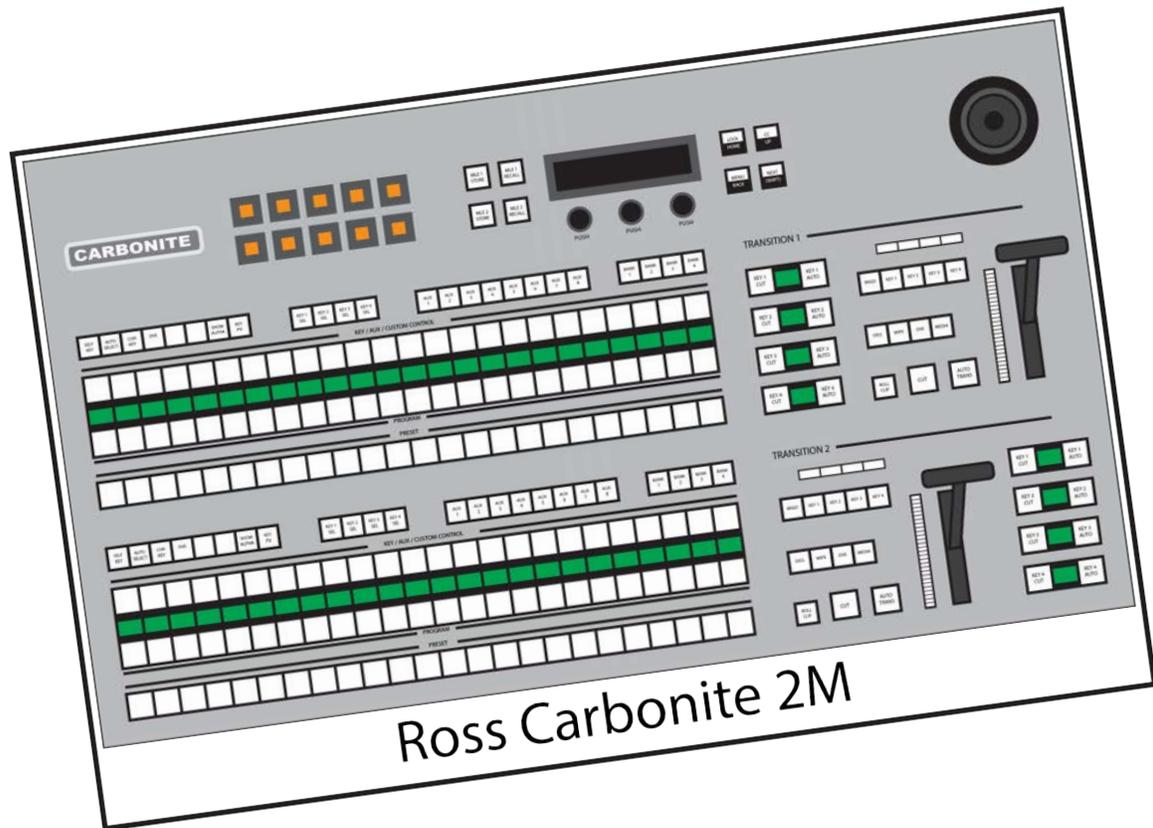


UCF & The Ross Carbonite 2M

Written & Graphics by Dylan Yonts
Studio Manager James McCully



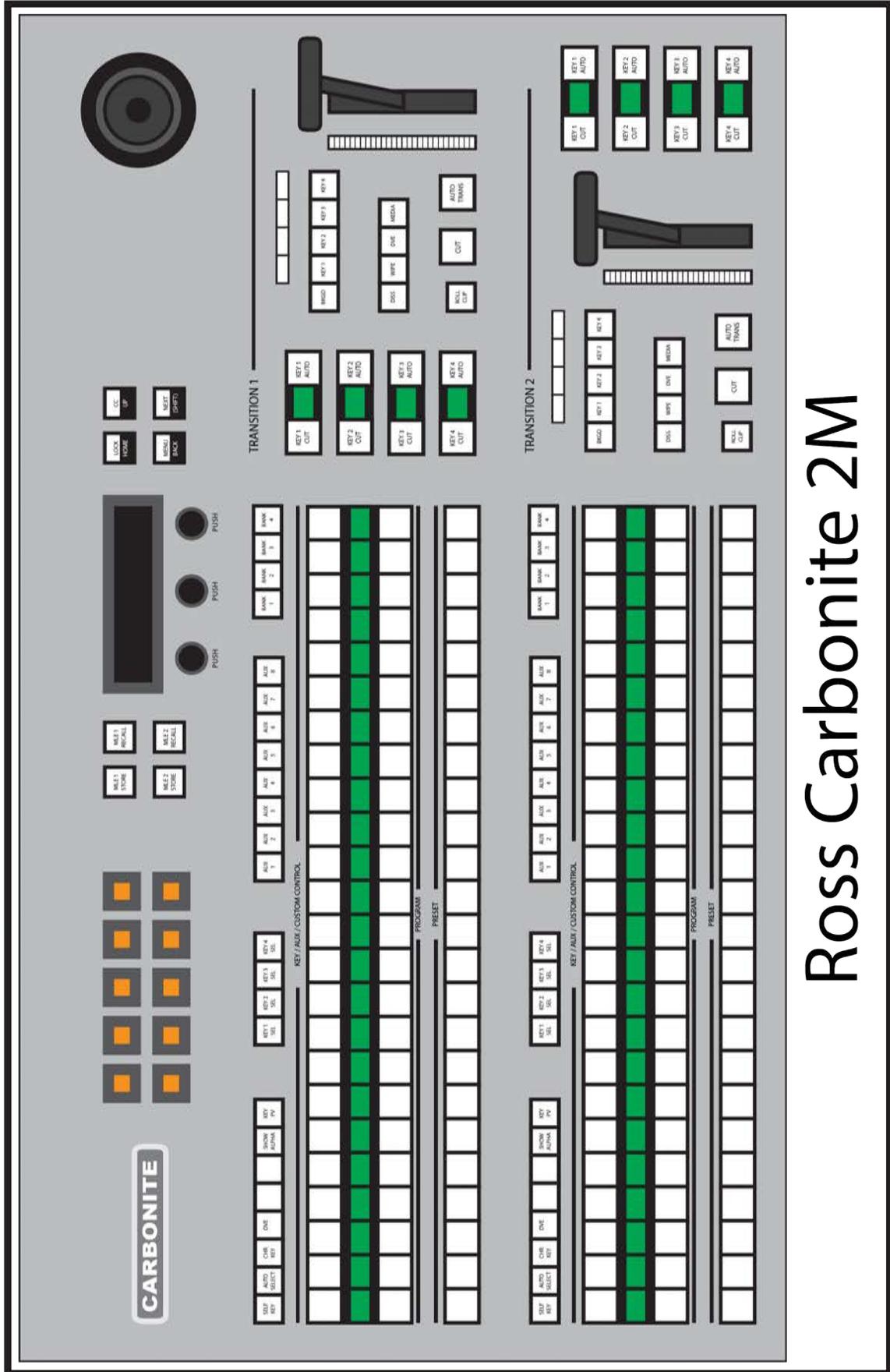
Chapter Guide

Chapter 1: A Brief Overview

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Chapter 3: The Keyers

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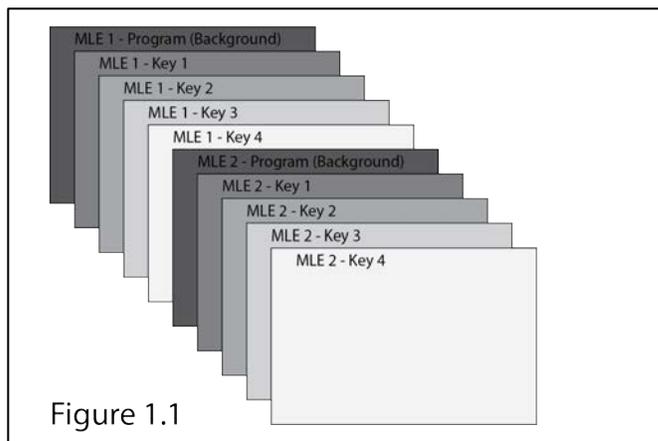


Ross Carbonite 2M

Chapter 1: A Brief Overview

This manual has been designed to highlight the most popular uses the faculty and students of the University of Central Florida will have of the Ross Carbonite 2M video switcher. The first portion (Chapter 2) of this manual will cover basic operations of the Carbonite as well as an overview of each button of the control surface. Chapter 3 will be dedicated to the 8 Keyers on the Carbonite 2M. Chapter 4 of this manual contains examples of real world activities performed on the switcher in the UCF studio.

The Ross Carbonite 2M video switcher has 10 layers that may be manipulated through various methods. **[Fig 1.1]** Activating a layer will hide everything below it, unless there is a mask or key established.



While this manual is primarily aimed at the technical director (TD), proper communication between all members of the production team is required for a well-executed show. What follows is a brief list of cues currently utilized by the Knightly News production staff. Unless noted, all cues are from the director.

1. Cues to the TD

- a. **Ready** - Bring the requested source into Preview
- b. **Ready With** - Double Punch - Bring the requested source into Preview with overlay (typically CG)
- c. **Take** - Execute a CUT
- d. **Fade or Mix** - Execute either a Manual Mix or AUTO TRANS, typically a dissolve
- e. **Key In / Key Out** (From Associate Director (AD)) - Activate or Deactivate selected Key for CG
- f. **Dip to Black** - Used to transition between segments and community calendar. A dissolve to black and immediate dissolve to CG, or reverse.

2. Cues to VTR control

- a. **Cue / Play** - Play requested VTR source
- b. **Roll Record** - Begin recording on tape, DVD, or GrassValley T2

3. Cues to Audio Control

- a. **Track** - Bring up audio on requested source
- b. **Mic** - Activate mics on talent
- c. **Take Out / Kill** - Deactivate mics, music, VTR, or other requested source's audio

4. Cues to Floor Director

- a. **Cue talent** - Floor Director signals for talent to begin action
- b. **Ready** – Raises one hand and points with other to camera
- c. **Take** – Moves both hands to camera and points

Chapter 2: The Switcher Console

Let's get started. This section will introduce the specific sections of the Ross Carbonite 2M Video Switcher to you. Let's start off with the most important sections. Source Displays, Preview, Program, and Transition Control. For now we will focus on MLE-2 (the lower switcher), and as we noted earlier, anything on MLE-2 will be overtop of anything on MLE-1. [Fig 2.2]

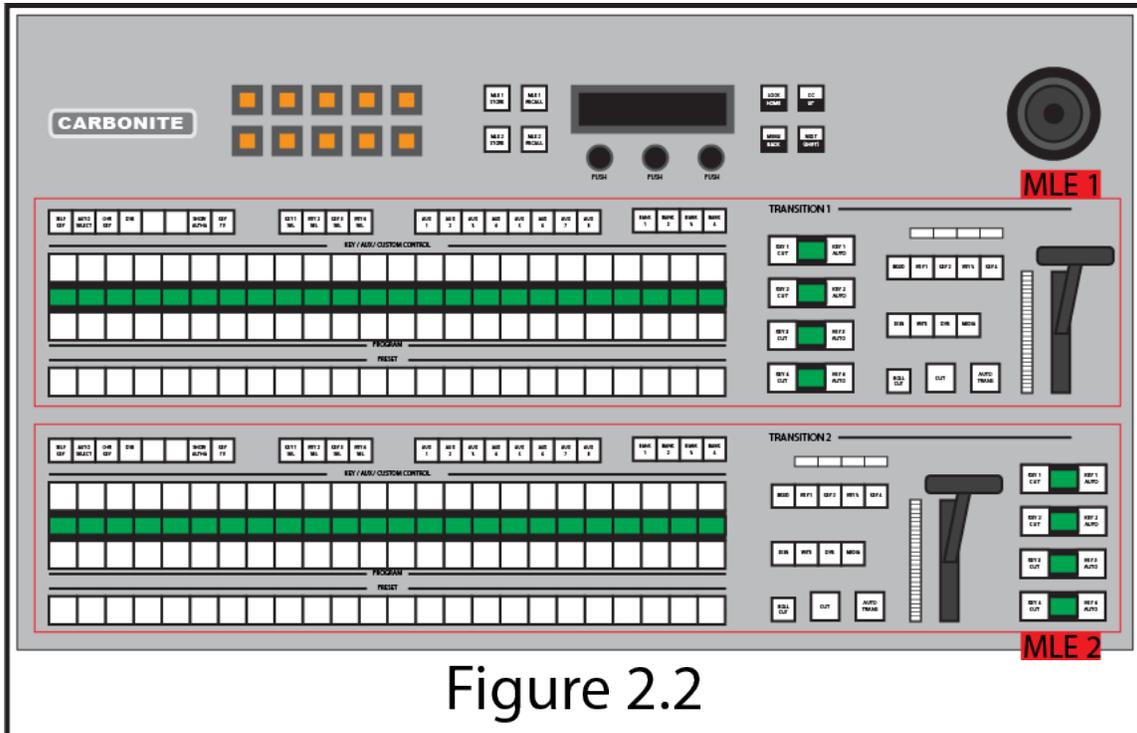


Figure 2.2

2.1 - Source Displays: [Fig 2.3]



Figure 2.3

This row of LCDs displays the attached source to the video switcher. These names can be modified through the menu of the switcher; however, please consult the Studio Engineer prior to any changes.

IMPORTANT: These screens are NOT buttons. Pressing these buttons will damage the screens. Please relay this to all students operating the switcher. About half of the students assume these are buttons and press them.

2.2 - Preview or Preset [Fig 2.4]

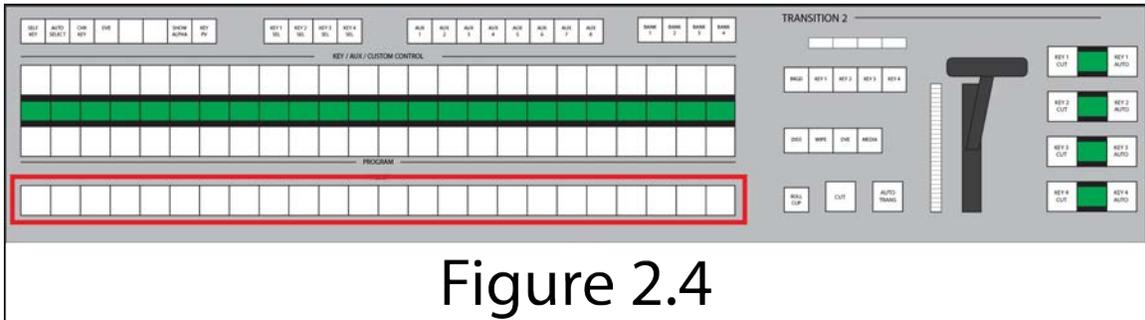


Figure 2.4

This particular board has this row labeled as “PRESET”; however, it is PREVIEW. This row is where you select the source you would like to transition to next. For almost ALL circumstances all source decisions will be made here. This gives the switcher a chance to correct any mis-keys prior to executing a transition and placing an incorrect source, such as a non ready camera, into program.

2.3 - Program [Fig 2.5]



Figure 2.5

This row is where you select the source you would like to be in PROGRAM, or what your viewer (or recording) will see. You will also notice that any button on the switcher lit in red is currently in PROGRAM. This carries throughout the switcher including both MLE banks and all Keys.

2.4 - Transition Control: [Fig 2.6]

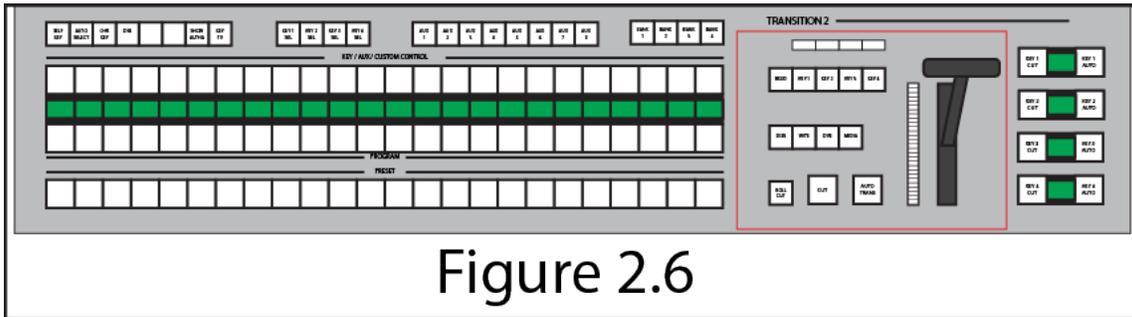


Figure 2.6

The keys found in this area control how and when your transition will occur. The three main methods of control are CUT, AUTO TRANS, and the Fader Bar. There are several options available to you to allowing the modification and customization of the transition; however, this will be covered in a later section. **[Sections 2.5 & 2.6]** For now, insure that the DISS (Dissolve), and BKGD (Background) keys are lit. **[Fig 2.7]** If they are not, simply press them now. In this mode (default) when you press execute a transition the source in the Preview (or Preset) row will move to Program and Program to Preview thus changing what is being sent out. Below are the three ways to execute a transition.

- **CUT [Fig 2.8]**
 - When pressed the transition will be instantly executed with no wipes or effects, simply one source will replace the other.
- **AUTO TRANS [Fig 2.9]**
 - Pressing the Auto Transition key will execute the selected transition type, the default is DISS (dissolve). There are many options available to you and will be discussed in the Transition Type Selection area of this manual.
- **Fader Bar [Fig 2.10]**
 - The FADER BAR allows the operator to manually control the transition. Either up or down, the faster you go, the faster the transition.
 - **Tip:** To compare two shots of anchors, place the first camera in Preview, and the second in Program and move the Fader Bar half way with DISS selected. Now ensure your talents are the same size and position on the screen. This may look strange but is the best method to compare two shots.

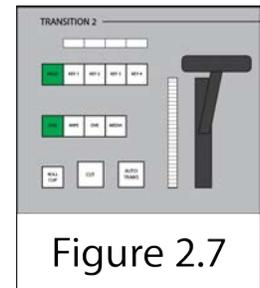


Figure 2.7

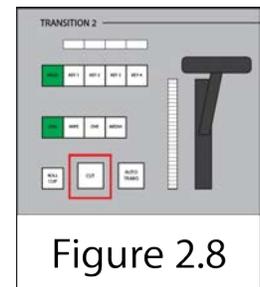


Figure 2.8

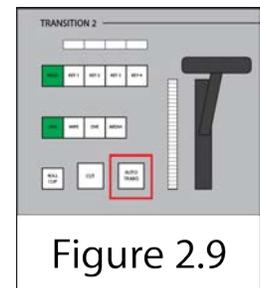


Figure 2.9

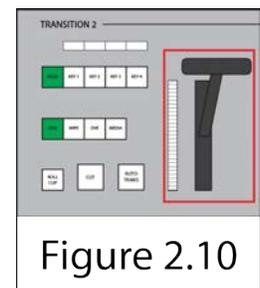


Figure 2.10

2.5 - Transition Type Selectors

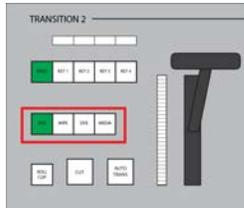


Figure 2.5.1

These four buttons enable you to decide the type of transition that will be executed upon either pressing the AUTO TRANS button, or pulling the FADER BAR. The four options are listed below with brief explanations.

- **DISS**

- This button chooses the dissolve effect. When executed a gradual fade between the two sources selected occurs. The length of this effect may be affected in several ways.
 - Once the DISS button has been depressed, it turns green, notating additional attributes may be modified on the Multi-Purpose area of the board.



On the menu screen you see the left section of the screen now displays TIME and a number above it. This number is the current number of frames the switcher will take to execute a full dissolve from 100% of A to 100% of B. When the TIME knob is turned the number of frames will change. Additionally, the 10 orange Multi-Purpose buttons now display a range of numbers. 5fr, 8fr, 10fr, 12fr, 15fr, 20fr, 25fr, 30fr, 45fr, and 60fr. These buttons allow for quick selection of common frame rates for a transition.

- If however the user would like to be more hands-on, the FADER BAR allows the operator to manually control the transition. Either up or down, the faster you go, the faster the transition.

- **WIPE**

- This button chooses a wipe transition effect. There are 10 pre loaded shapes available to the user. Once the WIPE button has been



depressed the Multi-Purpose buttons display the available options. Additionally, these shapes can be further modified in the menu screen and on the Live-Assist. Below are listed the available attributes for each wipe. Only three attributes will be shown at a time, use the NEXT button to advance the screen to show the other options.

- **Time**
 - As before, turning this knob will define the number of frames the transition will run when used with AUTO TRANS.
- **Dirctn**
 - Direction. Press this knob to select Fwd (forward) or Rev (reverse) as well as enableing or disable Flip-Flop (FF). This will tell the wipe to run forward during the first transition and reverse for the next, and forward, and reverse, and so on.
- **Patrn**
 - Pattern. This will allow you to choose the shape of the transition. These are the same options available on the Multi-Purpose buttons.
- **X Pos**
 - X Position. Position the center of the wipe effect along the X-Axis, horizontally, or left to right.
- **Y Pos**
 - Y Position. Position the center of the wipe effect along the Y-Axis, vertically, or up and down.
- **Aspect**
 - Aspect Ratio. Some, not all patterns can have their aspect ratio adjusted. This is the relation of height to width given in percentage.
- **Border**
 - Turning this knob will change the size of the border around the selected pattern. The options go from 0% - 100%.
- **Rot**
 - Rotation. Some, not all patterns can be rotated. Simply turn the knob to the left or right.
- **HMult**
 - Horizontal Multiply. By default each pattern only exists once. Turning this knob will create additional copies centered on your X & Y Pos set earlier.
- **VMult**
 - Vertical Multiply. By default each pattern only exists once. Turning this knob will create additional copies centered on your X & Y Positions set earlier.

- **DVE**

- Digital Video Effect. Choosing this option allows for the user to select one of 25 special effect wipes. Most of these wipes are listed on the Multi-Purpose buttons and available for quick selection. If the effect listed on the top row of the button is desired press the button once, if the bottom row, press the button twice rapidly. No need to press hard, simply quickly. As before additional options can be found in the menu screen, some options are only available by pressing the NEXT button.
 - **Time**
 - As before, turning this knob will define the number of frames the transition will run when used with AUTO TRANS.
 - **Dirctn**
 - Direction. Allows the user to select the direction the effect will travel.
 - **Effect**
 - Rotating this knob will allow you to select the desired DVE pattern. A comprehensive list of these patterns is available in the Ross Carbonite Operation Manual.

- **MEDIA**

- MediaWipe™. This allows the user to use an animation to cover a transition, also called a stinger. This function will not be covered in this manual at this time; however, additional information can be found in the Ross Carbonite Operation Manual.

2.6 - Next Transition Selector

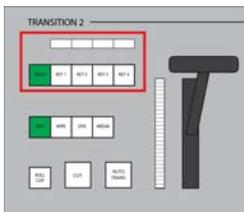


Figure 2.6.1

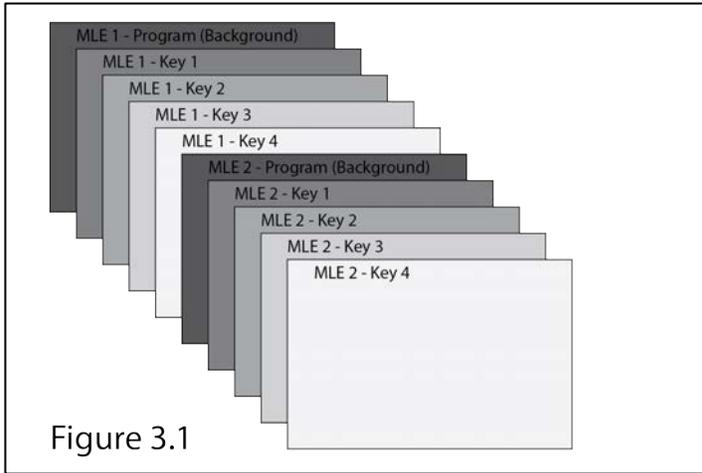
These five buttons and associated indicator lights allow the operator to choose which elements of the composition will be affected by the next transition. The default and standard mode of the switcher will be with only the BKGD (Background) key selected (and lit). This means when the operator initiates a transition (presses the CUT, AUTO TRANS keys, or moves the Fader Bar), only the background will be affected (Preview will become Program) and any Keys will remain in their prior state (on or off).

But let's say, for example, that you are coming up on the end of the show and have credits rolling from MLE-2: Key4 and you would like to fade to black both elements (camera and credits) at the same time. Let's assume CAM 1 is in Program, BK (Black) is in Preview, and KEY 4 is on air. If you press the BKGD and KEY 4 keys SIMULTANEOUSLY they will both become illuminated. This tells the switcher to affect both elements once the transition is initiated. Once the transition is executed

the camera will go to black and the credits will disappear; however, notice the buttons are still lit. Which means if an additional transition is executed both elements will return! To return to normal switching simply press the BKGD key by itself.

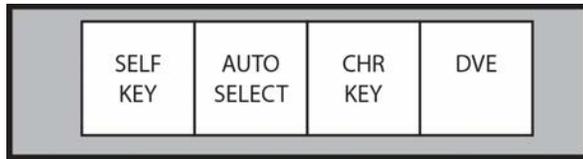
Any combination of the five keys, including all of them, can be pressed at the same time if so desired.

Chapter 3: The Keyers



As discussed in prior chapters, the Ross Carbonite 2M is setup in 10 layers. They are laid out as pictured in Fig. 3.1. This chapter will discuss how to modify the Keyers. For specific information on setting up a key for CG see section 4.1. The process to setup a Key for air is as follows:

1. Select the key you wish to modify in the Key Selection Area of the MLE you wish to modify. Ex. KEY 1 SEL
2. Select the Key Source in the Effects Row of the same MLE
3. Select the type of Key **[Fig 3.2]** Brief explanations of each type are listed below.



a. SELF KEY

- i. Uses the luminance, or brightness, values of the key source as the alpha channel. This type of key is seldom used due to its uncompromising selection of alpha channels.

b. AUTO SELECT

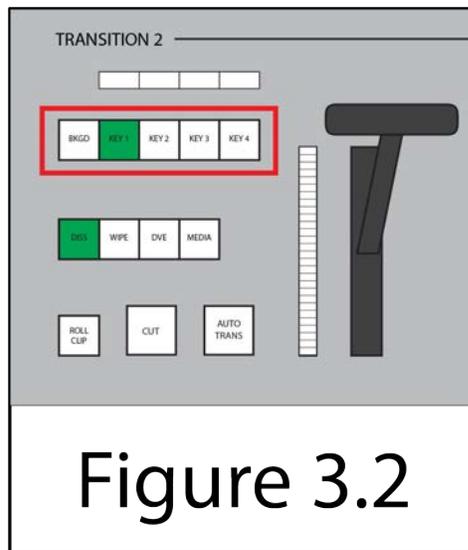
- i. Uses two video signals. The second, an alpha is used to define the area that will be made transparent or translucent. A single with an alpha channel can be placed into the M1 slot, the alpha channel will be brought into M3.

c. CHR KEY [see Section 4.2]

- i. Chroma key is when a color is removed and made transparent so that a background shows through. Typically used for a weather wall.
- ii. There are 2 floating chroma keys. They can be assigned to any of the 8 available keys.

d. DVE

- i. DVE, or Digital Video Effects allows effects such as scale, crop, aspect ratio, position, and border to the video.
 - ii. Once this type is selected the menu can be utilized to modify any settings. Use the NEXT key to move through the options. Additionally, the joystick can be moved and twisted to modify a source.
 - iii. There are 4 floating DVE keys available to any of the 8 Keys.
4. Adjust any settings associated with the Key type.
 5. The completed key may be viewed in one of several methods.
 - a. Simply Press KEY 1 CUT (If you used Key 1, otherwise, select the key you modified.) This will place it in the program feed. If nothing is seen the key may be improperly setup or something may be on top of that layer and it is not currently visible.
 - b. Press the Key 1 button in the Transition Selection Area of the Transition Control board. **[Fig 3.3]** If a transition is executed it will be brought into Program, or, the Key may be viewed in Preview. To return the Transition Selection to default simply press the BKGD key.



Chapter 4: Special Functions

1. Setup CG in a Key
2. Setup Chroma Key
3. Setup a 3-Up Composition
4. Fade to Black with Credits “Double Punch”
5. Frame Store / Frame Grabbing / Freeze Frame
6. To Copy a Key
7. Transferring files to and from the switcher
8. 50/50 Camera View
9. Create, load and use a MediaWipe (Stinger)

4.1 - Setup CG in a Key

Anytime a lower third is called for it must be done so with a Key. The CG Source is preset with an alpha channel coming from the CG station as well. The alpha channel is used to tell the switcher which portions of the CG channel are to be viewed and which should be discarded. Anything 100% white on the alpha will be seen 100% on the CG, anything 0% is not visible. The varying percentages work the same way. The following is the procedure to setup the existing CG into a Key available to program.



1. Select Key 4 on MLE-2 to Modify by pressing the *Key Selection* button [Fig 4.1.1] Key 4 will become green and settings will appear in the Menu.

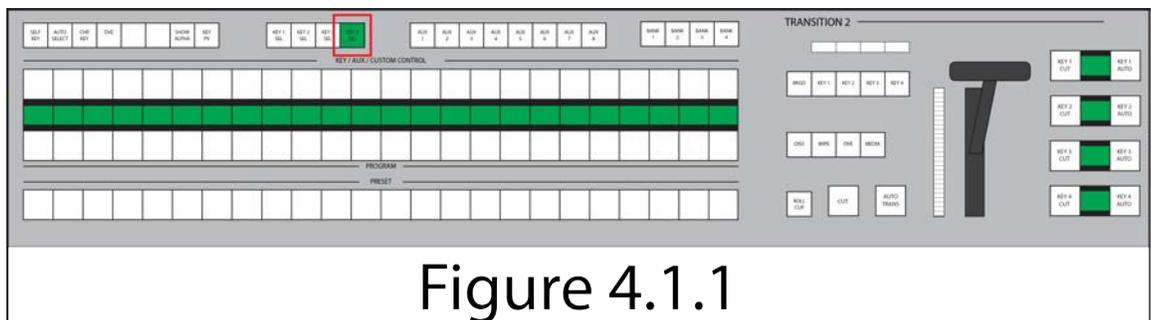
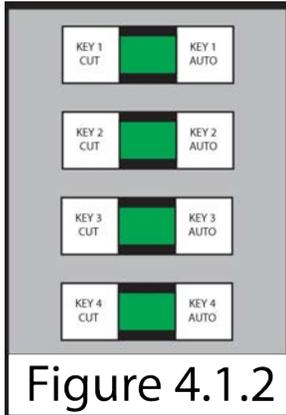


Figure 4.1.1

2. Select AUTO SELECT as Key Type
3. On ML-2, depress CG in EFFECTS row

- Your Character Generator feed is now setup and can be accessed anytime by Keying in Key 4 on MLE-2. **[Fig 4.1.2]**



- NOTE: Until you activate Key 4 the CG will not be seen in any viewer.

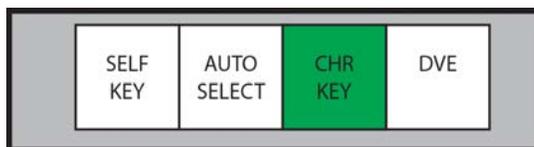
4.2 - Set up Chroma Key (cyc Wall)



With the Ross Carbonite 2M video switcher ANY source can be used as either the foreground or background of an effect. For this example we will use CAM 1 and M1 and the background with an image loaded in. For a typical Knightly News broadcast CG will be used as the background.

This effect will be created as a composition in MLE-1 and re-entered into the show through MLE-2.

- Activate Key 4 by pressing KEY 4 CUT on MLE-1
- Re-enter MLE1 into MLE2 by pressing MLE1 on the Preview row of MLE2
- Select your background in MLE-1 Program, in this case, CG.
- On MLE-1 press KEY 4 SEL to activate the key in the menu.
- Select your camera source in the effects row of MLE-1. In this case, CAM1
- Change the Key Type to CHR KEY (Chroma Key) **[Fig 4.2.1]**

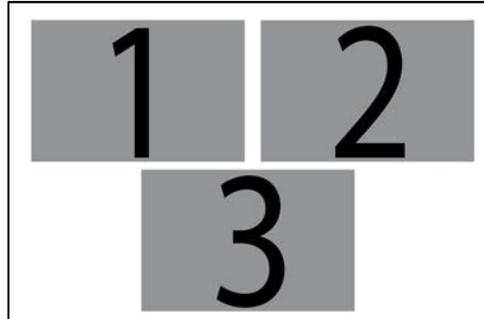


- At the menu, turn the left knob to the left to display *Basic Mode*.
- Turn the center knob to *Blue Color*

9. With your shot on the blue screen, framed how your shot will be, press the right knob labeled *Init* (Initialize).
10. If the key is not as desired a second attempt to initialize may be preformed, or, press next on the menu to discover additional options. These options are discussed further in the full Ross Carbonite Operations Manual.

4.3 - Set up 3-up Composition

This setup is useful when all 3 cameras need to be seen in the studio, or on any output simultaneously. This will be setup using 3 of the 4 keys available on MLE-1. While the sequence of keystrokes is the same for each Key, the values are different. Values for each Key are listed in the table. **[TABLE: 4.3]** For this walkthrough CAM 1 will be on KEY 1, CAM2 on KEY2, and CAM3 on KEY3. The instructions will simply show KEY-X and CAM-X.



1. Re-Enter MLE-1 into Preview (or Program) on MLE-2.
2. Place Black (BK into Program on MLE-1.
3. Press KEY X CUT on MLE-1 to bring the KEY active.
4. Select KEY X on MLE-1
5. Select DVE as Key Type
6. Select CAM X in Effects row of MLE-1
7. Use the Menu and Knobs to assign X POS, Y POS, and SIZE according to the table.
8. Press NEXT
9. Assign a border of 0.5%.
10. Press NEXT
11. Turn the right knob (labeled “Load”) until White is displayed and press the Knob.
12. Return to Step 3 and repeat with remaining cameras.

Table 4.3

CAM	X POS	Y POS	SIZE	BORDER
1	-24.0%	-23.0%	45.0%	0.5%
2	24.0%	-23.0%	45.0%	0.5%
3	0.0%	23.0%	45.0%	0.5%

4.4 - At end of program, fade to black with image and key (Double Punch)



1. At the end of a program you may have credits rolling over your actors. Your next transition needs to be to black; however, if you use CUT or AUTO TRANS as is, only the PROGRAM source will change and the KEY will remain with the credits. In order to go to black and remove the CG at the same time you must change the “Next Transition Selector” to modify the background (BKGD) and KEY at the same time. In this example your credits are from CG on MLE-2 KEY 4.
2. Workflow:
 - a. On MLE-2, simultaneously press BKGD and KEY 4 on the “Next Transition Selector”
 - b. Press CUT or AUTO TRANS depending on your desired transition type.
 - c. On MLE-2 press BKGD on the “Next Transition Selector” to return to normal operation.

4.5 - Frame Store / Frame Grabbing / Freeze Frame

There are two methods to capture a frame with the Ross Carbonite 2M. Each has pros and cons.

1. Method 1
 - a. This method is the preferred method to capture a still image to be used later in the production or for an image to be kept for archive, grading, or any other use. Images captured this way tend to be cleaner and with less shake; however, video sources with large amounts of movement can still give shake. If this occurs, simply recapture the image with a more stable source video.
The image will be stored on the switchers USB storage in a folder titled “captures” and loaded into a selected MediaStore bank. (M1-M4)
 - i. Press an unused MediaStore bank in the Preview row of either MLE.
 - ii. In the Menu, press the center knob labeled “Capt”.
 - iii. Turn the Left knob to select the desired source. The video will be playing in the selected MediaStore (M) bank’s preview on the screen.
 1. Normal sources are labeled as in the switcher
 2. PGM - Program
 3. PV - Preview
 4. MLE1 - Feed from MLE-1

5. CLN - Clean feed, only program with no Keys (CG)
 - iv. Press the right knob labeled "Capt".
 - v. In a few seconds the selected M bank will still and you can now call that source into Preview or Program, or even a Key.
 - vi. NOTE: To copy these saved images off of the switcher see the section on FTP file transfers. **[CREATE AND LINK FTP TRANSFER SECTION]**
2. Method 2
- a. This method is best when a still image is needed to be grabbed DURING a production. The image however typically has slight shake and is not preferred. This is truly a "freeze frame" For this example CAM 3 will be our desired source to freeze into KEY 3.
 - i. While your source, CAM 3, is in program, Select KEY 3 SEL on MLE-2.
 - ii. Set your key type as DVE
 - iii. Select your source same as program source (CAM 3)
 - iv. Activate MLE-2 KEY 3.
 - v. At the Menu controls Press NEXT->NEXT->NEXT
 - vi. Press the first Knob which should be labeled FREEZE
 - vii. Your image will be frozen until KEY 3 is deactivated, or the FREEZE knob is pressed again.
 - viii. NOTE: If you wish to fade to black from this you will have to select BKGD and KEY 3 for your Next transition selectors and have placed Black (BK) in Preview. See "Double Punch" section. **[Section 4.4]**

4.6 - To Copy a Key

Sometimes after creating a key that key needs to be either duplicated or moved to another position. This is easily done with the following steps.

1. Press and hold the DESTINATION KEY
2. Press the SOURCE KEY
3. Release the DESTINATION KEY

4.7 - Transferring Files To and From the Switcher

All media stored on the video switcher is in one of two places. Local storage is on the rack unit itself and a USB drive inserted in the front of the server chassis. At this time, all data should be stored on the USB drive and NOT the switcher chassis.

This storage is accessed via FTP through the switcher's control laptop, currently situated to the right of the switcher console in the studio's control room.

The following is a list of steps to connect to the remote storage.

1. Open the laptop and login. The login credentials are listed on the palm rest of the laptop.

2. On the desktop locate and open File-Zilla, an open source FTP client.
3. On the top row, enter the following information.
 - a. Host: **192.168.1.243** User: **user** Password: **password**
 - b. Once this information has been entered once, it is available by clicking the small arrow to the right of the “Quick Connect” button.
4. Click “Quick Connect”
5. In the right column all available storage on server should be listed.
 - a. Click on USB -> Then your desired folder
6. The left column is local storage. (The laptop itself) Any flash drives connected to this laptop are accessed here.
7. Simply drag and drop from one column to the other. Any files moved to the video switcher’s USB drive may now be accessed either through the switcher console, the Ross Dashboard, or the Ross Live Assist console.

4.8 50/50 Camera View



This view is to assist the composing of shots. Typically in a Knightly News broadcast, prior to the start of the show, this is done to match close-ups of the anchors. The example to the left is what you are trying to avoid. The process is simple yet often overlooked. For this example CAM 1 and CAM 3 will be the close-ups of the anchors.

1. Place CAM1 into Preview
2. Place CAM3 into Program
3. Move the Fader Bar to halfway.
4. Have your camera operators match the size of face and eyes.

4.9 Create, load and use a MediaWipe (Stinger)

4.9.1 – Overview

A media wipe is using an animation or video to transition from one scene to another. This is done on the Ross Carbonite 2M through the MEDIA Transition Type Selector.

4.9.2 – Creation of Graphics

Graphics created for a MediaWipe must be made into an image sequence. They must either be TGA (targa) or PNG (ping) files and 32 bit. Make sure alpha channels are used in your images. These animations can be created in a variety of programs, I recommend Adobe After Effects. Once exported you will have a folder with each frame of your animation as a still image.

4.9.3 – Importing Files into the Switcher

The files are imported utilizing the same method as any still image. Simply connect to the switcher via FTP and copy your folder of images into the switcher's memory. See Section 4.7 of this manual.

4.9.4 – Loading into the MediaWipe

To load your sequence into the MediaWipe first, make sure your files are completely transferred to the switcher's storage. Then follow the steps below:

1. On the control surface press the MEDIA key in the Transition Type Selection area
2. Press NEXT
3. Depress the left knob on the menu, labeled "Browse"
4. Use the left knob to navigate to the correct folder. These are the same folders you see when connected via FTP. USB(1) is where you store files, Internal contains demo files from Ross.
 - a. Note: "<.>" means "Go Up" a level in the directory tree
5. Once the desired directory is found select it and turn the knob, the name of your files will be displayed with a number in brackets ([206]). The number in brackets tells the user how many frames are in this animation. Only one will be displayed even though there should be many in the folder.
6. Press the knob. The import process is started. On the menu you will see how many images it has imported out of how many. i.e. (35 of 350)
7. Once complete the sequence is loaded.

4.9.5 – Setup the MediaWipe

Once the MediaWipe is loaded a frame to transition must be defined. This is accomplished by the following steps.

1. Activate the MEDIA Transition Type Selector
2. Move the T-Bar, the animation should be visible. If it is not, the animation was not loaded correctly.
3. Place the T-Bar at the desired point to execute a transition
4. Press and HOLD the MEDIA key
5. Press the CUT key
6. Release all keys
7. Press the AUTO TRANS key to check your work

4.9.6 – Executing a MediaWipe

Once the MediaWipe has been loaded and setup simply press the AUTO TRANS button when the MEDIA Transition Type Selector is selected.