part of each channel before the mixer. For example, as you move the slider to the right you get more of the left channel in the right channel and the volume of the left channel decreases.
    - **Tone** — plays out a tone on the channel. This can help identify that a channel is being routed correctly in the mixer. The frequency of the test tone is set from the **Audio Mixer Configuration** page.

    > ***Tip:*** *Shortcut buttons are also provided on the **Balance** window for **NG/Ducking**, **EQ**, **Compression Limiter**, and **Config**. These buttons jump directly to the corresponding setup pages for the channel you are on.*

    - **Mute** — turn off the audio from this source. This does not change the level.
    - **Pre/Post** (Aux only) — select whether the audio source on an **Aux** layer is taken before the fader (**Pre**) or after (**Post**) the source fader. If an audio source is taken before the fader, the source fader has no impact on the level of the audio going out the aux layer.
    - **Fader** — adjust the level of the audio from the source. You can either move the fader manually or enter a value in the text field at the bottom of the slider.
    - **AFV** (Main only) — turn Audio Follow Video (AFV) on or off for this audio source. AFV is only available for audio that is associated with a video source. When AFV is on, the audio level is taken to the **AFV Set** level when the associated video source is taken on-air. The audio level is taken to **-infinity** when the video source is taken off-air.
    - **AFV Set** (Main only) — the maximum level that you want the audio to rise to when the associated video source is taken on-air. To set the AFV level, move the slider to the level you want the audio to be at and click **AFV Set**. The **AFV Set** button turns on when the slider is at the AFV set level.
    - **PFL** — turn Pre Fader Listen (PFL) on or off for this audio source. This is similar to solo in that it mutes all other sources, but the audio source is taken before the fader where solo takes the audio after the fader. PFL hears the raw audio level coming into the mixer and solo hears the audio at the level the fader is set to. When **PFL** is turned on for a source a warning light flashes red on the monitor strip.
    - **Solo** — mute all other audio sources but the one(s) you turn solo on for. This

allows you to quickly isolate a source without having to mute all the other sources. When **Solo** is turned on for a source a warning light flashes red on the main strip.

> ***Tip:*** *You can move a fader at any time to bring up an audio source even if the associated audio source is not on-air. This audio source will remain at the selected level until it is brought down again manually or is included in a transition with* ***AFV*** *turned on.*

2. **Main Level Controls** — The Main and Monitor strips control the levels of the output audio for the mixer. If you select an Aux output this strip changes to control the level for that output.
   - **Effects** — click the **Compressor Limiter** button to jump directly to the corresponding setup pages for the effect you are applying to the output.
   - **Monitor Source** (Monitor only) — select the audio source for the monitor output.
   - **Fader** — adjust the level of the audio output. You can either move the fader manually or enter a value in the text field at the bottom of the slider.
   - **PFL/Solo Clear** (Monitor only) — turn solo off for all sources on this audio layer.
3. **Layer Controls** — select the audio layer that you want to control. Each layer is assigned to an audio output.
4. **Configuration** — open the audio mixer configuration page.
5. **Included Channels** — select whether only the audio sources that have been assigned to each layer are shown (**Custom**), or whether all audio sources are shown (**All**).

Audio Mixer Setup

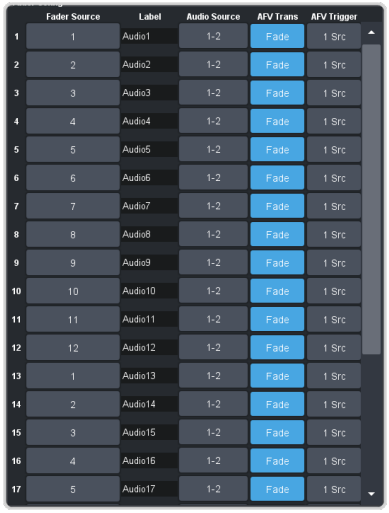
The audio mixer has up to 7 mixer layers that can be configured for which inputs are available to them and which physical outputs they are routed to.

The audio mixer supports up to 24 configurable faders. Each fader can be assigned any audio source in the mixer.

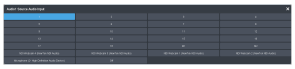
To Set Up Audio Faders

Assign audio sources to each fader in the mixer.

1. Click **Navigation Menu** > **Audio Mixer** > **Config**.



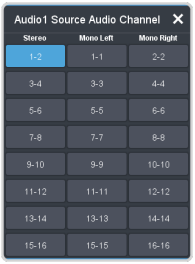
2. In the **Fader Config** area, click the **Fader Source** button for the fader you want to assign an audio source.



Assign an audio source to the fader or select **Off** to turn the audio fader off.

> ***Tip:*** *You can rename a fader by entering a new name in the* ***Label*** *field.*

3. Click the **Audio Source** button and click the stream pair that you want to use.



   - **Stereo** — select the stereo pair that you want to use.
   - **Mono Left** — select the left mono pair you want to use. The left channel audio is put on both the left and right channels.
   - **Mono Right** — select the right mono pair you want to use. The right channel audio is put on both the left and right channels.
4. Toggle the **AFV Trans** button to either have the audio sources fade in and out (**Fade**) or have a cut between the audio sources (**Cut**) when the associated video source is taken on or off-air.
   - **Fade** — the audio source level is taken down (going off-air) or up (going on-air) as the transition progresses. The rate of

the audio fade is tied to the length of the video transition.

- **Cut** — the audio source is cut on-air at the beginning of the transition (going on-air) or cut off-air at the end of the transition (going off-air).

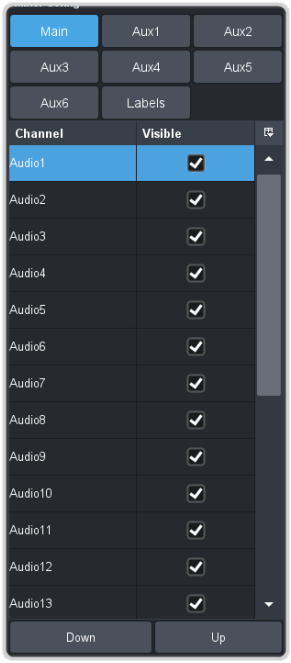
Note: *Each audio source is transitioned according to how the AFV transition is set. For example, if Audio 1 is set to Cut and Audio 2 is set to Fade and you perform a transition from Audio 1 to Audio 2, Audio 1 will remain on and cut off at the end of the transition and Audio 2 will fade in through the transition.*

5. Click the **AFV Trigger** button and select the video source(s) that you want the audio transitions to follow. By default, the audio follows the video it is embedded in. You can select multiple sources.

To Assign Audio Channels to Mix Layers

Select which audio sources are visible on each mixer layer.

1. Click **Navigation Menu** > **Audio Mixer** > **Config**.
2. In the **Mixer Config** area, click the mixer layer tab (**Main**, **Aux *X***) you want to show or hide audio faders on.



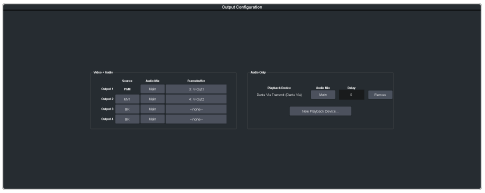
3. Uncheck the **Visible** box to hide a fader on the selected layer.
4. Change the order of the audio faders on the mixer layer by moving an audio source **Up** (left) or **Down** (right) in the list.

Tip: *To change the name of a mix layer, click **Label** and enter the new name in the field.*

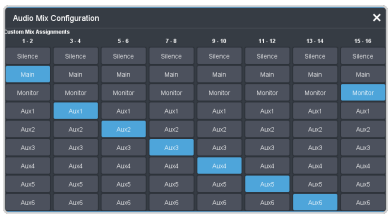
To Configure Audio Outputs

Audio signals can be embedded in video outputs or sent directly to playout devices.

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

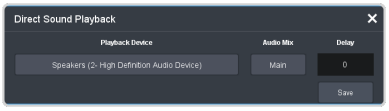


2. In the **Video + Audio** section, click the **Audio Mix** button for the video output you want to assign an audio source to and select the audio source.



- **Custom** — select which audio source will be embedded on each stereo pair.
  - **Silence** — embed silence.
  - **Main** — embed the main audio mix from the internal audio mixer.
  - **Monitor** — embed the monitor mix from the internal audio mixer.
  - **Aux *X*** — embed the audio from Aux Bus *X*.

3. In the **Audio Only** area, click **New Playback Device**.



4. Click the **Playback Device** button and select the audio playback device you want to use.
5. Click the **Audio Mix** button and select the audio source you want to assign.
6. In the **Delay** field, enter the amount of audio delay you want to ally to the output.

> ***Tip:*** *Delay can be used to compensate for the output framebuffer delay.*

7. Click **Save**.

> ***Tip:*** *You can delete a playback device by clicking the **Remove** button for the device.*

> ***Tip:*** *Click the **Audio Mix** button to select a different audio source for the playback device or enter a new value in the **Delay** field to edit an existing playback device.*

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. 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.
- **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 as well as audio mixer configurations.
- **Personality** — contains all the user interface settings, such as transition rates, that are stored under the **Personality** menu.

To Store a Set

Switcher Sets are stored to the local hard drive. Switcher Sets are stored to the local hard drive. A link to the folder is located under the Carbonite Code entry on the **Start** menu.

> ***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 from Windows®.*

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

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

2. Click a **Select Set** button for the set you want to store the switcher registers to.
3. Click a **Save** button to save that register to the selected set. 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.
4. Click **Yes**.

The registers are stored to the set on the hard drive.

> ***Tip:*** *You can export the switcher set to your local computer in the **Export Set From Frame** area. Click **Export As...** and navigate to the folder where you want to store the file and enter a name. Click **Save** and then **Export**.*

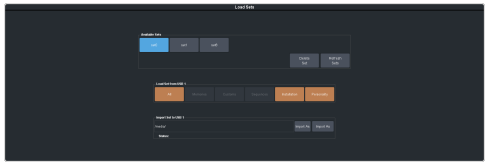
To Load a Set

Switcher Sets can only be loaded from the hard drive.

> ***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. 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 Frame** area. Click **Import From...** and navigate to the folder where the set is stored and click **Open**. Click **Import**.*

2. Click an **Available Set** button to select the set you want to load the switcher register from. If there is only one set stored then these buttons will not be present.
3. Click a **Load** 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.

4. Click **Yes**.

Media-Store

The MediaManager interface to the Media-Store allows you to load stills, animations, or audio files and make them available across all MEs.

Keep the following in mind:

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

- 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 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.
- If you delete or rename a media item on the USB while it is still inserted into the switcher, you must attempt to load the old file to clear that entry from the database.

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 the3-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:

- Media-Store audio is available to the audio mixer.
- 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 playout.
- 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

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: *Files names cannot contain symbols such as ! @ # & * ( ) / , ? ' " and cannot start with an underscore (_).*

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 in the file directory, 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.*

1. Click **Navigation Menu** > **Media** > **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.*

2. 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: *You can upload a media item from your computer to the selected folder on the storage device. In the **Still Upload** area click **Browse** and navigate to the media item you want to upload. Click **Open** and then **Upload File**.*

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

3. 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.*

   Tip: *You can remove items from the Media-Store cache to free up space. Refer to Media-Store Cache Manager for more information.*

Deleting a Media Item

Delete media items to remove them from the storage device and database.

To Delete A Media Item

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

1. Click **Navigation Menu** > **Media** > **MediaManager**
2. Navigate to the folder on the storage device 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.

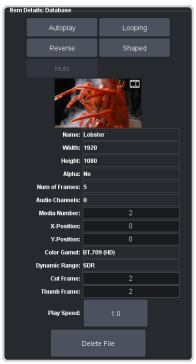
The label below the thumbnail of the media item shows the name of the file, the number of frames in the animation, and the media ID. In this example, the name of the media item is **Lobster**, it is **5** frames long, it is located on the USB (**U1**) and has a media ID of **001**.

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 item 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.
- **Y-Position** — set the vertical position of the media item.
- **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.

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 85 for information on available events.

> ***Tip:*** *For information on using the* ***State Attributes*** *tab, refer to Custom Control Events on page 86.*

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:

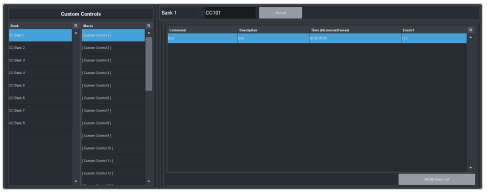
Keep the following in mind when recording custom controls:

- 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** button to select the bank that the custom control you want to record will be stored on.
3. Click a **Macro** button 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 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.

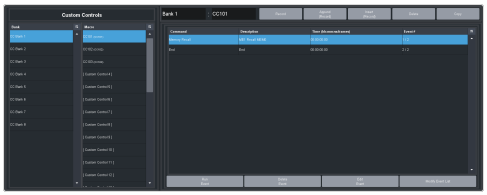
   > ***Tip:*** *Click* ***Cancel*** *if you do not want to store your events to the custom control.*

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 **Bank*X*** 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 85 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 the current 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 after the currently selected event
   - **Insert** — insert the current event after the currently selected event
   - **Record** — start recording a new custom control over the existing one
   - **Run Event** — run the currently selected event

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.
- When a custom control is held (at a Hold event), the button on the custom control bus flashes white.
- 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 supporter. 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.

Naming Custom Controls

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

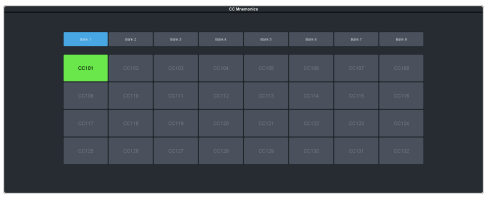
To Name a Custom Control

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

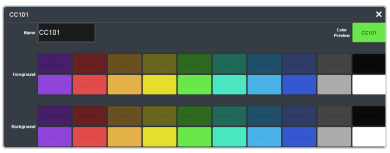
*Tip: You can also name a custom control and bank from the **Editor** page.*

Tip: Refer to General Settings on page 69 for information setting how the custom control names are shown on the control panel mnemonics.

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



2. Click **Bank *X*** to select the bank that the custom control you want to name is on.
3. Select how you want the mnemonics on each panel row to display the mnemonics for custom controls.
   - **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.
4. 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 Custom Controls

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.

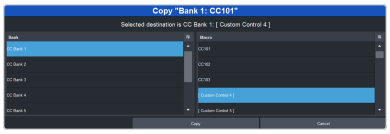
Copying and Pasting Custom Controls

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 though 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 a 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

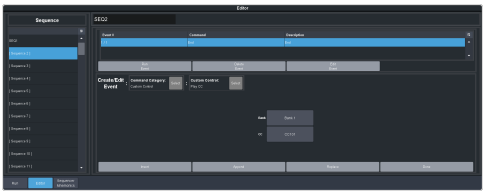
When you create a sequence, you record a series of events and special functions that are played back as you step through the sequence. The process for creating a new sequence and editing an existing one are the same, except when editing you have the option to insert events at different points in the 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 85 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.

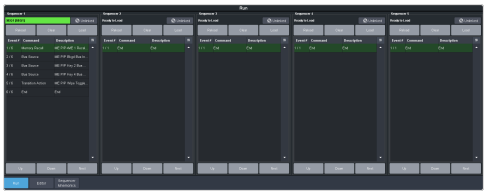
Loading and Running a Sequence

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

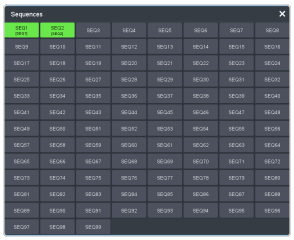
To Load a Sequence

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.

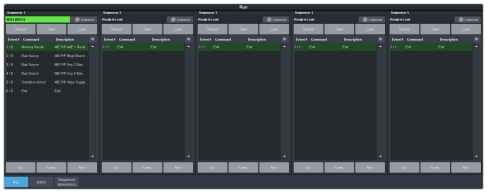
> ***Tip:*** *Click **Clear** to unload the sequence from the Sequencer.*

> ***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. • **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

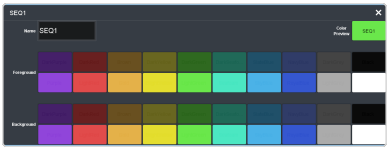
Each sequence can be given a unique name and mnemonic color. The name and color are shown on the Sequencer.

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.

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.

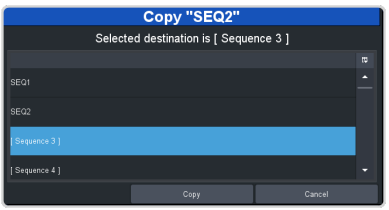
1. Click **Navigation Menu** > **Live Assist** > **Sequencer** > **Editor**.
2. Click the sequence that you want to delete.
3. Click **Delete**.
4. Click **Delete** to delete the sequence.

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.



5. Click **Copy**.

XPression Setup

Graphite CPC uses XPression as the main video engine for the switcher. Video inputs and output pass through XPression to be controlled by the switcher. XPression must be configured to offer the best performance for the switcher functionality.

> ***Note:*** *For detailed information on setting up XPression, refer to the documentation that came with XPression.*

When configuring XPression to operate with the switcher there are a number of setting that impact how the system performs or what inputs or outputs are available.

- **2x MultiSampling** — The Hardware Renderer (**Edit** > **Preferences** > **Hardware Renderer**) should have the **Anti Alias** set to **2x MultiSampling**. A hardware adapter must be selected to set the Anti Aliasing.
- **Video Inputs** — Video inputs to the switcher are XPression Internal Framebuffer outputs or NDI® streams. Framebuffers and NDI® outputs are set up from the **Inputs/Outputs** tab on the **Hardware Setup** dialog (**Edit** > **Hardware Setup**). NDI® streams can also be assigned directly to switcher inputs.
- **Video Outputs** — Video outputs from the switcher are assigned to XPression Virtual outputs or NDI® outputs. Virtual and NDI® outputs are set up from the **Inputs/Outputs** tab on the **Hardware Setup** dialog (**Edit** > **Hardware Setup**).

Network Setup

The switcher runs as a service on the Graphite CPC computer.

The switcher uses the following network ports:

- DashBoard Main — 5253 (5258 NAT)
- DashBoard Sat 1 — 5255 (5259 NAT)
- DashBoard Sat 2 — 5256 (5260 NAT)
- DashBoard SoftPanel — 5257 (5261 NAT)
- FTP (Graphite CPC) — 8821
- SFTP — 2222
- RossTalk — 7788
- RossTalk for XPression on Graphite CPC — 7790
- 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
- Web Server 1 — 80

DashBoard Network Settings

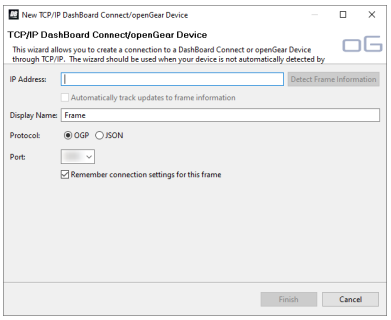
DashBoard can be connected to Graphite CPC manually. Once connected, DashBoard will remember the connection until you remove it or the IP address changes.

To Connect DashBoard to the Switcher

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

You need the IP address of the Graphite CPC computer 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 Graphite CPC computer. This is the computer that is running XPression and the switcher services.

   Tip: *If you are running DashBoard on the Graphite CPC computer, use* `localhost` *as the IP address and click* ***Detect Frame Information****. DashBoard will enter the internal IP address of the switcher.*

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.

   Note: *You can use a NAT gateway to connect to the switcher from a DashBoard computer on a different network. If you are connecting to the switcher through a NAT gateway, you must use the NAT ports instead of the regular ports.*

   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 (5258 NAT)
   - **Satellite 1** — 5255 (5259 NAT)
   - **Satellite 2** — 5256 (5260 NAT)
   - **Satellite 3/SoftPanel** — 5257 (5261 NAT)

   Tip: *Refer to MultiPanel on page 77 for information on setting up a MultiPanel system.*

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

System Access

Enable or disable system access and control methods such as FTP.

To Enable/Disable a System Access Method

1. Click **Navigation Menu** > **Configuration** > **System** > **Global**.
2. Configure the access method as required.

Method	Description
FTP	Disable FTP connections to the frame (**SFTP Only**). This prevents all FTP connections. If FTP is disabled SFTP is used. Refer to *FTP/SFTP Connection* for information on used FTP to connect to the frame.
Role Based Access Control	Ross Platform Manager allows for user authentication and role based access through DashBoard. Refer to *To Turn on Role Based Access Control for Ross Platform Manager* on page 13 for more information.
RossTalk	Disable RossTalk connections to the switcher. The switcher refuses connections on port 7788.

3. The switcher must be re-started for the change to be applied.

Video Inputs

External video sources come into the switcher through XPression or directly through an NDI® stream, and internal sources are generated internally from the switcher.

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.

Video Input Setup

Video inputs are separated into sources and internal. The sources are the video inputs coming from XPression or NDI® streams, and internal sources are generated internally from re-entries or follows, or from media generators.

Switcher inputs come from XPression Virtual Inputs and Internal Framebuffers, as well as external NDI® stream. You must set up the Virtual Inputs and Framebuffers on XPression before they are available to the switcher. The Virtual Inputs and Framebuffers can be added from the **Inputs/Outputs** tab on the **Hardware Setup** window (**Edit** > **Hardware Setup**). Refer to the documentation that came with your XPression system for information on setting up Virtual Inputs and Internal Framebuffers.

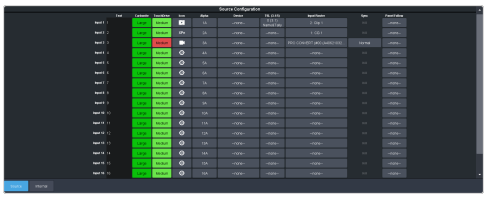
The NDI® converter and the DashBoard computer for the switcher should be on the same subnet.

Note: *The NDI® Access Manager from the NDI® Tools (ndi.video) may be required to be installed on the DashBoard computer for the NDI® stream to appear as an input on the switcher.*

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** > **Source**



The 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 as well as on menus. If TSL id is associated with the input, the switcher will use the router mnemonic name over the internal one. ***Tip:*** *A line break can be added to the name by entering a vertical bar, or pipe, symbol (|) where you want the break. For example, entering* `CAM|1` *would be* `CAM` *and then* `1` *on a separate line. Note that the* `|` *symbol does take up a character slot in the name.*
Carbonite **TouchDrive** **Icon**	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.
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 61 for information on setting up an auto key.
Device	Link an external device to a video input to allow remote control for that device.
TSL (3.1/5)	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 59 for information on assigning a TSL id to an input.
Input Router	Assign a video source to a switcher input. Refer to *Input Router* on page 61 for more information.
Sync	Select the source you want to use to synchronize the audio and video of the NDI® input. Refer to *NDI Sync* on page 62 for more information.

Setting	Description
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 62 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 61 for information on setting up an auto key.
Device	Link an external device to a video input to allow remote control for that device.
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 62 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. In DashBoard, the physical input is also shown below 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 can be 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** > **Source** 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 data.

The switcher accepts incoming TSL data on TCP port 5727.

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

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** button and select how the sources are tallied and which mnemonic name is use.
   - **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. In DashBoard, the physical input is also shown below 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 can be 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.*

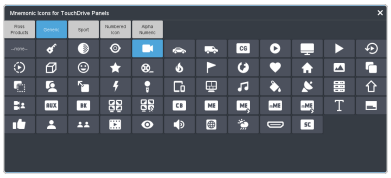
To Customize Mnemonics for TouchDrive

The TouchDrive control panels support RGB color mnemonics and icons.

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

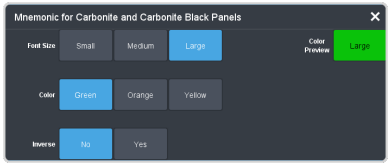
3. Click the **Icon** button for the source you want to customize the mnemonics for and click the icon you want to use.



To Customize Mnemonics for Carbonite Black

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

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

Setting	Description
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**).

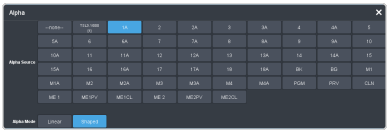
Auto Key Setup

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 keyer, the key alpha is automatically used.

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** > **Source** 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.

> ***Note:*** *Each input (**1**) has an associated alpha (**1A**). The alpha signal for a source is taken from the alpha information that in embedded in the video stream.*

- **--none--** — no alpha
- ***XX*** — assign the source on the selected input as a key alpha
- ***XX*A** — assign the alpha 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
- **PGM** — assign the main program output as the key alpha
- **PRV** — assign the main preview output as the key alpha
- **CLN** — assign the main clean feed output as the key alpha
- **ME*X*** — assign the program output of ME *X* as the key alpha
- **ME*X*PV** — assign the preview output of ME *X* as the key alpha
- **ME*X*CL** — assign the clean feed output of ME *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.

Input Router

The input router allows you to assign video sources from XPression or NDI® to switcher inputs.

XPression sources must be set up in XPression as virtual inputs or framebuffers. NDI® sources can be assigned directly to inputs.

To Route Sources to Switcher Inputs

Assign video sources to switcher inputs.

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

2. Click the **Input Router** button for the input you want to assign a source to.

- **Local** — sources generated by XPression (Clip Players and CGs).
- **External** — sources set up as virtual inputs or framebuffers in XPression.
- **NDI** — sources from NDI® streams.

NDI® Sync

Each NDI® source must be synchronised to ensure proper audio and video timing. This synchronization can be either to the normal timecode in the NDI® stream, or the timestamp of the sending or receiving system.

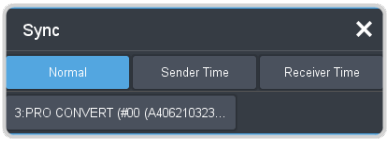
Tip: Visit ndi.video for more information on NDI® and the Tools available for managing NDI® streams.

To Set the NDI® Sync Source

Select the synchronization source you want to use for NDI® video sources.

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

2. Click the **Sync** button for the NDI® input you want to set the sync source for.



- **Normal** (recommended) — use the standard timecode in NDI®.
- **Sender Time** — use the timestamp in the NDI® stream. This is when the sending equipment submitted the data to the NDI® library.
- **Receiver Time** — use the timestamp of when XPression receives the NDI® data. This ignores the timestamp and timecode in the NDI® stream. This setting can be used when the NDI® timestamp and video/audio content don't match.
- **NDI Source** — use the timestamp/timecode of one of the other NDI® sources. This is useful if you know that the sources have the same timestamp/timecode.

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

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 on the same machine.

   - **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** > **Source** 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**.

Video Outputs

Any source in the switcher can be routed to one of the outputs. Each output is assigned to an XPression framebuffer.

Video Output Setup

You can assign a video source or bus to an output and each output is assigned to an XPression framebuffer.

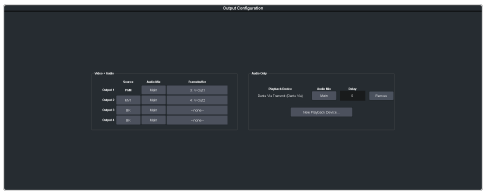
Switcher outputs are assigned to XPression Virtual Outputs from DashBoard. You must set up the Virtual Output on XPression before it is available to the switcher. The Virtual Outputs can be added from the **Inputs/Outputs** tab on the **Hardware Setup** window (**Edit** > **Hardware Setup**). Refer to the documentation that came with your XPression system for information on setting up Virtual Outputs.

To Set up a Video Output

Assign video sources or buses to the output and the output to a framebuffer. Some outputs are fixed to a specific video signal.

Tip: *Refer to To Configure Audio Outputs on page 42 for information on embedding audio sources in the video outputs.*

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

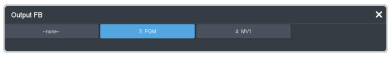


2. Click on the **Source** button for the output that you want to assign a source to.

Note: *Output 1 is locked to Program.*

3. Click the video source that you want to assign to the output.
   - **Physical** — the source inputs to the switcher.
     - ***XX*** — input *XX*
     - ***XX*A** — input *XX* alpha
   - **Internal** — the internally generated sources of the switcher (ME).
     - **BK** — black
     - **BG** — matte generator
     - **PGM** — main program output of the switcher
     - **PRV** — main preview output of the switcher
     - **CLN** — clean feed for main program of switcher
     - **ME*X*** — main program output of ME *X*
     - **ME*X*PV** — main preview output of ME *X*
     - **ME*X*CL** — clean feed output of ME *X*
   - **Media** — the Media-Store and MediaWipe sources.
     - **M*X*** — Media-Store video channel *X*
     - **M*X*A** — Media-Store alpha channel *X*
     - **ME*X*MW** — Media-Store video channel used for MediaWipe effects on ME *X*
     - **ME*X*MA** — Media-Store alpha channel used for MediaWipe effects on ME *X*
   - **Aux Follows** — the aux buses.
     - **AUX*XX*** — output of aux bus *XX*
   - **ME Follows** — the background, preset, and key buses of each ME.
     - **ME*X*Bg** — source on background of ME *X* (if installed)
     - **ME*X*Pst** — source on preset output of ME *X* (if installed)
     - **ME*X*K*Y*V** — key *Y* video of ME *X* (if installed)
     - **ME*X*K*Y*A** — key *Y* alpha of ME *X* (if installed)

4. Click on the **Framebuffer** button for the output that you want to assign an XPression framebuffer to.



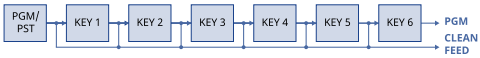
5. Click the virtual output from XPression that you want to assign to the output.

Important: *You must set up a Virtual Output in XPression for it to be available to the switcher. Refer to the documentation that came with your XPression for more information on setting up Virtual Output.*

FlexiClean Clean Feed

FlexiClean clean feed provides a second program output per ME that is derived from a

different point in the video layering than the standard program output. The clean feed can be set to come before any key in the video layering for an ME. This allows you to remove particular keys without affecting the primary program output.



Keep the following in mind:

Keep the following in mind when working with clean feeds:

- Recalling a memory register using MemoryAI may cause the clean feed output to look different than expected. MemoryAI allows key elements to be recalled to other keys than originally resulting in different key layering.

To Set Up Clean Feed

Clean Feed can be taken before any or all of the keyers on an ME. This allows you to have a secondary output of an ME without any branding for re-broadcast or archival.

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

2. Click an **ME *X* Clean Feed** button to select which key the clean feed for that ME is taken before.

   The selected key, and all keys after it, are not included in the clean feed output.

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 a 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.*

MultiViewer

The MultiViewer allows you to view multiple video sources from a single output. Video inputs or outputs on the switcher, including Program and Preview, can be assigned to any box on the MultiViewer.

A time-clock can be added as an overlay to the MultiViewer showing system time.

Keep the following in mind:

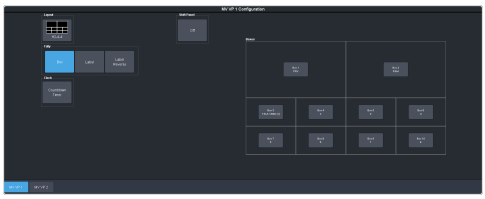
Keep the following in mind when working with a MultiViewer:

- Inputs are displayed with a red border when they are on-air. A green border is displayed when the input is selected on the Preset bus.

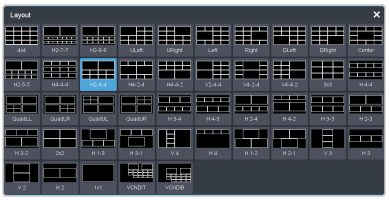
To Set Up a MultiViewer

Note: A MultiViewer must be assigned to a video output to be usable.

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



2. Click the **Layout** button and select the arrangement of the boxes that you want to use for the selected MultiViewer.



3. Use the **Transparency** slider to adjust the transparency of the background behind the source label for the selected MultiViewer.
4. Apply an overlay to the MultiViewer as follows:
   a) Click the **Overlay** button and click **On** to turn the overlay on, or **Off** to turn it off.

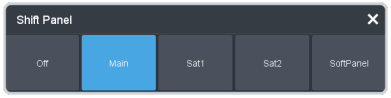
   Tip: The overlay can be used to overlay a camera shot of a shot-clock over the MultiViewer output.

   b) Click the **Source** button for the video source that you want to overlay over the MultiViewer output.
   c) Use the **Clip** slider to adjust the clipping of the overlay source.

   At **0%** the overlay source is completely opaque, and at **100%** it is completely transparent.

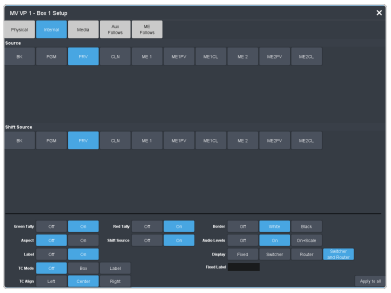
5. Click a **Tally** button to select how boxes on the MultiViewer are tallied.
   - **Box** — red or green border is shown around the outside of the MultiViewer box
   - **Label** — red or green boxes are shown inside the label area of the MultiViewer box
   - **Label Reverse** — the same as Label, but the placement of the tally boxes is swapped
6. Click **Shift Panel** and select the panel that you want the MultiViewer shift to be active on. When the **Shift** button is pressed on the assigned control panel the MultiViewer shows the shifted sources.

   Note: The shift function can only be assigned to a single panel at a time.



   Tip: When the MultiViewer Shift is active, the box buttons on the layout show the shifted source in brackets.

7. Click on one of the **Boxes** buttons and set up how that box appears on the MultiViewer in the standard and shifted configuration.



   - **Physical** — the source inputs to the switcher.
   - **Internal** — the internally generated sources of the switcher (ME).
   - **Media** — the Media-Store and MediaWipe sources.

- **Aux Follows** — the aux buses.
- **ME Follows** — the background, preset, and key buses of each ME.

8. Select how you want that box to appear on the MultiViewer.

*Tip: Click **Apply to All** to have the settings for the current box applied to all boxes in MultiViewer. This does not include what video source is assigned to the box.*

Option	Description
Green Tally	Turn the preview (green) tally for the box on or off.
Red Tally	Turn the program (red) tally for the box on or off.
Border	Turn the border around the box off (**Off**), white (**White**), or black (**Black**). When the border is turned off, some distortion may be visible around the edges of the box. Border is not available for ViewControl layouts.
Aspect	Turn aspect ratio markers for the box on (**Aspect**) or off (**Off**).
Shift Source	Turn the shifted source on (**On**) or off (**Off**) for the selected box. When the MultiViewer is shifted, the source in this box will not change.
Audio Levels	Turn on an audio meter for the audio associated with the video source in the selected box. Up to 16 audio channels can be shown.
Label	Turn source labels for the box off, or on in a selected position.
Display	Select what name is shows on the label. • **Fixed** — show only the text entered in the **Fixed Label** field as the name. • **Switcher** — show only the internal mnemonic name. • **Router** — show only the TSL UMD name. • **Switcher and Router** — show both the internal and TSL UMD name *Tip: If you select a source on an aux bus that does not have a TSL UMD name, the mnemonic name is used instead on the MultiViewer.*
TC Mode	Select how the timecode for the video in the selected box is shown. • **Off** — timecode is not shown. • **Box** — timecode is shown at the top or bottom of the box. Use the **TC Position** setting to select the position. • **Label** — timecode is shown in the label area of the box.
TC Align	Select whether the timecode is aligned to the **Left**, **Center**, or **Right** side of the box.
TC Position	If **Box** is selected for the **TC Mode**, select whether the timecode is aligned to the **Bottom** or **Top** of the box.

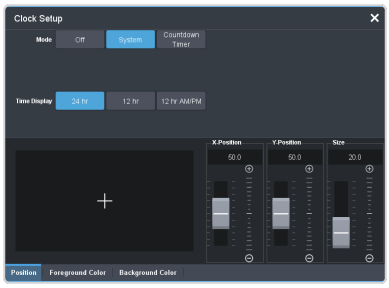
MultiViewer Clock

The clock can show the current system time or a countdown timer. The clock can only operate in a single mode at one time.

To Set Up a MultiViewer System Clock

The clock can show the current system time in 12-hour or 24-hour format (hh:mm:ss).

1. Click **Navigation Menu** > **Configuration** > **MultiViewers** and select the MultiViewer that you want to apply the clock overlay to.
2. Click **Clock** > **System**.



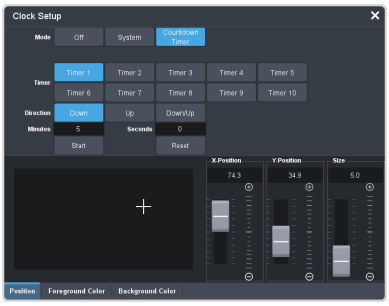
3. Click a **Time Display** button to set how the time is displayed.
   - **24 hr** — time is displayed in 24-hour format.
   - **12 hr** — time is displayed in 12-hour format without am/pm.
   - **12 hr AM/PM** — time is displayed in 12-hour format with am/pm.
4. Click the **Position** tab.
5. Use the **X Position**, **Y Position**, and **Size** sliders to position the clock and change the size.
6. Click the **Foreground Color** tab and select the color and transparency you want to use for the text of the clock.

7. Click the **Background Color** tab and select the color and transparency you want to use for the background of the clock.

To Set Up a MultiViewer Countdown Timer

The clock can show a countdown timer that will count down from a set time to 0, up from 0, or down from a set time to 0 and then up.

1. Click **Navigation Menu** > **Configuration** > **MultiViewers** and select the MultiViewer that you want to apply the clock overlay to.
2. Click **Clock** > **Countdown Timer**.



3. Click a **Timer** button to select which countdown timer you want to use. Each timer can be set up differently.

> ***Note:*** *Timer are shared across all MultiViewers.*

4. Click a **Direction** button to select the direction that the times counts in.
   - **Down** — enter a time in the **Minutes** and **Seconds** field that the timer will start counting down from. The timer stops when it reaches 0.
   - **Up** — the timer counts up from 0 until stopped.
   - **Down/Up** — enter a time in the **Minutes** and **Seconds** field that the timer will start counting down from. The timer counts down to 0 and then starts counting up until stopped.

> ***Tip:*** *You can manually control the countdown timer using the **Start** and **Reset** buttons, or assign these commands to custom controls.*

5. Click the **Position** tab.
6. Use the **X Position**, **Y Position**, and **Size** sliders to position the clock and change the size.
7. Click the **Foreground Color** tab and select the color and transparency you want to use for the text of the clock.

8. Click the **Background Color** tab and select the color and transparency you want to use for the background of the clock.

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**, or **Transition** for the transition settings.

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. • **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.
Flex Button Brightness	Set the overall brightness (0-100%) of all the buttons on the Flex Control modules of the TD control panels. 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. • **Frames** — transition rates are in frames. • **Seconds** — transition rates are in seconds.
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. • **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** button either be latching (toggle) or momentary (off). When in toggle mode, you can press the 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. • **Off** — the **Shift** button only stays on as long as you are holding it down. • **Toggle** — when you press the **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. • **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. • **Off** — pressing the memory number again does not undo the recall. • **On** — pressing the memory number again undoes the last memory recall.

Transition Settings

- Click **Navigation Menu** > **Personality** > **Transition**.

Personality	Description
Transition	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. • **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 transtiion.
Next Transition	Have the next transition buttons on the control panel latch when pressed (toggle). This setting is unique to the control panel. • **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.
Remove Keys	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. • **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	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. • **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	Set what action is performed when the auto transition button is pressed again during a transition. This setting is for the frame. • **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.
Key Auto Trans Double Press	Set what action is performed when the independent key auto transition button is pressed again during a transition. This setting is for the frame. • **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	Set whether the roll clip feature is always on, or must be turned on manually. This setting is for the frame. • **User** — the roll clip feature must be turned on manually. • **Force** — the roll clip feature is always on.

Color Schemes

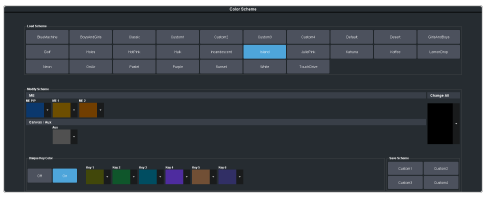
The buttons on the control panel glow with different colors specific to their state, function, and assignment. This color can be selected from a list of pre-set color schemes, or a custom color can be selected. Up to four (4) custom color schemes can be saved on the switcher.

To Select a Color Scheme

ME, 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**.



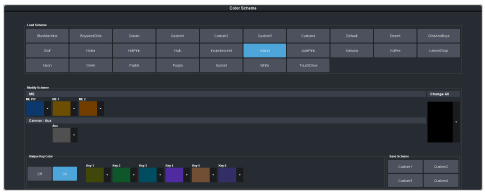
2. In the **Load Scheme** area, select the color scheme you want to use on the control panel.

> ***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.

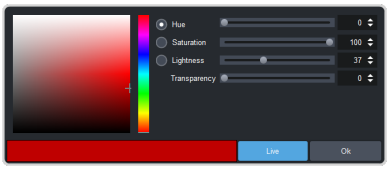
1. Click **Navigation Menu** > **Personality** > **Color Scheme**.



2. In the **Modify Scheme** area, click the ME 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 ME.
   - **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**.

Bus Maps

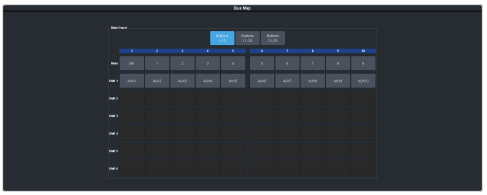
Any video input can be mapped to any source button on the control panel using a bus map. Each source button can have two inputs assigned (a standard source and a shifted source).

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. Click the source button that you want to assign a source to and select the source you want to assign to that button.

> ***Tip:*** *You must assign a button to the Shift function to be able to access those source buttons on the control panel.*

User Buttons

These buttons can be assigned to a number of functions, including ME 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 ME or aux bus you can press and hold the button to be able to select a different ME or aux bus. If the user button is assigned to an Aux, it will allow you to select a different Aux.

To Set A User Button

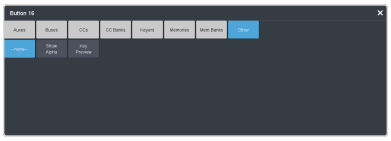
1. Click **Navigation Menu** > **Personality** > **User Select**.

   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.*

   Note: *The functions that are available on your switcher may differ depending on the options you have installed and how your switcher is configured.*

ViewControl

The ViewControl interface through DashBoard allows you to coordinate the control over the Carbonite switcher and other devices through custom controls and transitions.

Keep the following in mind:

Keep the following in mind when working with ViewControl:

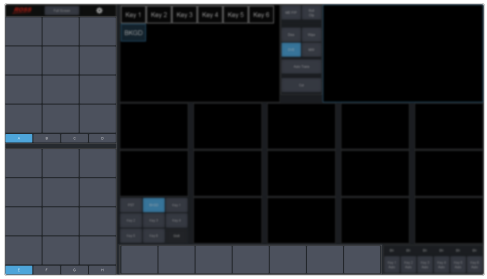
- ViewControl requires DashBoard 5.1, or later.
- Only the sources assigned to the MultiViewer boxes are available for direct selection. Custom controls can be used to select other sources.
- The MultiViewer Shift must be set to the main or satellite panel that the DashBoard you are using for ViewControl is assigned to.

ViewControl Overview

The ViewControl interface provides quick access to a number of custom control buttons as well as the transition functionality of the switcher.

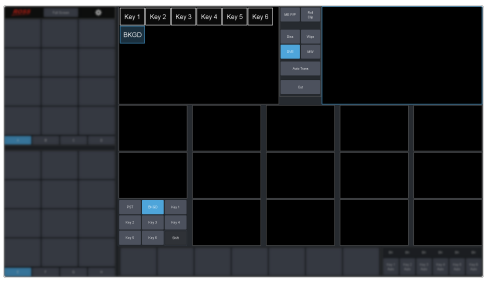
Custom Control Buttons

The custom control buttons can be assigned to any custom control on the switcher and given unique names and icons. The button groups on the left (shown below) are organized into groups, or tabs. The buttons along the bottom are constant across all tabs.



Bus Selection Buttons

The bus selection buttons allow you to select the different buses on different ME and MiniME™ outputs of the switcher.



To Select a Source on a Bus

1. Click **ME P/P** at the top and click the ME or MiniME™ that you want to select a bus on.

   Tip: *If the Shift feature is active the Program and Preview boxes will switch to the selected ME or MiniME™.*

2. Click the bus you want to select a source on at the lower left.
3. Click on the source (MultiViewer box) that you want to assign to the selected bus.

   Tip: *Click **Shift** to access the sources on the shifted MultiViewer boxes.*

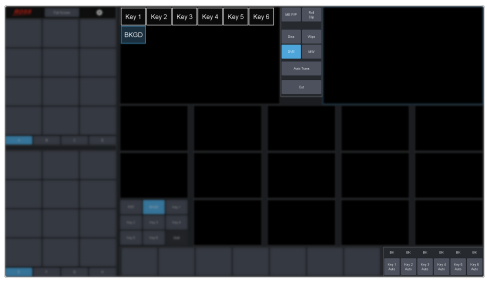
Keyer Transition Buttons

The Keyer Transition buttons allow you to perform a cut or dissolve of the keys on the selected ME or MiniME™. These buttons act the same as the Keyer Transition Buttons on the control panel.

Tip: *The Cut buttons tallies when a key is on. Red when the key is on-air or blue when it is on for an ME or MiniME™ that isn't on-air.*

Transition Buttons

The transition buttons allow you to select what is included in the next transition, what type of transition is to be performed, and perform the transition. These buttons function similarly to the buttons in the Transition Area on the control panel.



To Perform a Transition

1. Click the **ME P/P** button and select the ME or MiniME™ that you want to perform the transition on.
2. Click the **BKGD** and **Key** button over the Preview box to select what to include in the next transition.
3. Click **Diss**, **Wipe**, or **DVE** to select the type of transition to perform.

   Tip: *Live Assist will follow the selection to allow you to set the transition parameters.*

4. Click **Auto** to perform the transition, or **Cut** to perform a cut transition.

Custom Control Button Setup

When you assign a custom control to a button, you can give that button a unique name and assign an icon to it. The images for the icons must be on a USB drive in the frame when you assign them. Once assigned the icons are stored in the frame and the USB can be removed. Each of the tabs can be named.

The configuration of the tabs and custom control assignment to buttons are stored with the switcher personality settings.

To Set up the Custom Control Buttons

You must assign custom controls from the switcher to the buttons on ViewControl.

If you want to assign icons to the custom control buttons, you must have the images you want to use for the icons stored on a USB drive installed in the frame. After the images have been assigned you can remove the USB drive.

1. Click the ⚙ button.

2. Press the custom control button that you want to set up.
3. Enter a name for the button in the **Button Name** field.

   Tip: *You can change the name of a tab by selecting a button on the tab and then entering a new name in the **Group Name** field.*

4. Click the **Bank** button and select the number of the bank you want to select a custom control from.
5. Click the **CC *X*** button and select the number of the custom control you want to assign to the button.
6. Navigate the files on the USB drive and click the image you want to assign as the icon for the button.

   Tip: *Press **Default Icon** to switch back to the default icon.*

7. Set up additional custom control buttons as required.
8. Press **Save** when you are done setting up custom control buttons.

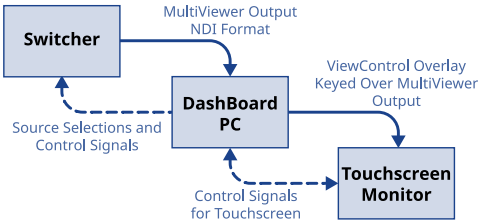
ViewControl Setup

ViewControl is set up to use a direct NDI® stream on specific MultiViewer layouts.

Connecting ViewControl over NDI®

ViewControl combines an overlay image from DashBoard with a custom MultiViewer output from the switcher to generate the interface.

Important: *ViewControl over NDI® is not supported on computers running the macOS® operating system at this time.*



The following connections are required for ViewControl:

- Set the output resolution of the DashBoard computer to either 1920×1080 or 1280×720.
- Set up a MultiViewer to use one of the ViewControl layouts that support NDI®.
- Connect the USB cable for the touchscreen to the DashBoard computer.

Keep the following in mind:

Keep the following in mind when working with NDI®:

- The MultiViewer must be set to **VCNDIT** or **VCNDIB** for the NDI® settings to be available in ViewControl.
- The NDI® Access Manager from the NDI® Tools (*ndi.video*) may be required for the NDI® stream to appear in ViewControl.
- If required, the NDI® Access Manager must be installed on the DashBoard computer running ViewControl.
- When using the NDI® Access Manager you will need to add the IP address of the NDI® converter to the **Remote Sources** tab.
- You may have to restart the DashBoard computer running the NDI® Access Manager before the NDI® stream becomes visible to ViewControl.

To Set Up the MultiViewer for ViewControl over NDI®

ViewControl integrates the MultiViewer output of the switcher with a graphical overlay from DashBoard to provide live video in the ViewControl windows. The MultiViewer must be configured to properly align the video for the buttons on ViewControl.

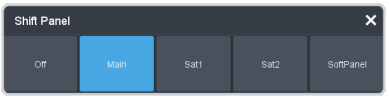
1. Click **Navigation Menu** > **Configuration** > **MultiViewers** and click **MV1**.

2. Click the **Layout** button and select a ViewControl layout for NDI®.
   - **VCNDIT** — (**ViewControl Top**) places the boxes at the top of the screen.
   - **VCNDIB** — (**ViewControl Bottom**) places the boxes at the bottom of the screen.

   Tip: *You must select one of the NDI® layouts to be able to select the NDI® input stream.*

3. Click **Shift Panel** and select the panel that you will be operating ViewControl from. When the **Shift** button is pressed on the assigned control panel the MultiViewer shows the shifted sources.

   Note: *The shift function must be active for the PRV and PGM boxes on the MultiViewer to switch to the active ME.*



   Tip: *When the MultiViewer Shift is active, the box buttons on the layout show the shifted source in brackets.*

4. Click on one of the **Boxes** buttons and set up how that box appears on the MultiViewer.
5. Click on the source you want to select for the box.

   Note: *The large box on the left should always be assigned to **PV** and the large box on the right assigned to **PGM**.*

To Set Up ViewControl for NDI®

Select the NDI® stream that is coming from the switcher that has the MultiViewer video stream.

Note: *Refer to the documentation that came with your SDI to NDI® Converter for information on setting it up.*

1. Click the ⚙ button.

2. Click **Update NDI Source List** and click the NDI® source that has the MultiViewer output from the switcher.

Note: *The MultiViewer must be set to one of the NDI® layouts for the NDI® source selection to be available.*

3. Click an **NDI Quality** button to select if you want to use the normal (**High**) or low bandwidth (**Low**) stream.
4. Click **Save**.

MultiPanel

Each frame supports up to 3 independent control connections (Main, Satellite 1, Satellite 2). Each connection can be from a control panel, DashBoard, or a combination of the two. Add 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 (5258 NAT)
- **Satellite 1** — 5255 (5259 NAT)
- **Satellite 2** — 5256 (5260 NAT)
- **SoftPanel** — 5257 (5261 NAT)

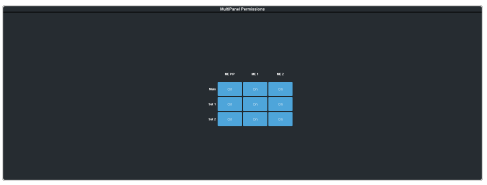
Keep the following in mind:

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 that the control panel does not have permission for.

To Set Up MultiPanel Permissions

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 ME.*

MIDI Controller

The MIDI controller is used to control the RAVE audio mixer. The controller connects to the switcher through DashBoard.

For these procedures you will need the following files. They are available with these instructions in your download.

- **Common:**
  - `Mapping Wizard.grid`
- **Generic:**
  - `Settings-MIDI_####_generic.controller`
- **X-TOUCH:**
  - `X-TOUCH-map###.controller`
  - `X-TOUCH-LayerA###.bin`
  - `X-TOUCH-LayerB###.bin`

Important: *The revision numbers (####) of the* `.controller` *and* `.bin` *files must match for the X-TOUCH.*

MIDI and MMA are trademarks of the MIDI Manufacturers Association.

Compatibility

The MIDI controller and bin files are only compatible with specific versions of switcher software.

X-TOUCH Files	Switcher Software
Version 1: • X-TOUCH-map001.controller • X-TOUCH-LayerA001.bin • X-TOUCH-LayerB001.bin	Graphite 1.2
Version 2: • X-TOUCH-map002.controller • X-TOUCH-LayerA002.bin • X-TOUCH-LayerB002.bin	Graphite 2.0
Version 3: • X-TOUCH-map003.controller • X-TOUCH-LayerA003.bin • X-TOUCH-LayerB003.bin	Graphite 2.2
Version 4: • X-TOUCH-map004.controller • X-TOUCH-LayerA004.bin • X-TOUCH-LayerB004.bin	Graphite 2.3
Version 5: • X-TOUCH-map005.controller • X-TOUCH-LayerA005.bin • X-TOUCH-LayerB005.bin	Graphite 2.4 or higher Ultra 4.0 or higher Graphite CPC 1.0 or higher

To Connect a MIDI Controller to DashBoard

DashBoard allows you to configure the MIDI controller connected to RAVE audio mixer.

Important: *Refer to the documentation that came with your MIDI controller for proper handling and setup instructions.*

1. Plug the MIDI controller into one of the USB ports on Graphite CPC or the DashBoard computer connected to the switcher.
2. Launch DashBoard.
3. Click **File** > **New** > **Other**.
4. Click **Input Devices** > **New MIDI Controller**.
5. Click **Next**
6. Enter the settings for the MIDI Controller:
   - **Display Name** — enter a name for the controller
   - **Slot** — select **1**
   - **Controller** — select your MIDI controller from the list.
7. Click **Finish**.
   The MIDI controller appears in the **Tree View**.

To Configure the MIDI Controller Interface

A custom DashBoard panel is used to automatically do all the mapping for the MIDI controller.

You will need the `Mapping Wizard.grid` file that came with your software.

1. Launch DashBoard.
2. Click **File** > **Open File**, navigate to the `Mapping Wizard.grid` file and click **Open**.
3. In the **MIDI** field, select your MIDI controller.
4. In the **Graphite** field, select **Audio Mixer**.

5. Click **DO EVERYTHING FOR ME**.

To Map MIDI Controller Buttons to Functions

The map file associates RAVE audio mixer functions to buttons on the MIDI controller.

A generic map file is provided on the product resources disk, or you can customize your own. Refer to *MIDI Device OID List* on page 130 for a list of commands.

1. Double-click the **MIDI Controller** node in the DashBoard Tree View.
2. In the **Device Classes** list, select **audiomixer**.

   *Tip: If **audiomixer** is not in the list, click **Add** and name the new device **audiomixer**.*

3. Click **Load** > **Browse** and select the `Settings-MIDI_v###_Generic.controller` file.
4. Click **Open** > **Restore**.

X-TOUCH COMPACT Configuration

Configure the X-TOUCH COMPACT to control the audio mixer through DashBoard.

To Configure the Button Layers on the X-TOUCH COMPACT

The Layer A and Layer B files assign the controls on the X-TOUCH COMPACT to MIDI Commands

Default layer files are provided on the product resources disk, or you can customize your own.

Note: The layer files must match the map file that you load in DashBoard.

1. Connect the X-TOUCH COMPACT to the server.
2. Launch the **X-TOUCH Editor** application that came with your controller.
3. Click the **GLOBAL** tab.
4. Click **LOAD** in the **PRESETS ON COMPUTER** area and click **Yes**.
5. Select the `X-TOUCH-LayerA####.bin` file and click **Open**.
6. Wait for the file to be loaded and click **Close** on the success dialog box.
7. Click **Dump A** in the **TO HARDWARE** area.
8. Click **Yes** to start the upload and **Close** on the success dialog box.
9. Repeat these steps to load the `X-TOUCH-LayerB####.bin` file and click **Dump B**.

To Map Buttons to Functions

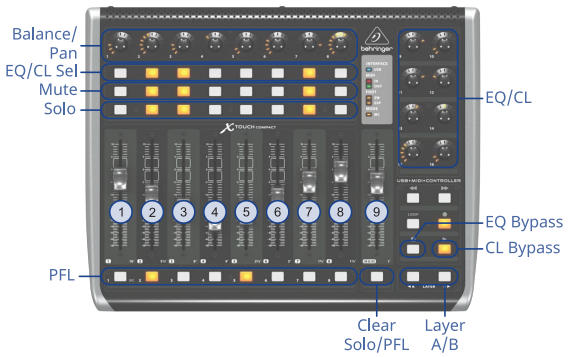
The map file associates RAVE audio mixer functions to buttons on the X-TOUCH COMPACT.

A default map file is provided on the product resources disk, or you can customize your own.

1. Double-click the **MIDI Controller** node in the DashBoard Tree View.
2. Click **Load** > **Browse** and select the `X-TOUCH-map####.controller` file.
3. Click **Open** > **Restore**.

Default X-TOUCH COMPACT Mapping

The default mapping comes from the map and layer files that are included on the Product Resources disk.



*Note: The **Clear** button clears the Solo selections on Layer A and the PFL selections on Layer B.*

Fader Mapping

The faders are mapped differently on the A and B layer.

Fader	Layer A	Layer B
1	Audio 1	Audio 9
2	Audio 2	Audio 10
3	Audio 3	Audio 11
4	Audio 4	Audio 12
5	Audio 5	Audio 13
6	Audio 6	Audio 14
7	Audio 7	Audio 15
8	Audio 8	Audio 16
9	MAIN	MONITOR

Note: *The default assignment is based on the default fader configuration. If you change what is assigned to any of the assignable faders (Audio X) used on the default map, the audio sources those faders control also changes. For example, if you assign* ***Audio 5*** *to SDI 5, the stripe on the midi panel will control SDI 5 audio instead of the PC input.*

Custom Mapping

You can change the current mapping of functions to the buttons, knobs, and sliders on the X-TOUCH COMPACT. The DashBoard controller lists all the inputs on the MIDI controller and allows you to assign a DashBoard OID to them.

Important: *Although you can assign different functions to the knobs, sliders, and buttons on the panel, some functions may require changes to the layers in the* ***X-TOUCH Editor*** *application. Refer to the documentation that came with your X-TOUCH COMPACT for more information.*

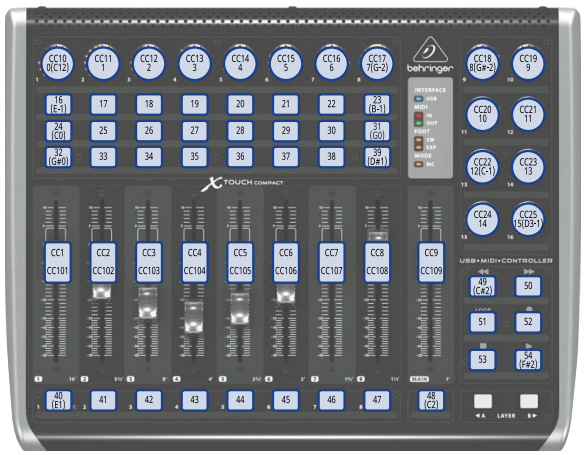


Figure 7: Layer A Button IDs

Note: *Buttons CC27 and CC26 on Layer A are the Foot Switch and Expression Pedal connections on the back of the panel.*

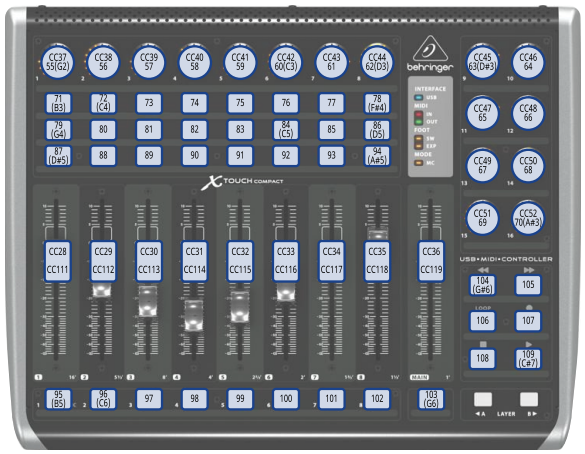


Figure 8: Layer B Button IDs

Note: *Buttons CC64 and CC63 on Layer B are the Foot Switch and Expression Pedal connections on the back of the panel.*

For the CC knobs and sliders, the top number is the action when the knob or slider is turned or moved, and the second is when it is pushed or touched.

Refer to the documentation that came with your Behringer X-TOUCH COMPACT for more information on how MIDI IDs are assigned to buttons.

To Create a Custom Button Mapping

You can assign any audio mixer function to a button, slider, or knob on the X-TOUCH COMPACT

1. Double-click the **MIDI Controller** node in the DashBoard Tree View.

   Tip: *If you want to start with a blank list, click* ***Load*** *>* ***Factory Default****.*

   Note: *The* ***Value*** *column shows the current data coming from the connected MIDI controller.*

2. In the **Continuous Controllers** table, set up the knobs and sliders you want to use on the panel. The numbers for these has the **CC** prefix.
   a) Locate the **ID** for the knob or slider you want to assign a function to. Refer to *Custom Mapping* on page 80 for a diagram to locate the knob or slider.
   b) In the **Mapped OID** field, enter the OID for the function you want to assign to the knob or slider. Refer to *MIDI Device OID List* on page 130 for a list of OIDs.
   c) Click the **Transformation** list and select the type of action for the knob or slider. Sliders should be set to **Volume dB** and knobs to **Middle Point**.
      - **Disabled** — the knob or slider is disabled.
      - **Volume dB** — the slider is configured for volume control.
      - **Middle Point** — the knob is configured for a 200 point range value (-100 to 100).

   d) Change the default parameters for your knob or slider as required.
      - **Name** — enter a new custom name for the control.
      - **Min** — the minimum value for the selected function. This is the value

returned when the knob is at the counter-clockwise stop, or the slider it at the bottom stop.
    - **Max** — the maximum value for the selected function. This is the value returned when the knob is at the clockwise stop, or the slider it at the top stop.
    - **Sensitivity** — the number of points between the minimum value and the maximum value.
    - **Speed %** — 100% (other values not supported at this time)
    - **Invert** — invert the min and max stops of the knob or slider.

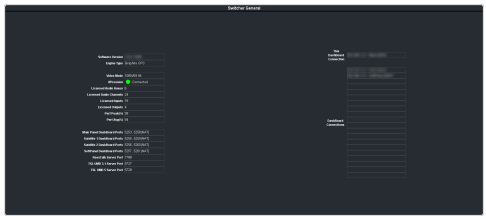
3. In the **Buttons** table, set up the buttons you want to use on the panel.
    a) Locate the **ID** for the button you want to assign a function to. Refer to *Custom Mapping* on page 80 for a diagram to locate the buttons.
    b) In the **Mapped OID** field, enter the OID for the function you want to assign to the button. Refer to *MIDI Device OID List* on page 130 for a list of OIDs.
    c) Click the **Action** list and select the type of action for the button.
        - **OFF** — (not supported at this time)
        - **Stateless** — basic button functionality with no special state.
        - **GPI** — (not supported at this time)
        - **Set Value** — (not supported at this time)
        - **Toggle** — (not supported at this time)
        - **Increment** — (not supported at this time)
    d) Change the default parameters for your button as required.
        - **Name** — enter a new custom name for the control.
        - **Value (Off)** — 0 (other values not supported at this time)
        - **Value (On)** — 1 (other values not supported at this time)
        - **Min** — 0 (other values not supported at this time)
        - **Max** — 1 (other values not supported at this time)
        - **Hold** — (not supported at this time)
4. Click the **Force Panel Refresh** list and select the how often DashBoard syncs with the panel.
5. Click **Save**.
6. Click **Save** again and select a file name and location for your custom controller file.
7. Click **Save**.
8. Click **Done**.

Diagnostics

Switcher status menus and error conditions, installed options, calibration, diagnostics, and logs.

Switcher Status

The status menu shows information for various components of the frame.



- **Software Version** — the current version of the software running on the switcher.
- **Engine Type** — the model of frame.
- **Video Mode** — the video format that the switcher is operating in.
- **XPression** — the status of the connection to XPression
- **Licensed Audio Auxes** — the number of audio aux layers that have been licensed.
- **Licensed Audio Channels** — the number of audio channels that have been licensed.
- **Licensed Inputs** — the number of video inputs that have been licensed.
- **Licensed Outputs** — the number of video outputs that have been licensed.
- **Perf Peak (%)** — the peak level reached on the system performance meter.
- **Perf Avg (%)** — the average level reached on the system performance meter.
- **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 3.1 UMD commands.
- **TSL UMD 5 Server Port** — the network port that the switcher is listening on for TSL 5 UMD commands.
- **This DashBoard Connection** — the IP address of the DashBoard system you are currently using to connect to the switcher. The text after the IP address indicates whether the connection is as Main, Satellite, or SoftPanel and the port being used.
- **DashBoard Connections** — the IP addresses of all the DashBoard connections to the switcher, including panels. The text after the IP address indicates whether the connection is as Main, Satellite, or SoftPanel and the port being used. Refer to *MultiPanel* on page 77 for more information.

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

- **Panel Connections** — The role, IP address, and model of all the physical panels connected to the switcher.

Switcher Reset

If required, the switcher can be reset to return it to a user-defined default setting (RState). A reset can be performed for the entire switcher, or individual components, such as keys.

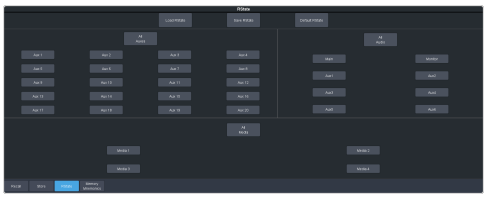
Custom Reset Settings (RState)

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 **Aux*X*** and audio layers to select the buses and audio outputs that are reset with a switcher reset.

   Note: *If **Disable Audio Memories** is set to **On** (Click **Navigation Menu** > **Configuration** > **System** > **Global**) the audio memory 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**.

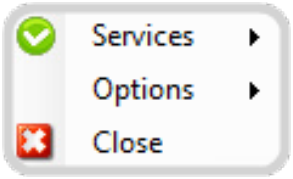
   Tip: *Click **Default RState** to load the default RState settings.*

Switcher Status Monitor

The switcher, and supporting systems, run as a services on the XPression computer. These services can be started or stopped, depending on your needs, but are required for the switcher to operate.

The **Status Monitor** is located in the **Notification Area** and allows you to access the various services used by the switcher.

Tip: *Right-click on the **Status Monitor** (C) icon to open the Status Monitor.*



- **Services** — Allows you to manually Stop, Start, or Restart a service or all services at once. The following services are used by the system.
  - Switcher
  - Panel
  - Webserver
  - FTPServer
  - OGPserver
- **Options**
  - **Startup With Windows** — Allows the switcher to start up when Windows® starts up. You can start the switcher manually using the **Carbonite Status Monitor** application.
  - **Use Default HTTP Port** — The system is set to allow access on the default port (5253 (5258 NAT)) when connecting to the switcher from DashBoard. If you disable the port you will not be able to connect to the switcher from DashBoard.
- **Close** — Close the Status Monitor. This shuts down the switcher. You can start the switcher manually using the **Carbonite Status Monitor** application.

Specifications

Switcher resources, video specifications, power rating, and port pinouts.

Specifications

The information is this section is subject to change without notice.

Switcher Resources

The number of resources specific to your switcher depends on the options installed.

Resource	Graphite CPC 8	Graphite CPC 12	Graphite CPC 18
Audio			
Audio Source Inputs	8	12	18
Aux Layers	2	4	6
Video			
2D DVE Channels	6		
Custom Controls	256 (8 Banks × 32 CCs)		
Keyers per ME	6		
Matte Generators per ME	1		
Memories per ME	100		
MEs (Max)	3		
MultiViewer Boxes	16		
MultiViewer Layouts	45		
MultiViewer Outputs	2		
Aux Buses	20		
Video Inputs	8	12	18
Video Outputs	2	2	4

Custom Control Events

The Custom Control editor in DashBoard allows you to add or edit events in custom controls.

Operations Custom Controls

(BKGD DVE)

Event	Location	Description
BKGD DVE Size	**Switcher** > **Bkgd DVE** > **Bkgd DVE Crop Param**	Set the size of the background DVE for the selected . **1.** Click the **ME** button for the Canvas 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.** 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**	Set the X-Position of the background DVE for the selected . **1.** Click the **ME** button for the Canvas that you want to perform the event on. **2.** Click the **Parameter** button and select **X-Position** **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 position on the X-axis you want to apply to the Background DVE.
BKGD DVE Y-Position	**Switcher** > **Bkgd DVE** > **Bkgd DVE Crop Param**	Set the Y-Position of the background DVE for the selected . **1.** Click the **ME** button for the Canvas that you want to perform the event on. **2.** Click the **Parameter** button and select **Y-Position** **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 position on the Y-axis you want to apply to the Background DVE.
BKGD DVE Aspect	**Switcher** > **Bkgd DVE** > **Bkgd DVE Crop Param**	Set the aspect ratio of the background DVE for the selected . **1.** Click the **ME** button for the Canvas 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.** In the **Value (%)** field, enter the aspect ratio you want to apply to the Background DVE.
BKGD DVE Border Size	**Switcher** > **Bkgd DVE** > **Bkgd DVE Crop Param**	Set the size of the border of the background DVE for the selected . **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.

Event	Location	Description
BKGD DVE Edge Softness	**Switcher** > **Bkgd DVE** > **Bkgd DVE Crop Param**	Set the softness of the edge of the background DVE for the selected . **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**	Set the amount of cropping you want to apply to each edge of the background DVE for the selected . **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**	Stop a particular custom control. The specific custom control is set when the cancel is inserted. **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**	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. **1.** Enter the length of the pause in the **Pause (fr)** field.
Play CC	**Custom Control** > **Play CC**	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. **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**	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. **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.

Event	Location	Description
Resume All CCs	**Custom Control** > **Resume All**	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.
State, Insert	**Custom Control** > **State**	Embed the state of the switcher into a custom control. A state in a custom control behaves just like a memory. **1.** Click **State Attributes** and select the inclusions and attributes 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**	Perform a key only transition for the selected area. **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. • **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**	Set or reset the keyer transition rate of the selected area. **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.
DVE Key Aspect	**Switcher** > **Keyer** > **DVE Param**	Select the aspect ratio for the DVE key on the selected key for the selected ME. **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.

Event	Location	Description
DVE Key Border Color (HSL)	**Switcher** > **Keyer** > **DVE Border Color (HSL)**	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. **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)**	Select the preset color you want to apply to the border of the DVE key of the selected key for the selected area. **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**	Select the size of border for the DVE key on the selected key for the selected ME. **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.
DVE Key Crop (Bottom Edge)	**Switcher** > **Keyer** > **DVE Param**	Select the amount of cropping on the bottom edge of the DVE key on the selected key for the selected ME. **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**	Select the amount of cropping on both horizontal or vertical edges of the DVE key of the selected key for the selected area. **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.

Event	Location	Description
DVE Key Crop (Left Edge)	**Switcher** > **Keyer** > **DVE Param**	Select the amount of cropping on the left edge of the DVE key on the selected key for the selected ME. **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**	Select the amount of cropping on the right edge of the DVE key on the selected key for the selected ME. **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**	Select the amount of cropping on the top edge of the DVE key on the selected key for the selected ME. **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.
DVE Key Edge Softness	**Switcher** > **Keyer** > **DVE Param**	Select the amount of softness to apply to the edge of the DVE key on the selected key for the selected ME. **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**	Select the size of the DVE key on the selected key for the selected ME. **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.

Event	Location	Description
DVE Key X-Position	**Switcher** > **Keyer** > **DVE Param**	Select the x-axis position of the DVE key on the selected key for the selected ME. **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**	Select the y-axis position for the DVE key on the selected key for the selected ME. **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**	Assign DVE resources (Fly) to the selected key for the selected area. **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**	Make the selected key linear on the selected area. **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.
Key Active	**Switcher** > **Keyer** > **Keyer Active**	Transition a key (or include it in the next transition) on or off-air for the selected area. **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**	Copy the contents of one key to another key the same or a different area. **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.

Event	Location	Description
Key Invert	**Switcher** > **Keyer** > **Keyer Invert**	Turn the key invert feature on or off for the selected key for the selected area. **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**	Select the mode for the selected key for the selected area. **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**	Reset the parameters for the selected key for the selected area. **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**	Select clip, gain, and transparency settings for the selected key for the selected area. **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.
Key Swap	**Switcher** > **Keyer** > **Keyer Swap**	Swap the contents of one key with another key the same or a different area. **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**	Assign a key type for a key for the selected area. **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, Force	**Switcher** > **Keyer** > **Mask Force**	Apply a mask to the selected key for the selected ME. **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 force the area inside the mask region to the foreground (**On**) or not (**Off**).

Event	Location	Description
Mask, Invert	**Switcher** > **Keyer** > **Mask Invert**	Invert the mask of the selected key for the selected ME. **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**	Select the position for the bottom edge of the box mask on the selected key for the selected ME. **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**	Select the amount of softness to apply to the edges of the box mask on the selected key for the selected ME. **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**	Select the position for the left edge of the box mask on the selected key for the selected ME. **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.
Mask (Box) — Right Edge Position	**Switcher** > **Keyer** > **Box Mask Param**	Select the position for the right edge of the box mask on the selected key for the selected ME. **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**	Select the size of the box mask on the selected key for the selected ME. **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.

Event	Location	Description
Mask (Box) — Top Edge Position	**Switcher** > **Keyer** > **Box Mask Param**	Select the position for the top edge of the box mask on the selected key for the selected ME. **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**	Select the x-axis position of the box mask on the selected key for the selected ME. **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**	Select the y-axis position for the box mask on the selected key for the selected ME. **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**	Select the aspect ratio for the pattern mask for the selected ME. **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.
Mask (Pattern) — Border Size	**Switcher** > **Keyer** > **Pattern Mask Param**	Select the size of border for the pattern mask on the selected key for the selected ME. **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**	Select the amount of softness to apply to the edge of the mask for the selected ME. **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.

Event	Location	Description
Mask (Pattern) — Horizontal Multiplication	**Switcher** > **Keyer** > **Pattern Mask Param**	Select the number of times you want to multiply the pattern mask horizontally for the selected ME. **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**	Reset the mask for the selected ME. **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**	Select the rotation for the pattern mask for the selected ME. **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**	Select the size of the pattern mask for the selected ME. **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**	Select the number of times you want to multiply the pattern mask vertically for the selected ME. **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.
Mask (Pattern) — X-Position	**Switcher** > **Keyer** > **Pattern Mask Param**	Select the x-axis position of the pattern mask for the selected ME. **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**	Select the y-axis position for the pattern mask for the selected ME. **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.

Event	Location	Description
Mask	**Switcher** > **Keyer** > **Mask Type**	Apply a mask to the selected key for the selected ME. **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**	Select whether an animation plays automatically when taken on-air for the selected Media-Store channel. **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**	Select whether to include the alpha with a capture on the selected Media -Store channel. **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**	Select the alpha source you want to capture for the selected Media-Store channel. **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.
Capture	**Switcher** > **Media-Store** > **Capture**	Capture a still to the selected Media-Store channel. **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**	Select the capture mode for the selected Media-Store channel. **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**	Select the video source you want to capture for the selected Media-Store channel. **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.

Event	Location	Description
Clear Channel	**Switcher** > **Media-Store** > **Channel Action**	Clear the selected Media-Store channel. **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**	Select the point, in frames, from the start of the media item that the MediaWipe background cut occurs for the selected Media-Store channel. **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**	Delete a captured still. **1.** Enter the number of the capture file you want to delete in the **Capture File** field.
Media-Store Load	**Switcher** > **Media-Store** > **Load**	Load a media item into the selected Media-Store channel. **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.
Looping	**Switcher** > **Media-Store** > **Attributes**	Select whether an animation will loop at the end for the selected Media-Store channel. **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**	Move to a specific frame in the media item for the selected Media-Store channel. **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.

Event	Location	Description
Mute	**Switcher** > **Media-Store** > **Attributes**	Select whether the associated audio is turned on or off during playback for the selected Media-Store channel. **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**	Start an animation playing for the selected Media-Store channel. **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**	Select the speed for an animation to play at on the selected Media-Store channel. **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**	Reset the selected Media-Store channel. **1.** Click the **MediaStore Channel** button for the Media-Store channel you want to perform the event on. **2.** Click **Reset Media**.
Reverse	**Switcher** > **Media-Store** > **Attributes**	Select whether an animation plays in reverse for the selected Media-Store channel. **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**	Rewind an animation to the first frame for the selected Media-Store channel. **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**	Select whether the alpha of the media item should be shaped or ushaped for the selected Media-Store channel. **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**).

Event	Location	Description
Thumb Frame	**Switcher** > **Media-Store** > **Attributes**	Select the point, in frames, from the start of the animation that is used as the thumbnail for the media item. **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**	Select the x-axis position for the media item for the selected Media-Store channel. **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**	Select the y-axis position for the media item for the selected Media-Store channel. **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. **1.** Click the **ME/Matte** button for the ME or aux that you want to perform the event on. **2.** 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. **1.** Click the **ME/Matte** button for the ME or aux that you want to perform the event on. **2.** Click the **Matte** button and select **Matte**. **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.
Matte Color (Preset)	>**Switcher** > **Matte** > **Matte Color (Preset)**	Select a preset matte color for the selected ME or aux. **1.** Click the **Matte** button and select **Matte**. **2.** Click the **Color** button and select the color you want to use.

Event	Location	Description
Wash Color (HSL)	>**Switcher** > **Matte** > **Wash Color (HSL)**	Select the custom matte color for the selected ME or aux. Each component of the HSL color must be inserted individually. This is the second color of the wash, the first color is set from the matte color. **1.** Click the **ME** button for the ME that you want to perform the event on. **2.** Click the **Matte** button and select **Wash**. **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.
Wash Color (Preset)	>**Switcher** > **Matte** > **Wash Color (Preset)**	Select a preset wash color for the selected ME. This is the second color of the wash, the first color is set from the matte color. **1.** Click the **ME** button for the ME that you want to perform the event on. **2.** Click the **Matte** button and select **Wash**. **3.** Click the **Color** button and select the color you want to use.
Wash Color Reset	>**Switcher** > **Matte** > **Wash Color Reset**	Reset the matte color for the selected ME. This is the second color of the wash, the first color is set from the matte color. **1.** Click the **ME** button for the ME that you want to perform the event on. **2.** Click the **Matte** button and select **Wash**.
Wash Generator — Disable	>**Switcher** > **Matte** > **Wash Enabled Reset**	Disable the wash generator for the selected ME. **1.** Click the **ME** button for the ME that you want to perform the event on.
Wash Generator — Enable	>**Switcher** > **Matte** > **Wash Enabled**	Enable the wash generator for the selected ME. **1.** Click the **ME** button for the ME that you want to perform the event on. **2.** Click the **Wash** button and select whether the wash generator is enabled (**On**) or not (**Off**).

Sequencer

Event	Location	Description
Load	**Sequencer** > **Load**	Load a sequence into the selected Sequencer. **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.** 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. **1.** 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. **1.** 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. **1.** Click the **Sequencer** button and select the Sequencer you want to perform the event on.

Event	Location	Description
Up	**Sequencer** > **Up**	Move the next event highlight (green) up one event in the sequence loaded into the selected Sequencer. **1.** 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. **1.** Click the **Sequencer** button and select the Sequencer you want to perform the event on.
Link	**Sequencer** > **Link**	Turn Link on or off for the selected Sequencer. **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**	Assign a control panel row to an ME, MiniME™, or on a particular panel. **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 Copy	**Switcher** > **Bus Source Copy**	Copy the contents of one bus to another. **1.** Click the **Source ME** button and select the location containing the bus you want to copy from. **2.** Click the **Source Bus/Keyer** button and select the bus that you want to copy. **3.** Click the **Destination ME** button and select the location containing the bus you want to copy to. **4.** Click the **Dest. Bus/Keyer** button and select the bus that you want to copy to.
Bus Source Select	**Switcher** > **Bus Source**	Select a source on the selected bus for the selected area. **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.

Event	Location	Description
ME Copy	**Switcher** > **ME Copy**	Copy the contents of one area to another. **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**	Recall a memory for the selected area. **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**	Load the custom reset settings for the selected area. **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**	Recall a memory for the selected area. **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**	Set up a dissolve transition with a single custom control event. **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. • **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.

Event	Location	Description
Transition Action - Wipe	**Switcher** > **Transition** > **Transition Action**	Set up a wipe transition with a single custom control event. **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. • **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.
Transition Action - DVE	**Switcher** > **Transition** > **Transition Action**	Set up a DVE wipe transition with a single custom control event. **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. • **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.

Event	Location	Description
Transition Action - MediaWipe	**Switcher** > **Transition** > **Transition Action**	Set up a MediaWipe transition with a single custom control event. **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. • **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**	Performs an auto transition on the selected area. **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**.
Cut	**Switcher** > **Transition** > **ME Trans Action**	Performs a cut on the selected ME. **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. **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. **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**).

Event	Location	Description
DVE Wipe Direction	**Switcher** > **Transition** > **DVE Wipe Direction**	Select the direction for the DVE wipe transition of the selected ME. **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. **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. **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. **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. **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**).
MediaWipe — Direction	**Switcher** > **Transition** > **DVE Wipe Direction**	Select the direction for the MediaWipe transition of the selected ME. **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**	Select which Media-Store channel will be used for the MediaWipe transition of the selected ME. **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**	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. **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**.

Event	Location	Description
MediaWipe Trans Start Point, Set	**Switcher** > **Transition** > **ME Trans Action**	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. **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**	Sets the starting point for a MediaWipe transition for the selected area. **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**	Select the type of dissolve transition (WhiteFlash or Dissolve) you want to use. **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**	Set or reset the background transition rate of the selected area. **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**	Select the transition type for a background transition of the selected area. **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)**	Select color for the WhiteFlash transition. **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.
ME WhiteFlash Offset	**Switcher** > **Transition** > **ME Trans Value**	Select time for the offset of the WhiteFlash transition. **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**	Select time for the onset of the WhiteFlash transition. **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**	Resets the transition area of the selected area. **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**.

Event	Location	Description
Roll Clip	**Switcher** > **Transition** > **Roll Clip**	Turn the Roll Clip feature on or off for the selected area. **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**	Configures the next transition area of the selected area to take all keys off-air with the next transition. **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**	Applies the pre-delay to the transition. **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**	Select the elements to be included in the next transition of the selected area. **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**	Turn the transition limit feature on or off for the selected area. **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**	Resets the transition limit point of the selected area. **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**.
Trans Limit — Set	**Switcher** > **Transition** > **ME Trans Action**	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. **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 Limit**.
Trans Limit — Value	**Switcher** > **Transition** > **ME Trans Value**	Select the limit point for the trans limit of the selected area. **1.** Click the **ME** button and select the area that you want to perform the event on. **2.** Click **Trans Limit**. **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 point in the transition that you want to place the trans limit in the **Value (%)** field.

Event	Location	Description
Wipe Direction (Flip-Flop)	**Switcher** > **Transition** > **Wipe Direction**	Select whether the wipe reverses direction for every second transition of the selected ME. **1.** Click the **ME** button for the ME that you want to perform the event on. **2.** Click the **Pattern** button and select **Wipe**. **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 **Flip-Flip**. **5.** Click the **Value** button and select whether Flip-Flop is on (**On**) or off (**Off**).
Wipe Direction	**Switcher** > **Transition** > **Wipe Direction**	Select the direction for the wipe transition of the selected ME. **1.** Click the **ME** button for the ME that you want to perform the event on. **2.** Click the **Pattern** button and select **Wipe**. **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 **Direction**. **5.** 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**	Select the aspect ratio for the wipe pattern you want to use for a wipe transition of the selected ME. **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.
Wipe Pattern — Border Color (HSL)	**Switcher** > **Transition** > **Wipe Border Color (HSL)**	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. **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 **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.
Wipe Pattern — Border Color (Preset)	**Switcher** > **Transition** > **Wipe Border Color (Preset)**	Select the preset color you want to apply to the border of the pattern for the wipe transition of the selected ME. **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**	Select the size of border for the wipe pattern you want to use for a wipe transition of the selected ME. **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.

Event	Location	Description
Wipe Pattern — Edge Softness	**Switcher** > **Transition** > **Wipe Param**	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. **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**	Select the number of times you want to multiply the wipe pattern horizontally for the wipe transition of the selected ME. **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**	Select the pattern you want to use for a wipe transition of the selected ME. **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**	Select the rotation for the wipe pattern you want to use for a wipe transition of the selected ME. **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**	Select the size for the wipe pattern you want to use for a wipe transition of the selected ME. **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.
Wipe Pattern — Vertical Multiplication	**Switcher** > **Transition** > **Wipe Param**	Select the number of times you want to multiply the wipe pattern vertically for the wipe transition of the selected ME. **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
Wipe Pattern — X-Position	**Switcher** > **Transition** > **Wipe Param**	Select the x-axis position for the wipe pattern you want to use for a wipe transition of the selected ME. **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**	Select the y-axis position for the wipe pattern you want to use for a wipe transition of the selected ME. **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**	Reset the parameters or direction and flip-flop for the wipe transition of the selected ME. **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.

Personality Custom Controls

Personality

Event	Location	Description
Personality — Auto Remove Key	**Switcher Personality** > **Auto Remove Key**	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. **1.** 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. **2.** 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**	Select how the switcher reacts when the **KEY AUTO** button is pressed during a transition. **1.** Click the **Second Auto** button and select how the switcher reacts to pressing the button during a transition. • **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

Event	Location	Description
Personality — Auto Trans Second Press (ME)	**Switcher Personality** > **ME Auto Trans 2nd Press**	Select how the switcher reacts when the **AUTO TRANS** button is pressed during a transition. **1.** Click the **Second Auto** button and select how the switcher reacts to pressing the button during a transition. • **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**	Have the transition area reset to a default background dissolve after each transition. **1.** 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. **2.** Click the **Value** button and select whether the personality option is on (**On**) or not (**Off**).
Personality — Roll Clip	**Switcher Personality** > **Roll Clip Force**	Select whether the Roll Clip functionality is always on. **1.** Click the **ME** button and select the area that you want to adjust the roll clip for. **2.** 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.

Event	Location	Description
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.
Color Corrector Gamma Offset	**Switcher Installation** > **Proc Amp/Color Corrector** > **Color Corrector Param**	Adjust the Gamma 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 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. **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. **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.

Event	Location	Description
Color Corrector Reset	**Switcher Installation** > **Proc Amp/Color Corrector** > **Color Corrector Reset**	Reset the values for the selected color corrector. **1.**
Color Gamut, Input	**Switcher Installation** > **Input** > **Input Color Gamut**	Select the color gamut that video input is in. **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. **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. **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. **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. **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.
Dynamic Range, Output	**Switcher Installation** > **Output** > **Output Dynamic Range**	Select the dynamic range that a video output is in. **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**	Select the dynamic range that the switcher will operate in. **1.** Click a **Dynamic Range** button to select the dynamic range that the switcher operates in.
Frame Delay	**Switcher Installation** > **Input** > **Frame Delay**	Assign a Frame Delay to an input. **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**	Assign an FSFC to an input BNC. This event is only available if you have fewer FSFCs than inputs. **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**	Assign an FSFC to an input. **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.

Event	Location	Description
Input FSFC Framing	**Switcher Installation** > **Input** > **Input Framing**	Select the video framing that is applied to the converted video input. **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.
Input Scaler Mode (UHDTV1 Only)	**Switcher Installation** > **Input** > **Input Scaler Mode**	Select the format of the video input to be converted. **1.** Click the **Input** button and select the input BNC that you want to assign the scaler to. **2.** Click the **Value** button and select the format of the video input.
Layer Mode	**Switcher Installation** > **ME** > **ME Layer Mode**	Select whether external layer mode is active for the selected ME. **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 a **Value** button to select whether external layer mode is on (**On**) or not (**Off**).
ME Follow	**Switcher Installation** > **ME** > **ME Follow**	Select whether an ME or MiniME™ follows another ME or MiniME™. **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**	Assign a source to the selected output BNC. **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**	Reset the values for the selected proc amp or color corrector. **1.**
Proc Amp Enable	**Switcher Installation** > **Proc Amp/Color Corrector** > **Proc Amp Enable**	Enable a Proc Amp 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 proc amp (**On**) or disable the proc amp (**Off**).
Proc Amp Gain	**Switcher Installation** > **Proc Amp/Color Corrector** > **Proc Amp Param**	Adjust the gain of a color component for the selected proc amp. **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.

Event	Location	Description
Proc Amp Gamma	**Switcher Installation** > **Proc Amp/Color Corrector** > **Proc Amp Param**	Adjust the Gamma for the selected proc amp. **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. **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. **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. **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. **1.**
Rotation Mode, Output	**Switcher Installation** > **Output** > **Output Rotation Mode**	Enable video rotation on a selected output. **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.
Rotation Zoom, Output	**Switcher Installation** > **Output** > **Output Rotation**	Adjust the size of the rotated output image. **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.

Event	Location	Description
Rotation X-Position, Output	**Switcher Installation** > **Output** > **Output Rotation**	Adjust the rotated image along the x-axis. **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**	Adjust the rotated image along the y-axis. **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**	Set a bus source substitution for the substitution table. **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**	Set an ME source substitution for the substitution table. **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 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**	Select the field that a video transition will be performed on. **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**).
TSL Address	**Switcher Installation** > **Input** > **TSL Address**	Assign a TSL id to an input. **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. **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**).

Event	Location	Description
Video Mode	**Switcher Installation** > **Reference** > **Video Format**	Select the video format that the switcher will operate in. **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. **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. **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. **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**).
MultiViewer Box — Green Tally (Preview)	**MultiViewer** > **Box** > **MV Box Preview Tally**	Select whether a green (preview) tally is shown for the selected box on the selected MultiViewer. **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**).

Event	Location	Description
MultiViewer Box — Label	**MultiViewer** > **Box** > **MV Box Label**	Select whether the source label is on or off for the selected box on the selected MultiViewer. **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**	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. **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**	Select the position of the source label for the selected box on the selected MultiViewer. **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**	Select transparency for the background behind the source labels on the selected MultiViewer. **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.
MultiViewer Box — Red Tally (On-Air)	**MultiViewer** > **Box** > **MV Box On-Air Tally**	Select whether a red (on-air) tally is shown for the selected box on the selected MultiViewer. **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**	Assign a source to one of the boxes on the selected MultiViewer. **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.

Event	Location	Description
MultiViewer — Clip	**MultiViewer** > **MV Keyer Clip**	Select the amount of clipping to be applied to the overlay source on the selected MultiViewer. **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)**	Select the custom color for the background of the clock on the selected MultiViewer. **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)**	Select a preset color for the background of the clock on the selected MultiViewer. **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**	Select the direction you want to countdown timer to count in. **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**	Reset the selected timer. **1.** Click the **Timer Reset** button and select the timer you want to reset.
MultiViewer Clock — Countdown Timer State	**MultiViewer** > **Clock** > **Countdown Timer State**	Select the direction you want to countdown timer to count in. **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)**	Select the custom color for the lettering of the clock on the selected MultiViewer. **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.

Event	Location	Description
MultiViewer Clock — Foreground Color (Preset)	**MultiViewer** > **Clock** > **MV Clock (Preset Color)**	Select a preset color for the lettering of the clock on the selected MultiViewer. **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**	Select the hour format for the clock on the selected MultiViewer. **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**	Select whether the clock shows timecode or system time on the selected MultiViewer. **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**	Select which countdown timer you want a MultiViewer to use. **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**	Select the size of the clock on the selected MultiViewer. **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.
MultiViewer Clock — Timecode Frame Count	**MultiViewer** > **Clock** > **MV Clock Frame Count**	Select whether number of frames for a timecode are shown on the selected MultiViewer. **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**	Set the starting time in minutes for the timer. **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.

Event	Location	Description
MultiViewer Clock — Timer Set Time (Seconds)	**MultiViewer** > **Clock** > **Timer Set Times**	Set the starting time in seconds for the timer. **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**	Select the horizontal position of the clock on the selected MultiViewer. **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**	Select the vertical position of the clock on the selected MultiViewer. **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**	Select whether a MultiViewer follows the layout of a . **1.** Click a **MultiViewer** button to select which MultiViewer you want to perform the event on. **2.** Click a **Follow** button to select which the MultiViewer will follow or select **Off** to have the MultiViewer operate normally.
MultiViewer — FSFC Label	**MultiViewer** > **MV FSFC Label**	Select whether FSFC is shown on the label on the selected MultiViewer when a source has an FSFC applies to it. **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**	Select a layout for the selected MultiViewer. **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**	Select whether the MultiViewer overlay is turned on or not. **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**).

Event	Location	Description
MultiViewer — Shift	**MultiViewer** > **MV Shift**	Select whether the sources on the selected MultiViewer are shifted, or not. **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**	Select which control panel the MultiViewer shift is following. When **Shift** is press on the selected panel, the selected MultiViewer shifts. **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**	Select how the tallies are shown on the selected MultiViewer. **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**	Select whether the ViewControl sources are shifted, or not. **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**	Set the pan level for the selected channel on the selected device. **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.

Event	Location	Description
Audio Mixer Volume	**Devices** > **Audio Mixer**	Set the level for the selected channel on the selected device. **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**	Send the halt command to the selected camera. **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**	Recall a shot on the selected camera at the rate/speed set in the shot. **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**	Recall a shot on the selected camera as quickly as possible. **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.
Robotic Camera — Store Shot	**Devices** > **Camera**	Store a shot on the selected camera. **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**	Set up the type of edge trigger for the GPI output. **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**	Set up the type of level trigger for the GPI output. **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**	Select whether the level trigger GPI output act as a tally. **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**	Trigger a GPI output. **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**	Select the type of trigger for the GPI output. **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**	Recall a register on the selected PBus device. **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.

Event	Location	Description
PBus — Trigger	**Devices** > **PBus**	Trigger a function on the selected PBus device. **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 1: RossTalk (XPression)

Event	Location	Description
RossTalk CC	**Devices** > **RossTalk (XPression)** > **CC**	Send the simulated custom control 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 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**	Send the Clear All command to the selected device. **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**	Send the Clear Framebuffer 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 framebuffer that you want to perform the action on in the **Channel** field.
RossTalk Clear Layer	**Devices** > **RossTalk (XPression)** > **Clear Layer**	Send the Clear Framebuffer 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 — Cue Channel	**Devices** > **RossTalk (XPression)** > **Cue (2)**	Send the Cue 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.
RossTalk — Cue Current	**Devices** > **RossTalk (XPression)** > **Cue**	Send the Cue command to the selected device. **1.** Click the **RossTalk Device** button and select the device you want to send the RossTalk command to.

Event	Location	Description
RossTalk — Cue Item	**Devices** > **RossTalk (XPression)** > **Cue (1)**	Send the Cue 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 — Cue Layer	**Devices** > **RossTalk (XPression)** > **Cue (3)**	Send the Cue command for a specific item and location 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. **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. **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. **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. **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. **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. **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. **1.** Click the **RossTalk Device** button and select the device you want to send the RossTalk command to.
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.

Event	Location	Description
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.
RossTalk — Take Item	**Devices** > **RossTalk (XPression)** > **Take (1)**	Send the Take 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.

Event	Location	Description
RossTalk — Take Layer	**Devices** > **RossTalk (XPression)** > **Take (3)**	Send the Take command for a specific item and location 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. **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. **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. **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 2: RossTalk (Generic)

Event	Location	Description
RossTalk CC	**Devices** > **RossTalk (Generic)** > **CC**	Send the simulated custom control 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 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. **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. **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. **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 (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 3: 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.

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. **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. **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.

Event	Location	Description
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. **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. **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. **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. **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 `recording_DATE_TIME`. **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.
Video Server — Shuttle	Video Server > **Shuttle**	Send the shuttle command to the selected device. The Shuttle command is not supported by the internal Clip Player at this time. **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**	Send the Stop command to the selected device. **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.

MIDI Device OID List

The OID for the MIDI device is made of a number of parts separated by a period. These parts identify things like the device class (`audiomixer`), audio source, audio destination, and control function.

For example, the OID `audiomixer.aux.2.sdi2.volume` translates to device class (`audiomixer`), audio destination (`aux.2`), audio source (`sdi2`), and control function (`volume`). This is a continuous input that allows you to control the volume of SDI 2 on the Aux 2 out.

Note: *As this interface has not been tested with many MIDI controllers, unpredictability can arise. In some cases it may help to restart the switcher or reset the OIDs by altering the OID, press* ***Enter****, and then set the OID back.*

Table 4: Audio Mixer OIDs

Target	Syntax	Description
Volume		
Assignable Audio Channels	`audiomixer.main.audio1.volume`	Volume for assignable audio channel 1 input on the Main layer. Replace `audio1` with the assignable audio channel you want to set the volume for. Replace `main` with the Aux layer you want set the volume for (`aux.1`-`aux.12`).
Output Mix	`audiomixer.output.main.volume`	Primary volume for the Main layer. Replace `main` with the Aux layer you want set the volume for (`aux.1`-`aux.12`) or the Monitor output (`monitor`).
Balance/Pan		
Assignable Audio Channel	`audiomixer.main.audio1.pan`	Balance for assignable audio channel 1 input on the Main layer. Replace `audio1` with the assignable audio channel you want to set the balance for. Replace `main` with the Aux layer you want set the balance for (`aux.1`-`aux.12`).
Equalization (EQ)		
EQ Channel Select	`audiomixer.eqchannelselect`	Select the audio channel that you want to set the EQ for. This oid is assigned to a button on the same strip as that audio channel you want to EQ. This tells the mixer that the EQ values are to be applied to the selected audio channel.
EQ Bypass	`audiomixer.eqbypasscommon`	Bypass the equalization for the selected audio channel.
Low Shelf Gain	`audiomixer.lowshelfgaincommon`	Gain setting for the Low Shelf EQ of the selected audio channel.
Midrange 1 Gain	`audiomixer.midrange1gaincommon`	Gain setting for the Midrange 1 EQ of the selected audio channel.
Midrange 2 Gain	`audiomixer.midrange2gaincommon`	Gain setting for the Midrange 2 EQ of the selected audio channel.
High Shelf Gain	`audiomixer.highshelfgaincommon`	Gain setting for the High Shelf EQ of the selected audio channel.
Low Shelf Max Frequency (linear)	`audiomixer.lowshelfmaxfreqcommon`	Maximum Frequency setting for the Low Shelf EQ of the selected audio channel. Frequency selection is performed on a linear scale.
Midrange 1 Center Frequency (linear)	`audiomixer .midrange1centerfreqcommon`	Center Frequency setting for the Midrange 1 EQ of the selected audio channel. Frequency selection is performed on a linear scale.

Target	Syntax	Description
Midrange 2 Center Frequency (linear)	audiomixer .midrange2centerfreqcommon	Center Frequency setting for the Midrange 2 EQ of the selected audio channel. Frequency selection is performed on a linear scale.
Midrange 1 Q (linear)	audiomixer.midrange1qcommon	Q Ratio setting for the Midrange 1 EQ of the selected audio channel. Ratio selection is performed on a linear scale.
Midrange 2 Q (linear)	audiomixer.midrange2qcommon	Q Ratio setting for the Midrange 2 EQ of the selected audio channel. Ratio selection is performed on a linear scale.
High Shelf Minimum Frequency (linear)	audiomixer.highshelfminfreqcommon	Minimum Frequency setting for the High Shelf EQ of the selected audio channel. Frequency selection is performed on a linear scale.
Low Shelf Max Frequency (scaled)	audiomixer .lowshelfmaxfreqscaledcommon	Maximum Frequency setting for the Low Shelf EQ of the selected audio channel. Frequency selection is performed on a non-linear scale.
Midrange 1 Center Frequency (scaled)	audiomixer .midrange1centerfreqscaledcommon	Center Frequency setting for the Midrange 1 EQ of the selected audio channel. Frequency selection is performed on a non-linear scale.
Midrange 2 Center Frequency (scaled)	audiomixer .midrange2centerfreqscaledcommon	Center Frequency setting for the Midrange 2 EQ of the selected audio channel. Frequency selection is performed on a non-linear scale.
Midrange 1 Q (scaled)	audiomixer.midrange1qscaledcommon	Q Ratio setting for the Midrange 1 EQ of the selected audio channel. Ratio selection is performed on a non-linear scale.
Midrange 2 Q (scaled)	audiomixer.midrange2qscaledcommon	Q Ratio setting for the Midrange 2 EQ of the selected audio channel. Ratio selection is performed on a non-linear scale.
High Shelf Minimum Frequency (scaled)	audiomixer .highshelfminfreqscaledcommon	Minimum Frequency setting for the High Shelf EQ of the selected audio channel. Frequency selection is performed on a non-linear scale.
Compressor / Limiter (C/L)		
C/L Channel Select	audiomixer.clchannelselect	Select the audio channel that you want to set the C/L for. This oid is assigned to a button on the same strip as that audio channel you want to C/L. This tells the mixer that the C/L values are to be applied to the selected audio channel.
C/L Threshold	audiomixer.thresholdscaledcommon	The level at which the compressor starts to be applied.
C/L Attack	audiomixer .attackcontrolscaledcommon	The amount of time you want to pass between the level surpassing the threshold and the full compression ratio being applied
C/L Compression	audiomixer.compressionscaledcommon	The ratio for the amount of compression you want to apply.
C/L Release	audiomixer .releasecontrolscaledcommon	The amount of time you want to pass between the level falling below the threshold and the compression ratio returning to 1:1 (no compression applied).
C/L Makeup	audiomixer.makeupgainscaledcommon	Increase the gain of the audio after compression.
C/L Bypass	audiomixer.clbypasscommon	Bypass the equalization for the selected audio channel.

Target	Syntax	Description
Gain		
Analog	`audiomixer.abm.1.1.gain`	Gain for the Analog 1 input. Replace `abm.1.1` with the analog port on the ABU you want to set the gain for (`abm.1.1`-`abm.3.8`). For example, `abm.2.5` is the Analog 5 input port on ABU 2.
Pad		
Analog	`audiomixer.abm.1.1.pad`	Toggle pad for analog 1 input on ABU 1. Replace `abm.1.1` with the analog port on the ABU you want to set pad for (`abm.1.1`-`abm.3.8`). For example, `abm.2.5` is the Analog 5 input port on ABU 2.
Phantom Power		
Analog	`audiomixer.abm.1.1.phantompower`	Toggle phantom power for the analog 1 input port on ABU a. Replace `abm1.1` with the analog port on the ABU you want to set phantom power for (`abm.1.1`-`abm.3.8`). For example, `abm.2.5` is the Analog 5 input port on ABU 2.
Mute		
Assignable Audio Channel	`audiomixer.main.audio1.mute`	Toggle mute for assignable audio channel 1 input on the Main layer. Replace `audio1` with the assignable audio channel want to set mute for. Replace `main` with the Aux layer you want set mute for (`aux.1`-`aux.12`).
Solo		
Assignable Audio Channel	`audiomixer.main.audio1.solo`	Toggle solo for assignable audio channel 1 input on the Main layer. Replace `audio1` with the assignable audio channel input you want to set solo for. Replace `main` with the Aux layer you want set solo for (`aux.1`-`aux.12`).
Clear Solo		
Main	`audiomixer.output.main.clearsolo`	Clear solo for all sources on Main layer.
Monitor	`audiomixer .output.monitor.clearsolo`	Clear solo for all sources on Monitor layer.
Aux	`audiomixer.output.aux.1.clearsolo`	Clear solo for all sources on the Aux layers. Replace `Aux.1` with the Aux layer you want set solo for (`aux.1`-`aux.12`).
Pre/Post		
Assignable Audio Channel	`audiomixer.aux.1.audio1.pre`	Toggle pre fader for assignable audio channel 1 input on the Aux 1 layer. Replace `audio1` with the assignable audio channel input you want to set pre for. Replace `aux.1` with the Aux layer you want set pre for (`aux.1`-`aux.12`).
PFL		
Assignable Audio Channel	`audiomixer.audio1.pfl`	Toggle PFL for assignable audio channel 1. Replace `audio1` with the assignable audio channel input you want to set solo for (`sdi1`-`sdi12`).
Clear PFL		
All	`audiomixer.clearpfl`	Clear PFL on all sources.

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FreeType font driver for BDF fonts

Francesco Zappa Nardelli

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This license, the Lesser General Public License, applies to some specially designated software packages—typically libraries—of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General

Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the " Lesser " General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a " work based on the library " and a " work that uses the library " . The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

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0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called " this License "). Each licensee is addressed as " you " .

A " library " means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executable.

The " Library " , below, refers to any such software library or work which has been distributed under these terms. A " work based on the Library " means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term " modification " .)

" Source code " for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library. You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a. The modified work must itself be a software library.

b. You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c. You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d. If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy. This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a “ work that uses the Library ” . Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a “ work that uses the Library ” with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a “ work that uses

the library ” . The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a “ work that uses the Library ” uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a “ work that uses the Library ” with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a. Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable “ work that uses the Library ” , as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b. Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c. Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d. If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e. Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the “ work that uses the Library ” must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a. Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b. Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

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Version 3, 29 June 2007

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" The Library " refers to a covered work governed by this License, other than an Application or a Combined Work as defined below.

An " Application " is any work that makes use of an interface provided by the Library, but which is not otherwise based on the Library. Defining a subclass of a class defined by the Library is deemed a mode of using an interface provided by the Library.

A " Combined Work " is a work produced by combining or linking an Application with the Library. The particular version of the Library with which the Combined Work was made is also called the " Linked Version ".

The " Minimal Corresponding Source " for a Combined Work means the Corresponding Source for the Combined Work, excluding any source code for portions of the Combined Work that, considered in isolation, are based on the Application, and not on the Linked Version.

The “ Corresponding Application Code ” for a Combined Work means the object code and/or source code for the Application, including any data and utility programs needed for reproducing the Combined Work from the Application, but excluding the System Libraries of the Combined Work.

1. Exception to Section 3 of the GNU GPL.

You may convey a covered work under sections 3 and 4 of this License without being bound by section 3 of the GNU GPL.

2. Conveying Modified Versions.

If you modify a copy of the Library, and, in your modifications, a facility refers to a function or data to be supplied by an Application that uses the facility (other than as an argument passed when the facility is invoked), then you may convey a copy of the modified version:

a. under this License, provided that you make a good faith effort to ensure that, in the event an Application does not supply the function or data, the facility still operates, and performs whatever part of its purpose remains meaningful, or

b. under the GNU GPL, with none of the additional permissions of this License applicable to that copy.

3. Object Code Incorporating Material from Library Header Files.

The object code form of an Application may incorporate material from a header file that is part of the Library. You may convey such object code under terms of your choice, provided that, if the incorporated material is not limited to numerical parameters, data structure layouts and accessors, or small macros, inline functions and templates (ten or fewer lines in length), you do both of the following:

a. Give prominent notice with each copy of the object code that the Library is used in it and that the Library and its use are covered by this License.

b. Accompany the object code with a copy of the GNU GPL and this license document.

4. Combined Works.

You may convey a Combined Work under terms of your choice that, taken together, effectively do not restrict modification of the portions of the Library contained in the Combined Work and reverse engineering for debugging such modifications, if you also do each of the following:

a. Give prominent notice with each copy of the Combined Work that the Library is used in it and that the Library and its use are covered by this License.

b. Accompany the Combined Work with a copy of the GNU GPL and this license document.

c. For a Combined Work that displays copyright notices during execution, include the copyright notice for the Library among these notices, as well as a reference directing the user to the copies of the GNU GPL and this license document.

d. Do one of the following:

0. Convey the Minimal Corresponding Source under the terms of this License, and the Corresponding Application Code in a form suitable for, and under terms that permit, the user to recombine or relink the Application with a modified version of the Linked Version to produce a modified Combined Work, in the manner specified by section 6 of the GNU GPL for conveying Corresponding Source.

1. Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (a) uses at run time a copy of the Library already present on the user's computer system, and (b) will operate properly with a modified version of the Library that is interface-compatible with the Linked Version.

e. Provide Installation Information, but only if you would otherwise be required to provide such information under section 6 of the GNU GPL, and only to the extent that such information is necessary to install and execute a modified version of the Combined Work produced by recombining or relinking the Application with a modified version of the Linked Version. (If you use option 4d0, the Installation Information must accompany the Minimal Corresponding Source and Corresponding Application Code. If you use option 4d1, you must provide the Installation Information in the manner specified by section 6 of the GNU GPL for conveying Corresponding Source.)

5. Combined Libraries.

You may place library facilities that are a work based on the Library side by side in a single library together with other library facilities that are not Applications and are not covered by this License, and convey such a combined library under terms of your choice, if you do both of the following:

a. Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities, conveyed under the terms of this License.

b. Give prominent notice with the combined library that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

6. Revised Versions of the GNU Lesser General Public License.

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If the Library as you received it does not specify a version number of the GNU Lesser General Public License, you may choose any version of the GNU Lesser General Public License ever published by the Free Software Foundation.

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GNU Library General Public License Version 2

Version 2, June 1991

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[This is the first released version of the library GPL. It is numbered 2 because it goes with version 2 of the ordinary GPL.]

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software—to make sure the software is free for all its users.

This license, the Library General Public License, applies to some specially designated Free Software Foundation software, and to any other libraries whose authors decide to use it. You can use it for your libraries, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library, or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link a program with the library, you must provide complete object files to the recipients so that they

can relink them with the library, after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

Our method of protecting your rights has two steps: (1) copyright the library, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the library.

Also, for each distributor's protection, we want to make certain that everyone understands that there is no warranty for this free library. If the library is modified by someone else and passed on, we want its recipients to know that what they have is not the original version, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that companies distributing free software will individually obtain patent licenses, thus in effect transforming the program into proprietary software. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License, which was designed for utility programs. This license, the GNU Library General Public License, applies to certain designated libraries. This license is quite different from the ordinary one; be sure to read it in full, and don't assume that anything in it is the same as in the ordinary license.

The reason we have a separate public license for some libraries is that they blur the distinction we usually make between modifying or adding to a program and simply using it. Linking a program with a library, without changing the library, is in some sense simply using the library, and is analogous to running a utility program or application program. However, in a textual and legal sense, the linked executable is a combined work, a derivative of the original library, and the ordinary General Public License treats it as such.

Because of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a “ work based on the library ” and a “ work that uses the library ” . The former contains code derived from the library, while the latter only works together with the library. Note that it is possible for a library to be covered by the ordinary General Public License rather than by this special one.

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TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Library General Public License (also called “ this License ”). Each licensee is addressed as “ you ” . A “ library ” means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The “ Library ” , below, refers to any such software library or work which has been distributed under these terms. A “ work based on the Library ” means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term “ modification ” .)

“ Source code ” for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a. The modified work must itself be a software library.

b. You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c. You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d. If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

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libsamplerate

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ZLIB DATA COMPRESSION LIBRARY

zlib.h -- interface of the 'zlib' general purpose compression library version 1.3, August 18th, 2022

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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.

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