# Using Frame Memory Import / Export with the MVS-8000 & DVS-9000

The Sony<sup>®</sup> MVS-8000 and DVS-9000 series of digital production switchers have the ability to import and export industry-standard image file formats. This feature allows operators to use software applications such as Adobe<sup>®</sup> Photoshop<sup>®</sup> and Adobe After Effects<sup>®</sup> to create individual stills or still sequences and use them in production.

Below are descriptions of the file formats supported, and tips for getting the best results with your production switcher.

Format	Import	Export
TIFF	<ul> <li>✓ (32-Bit supported)</li> </ul>	$\checkmark$
Targa <sup>®</sup> (TGA)	<ul> <li>✓ (32-Bit supported)</li> </ul>	$\checkmark$
Windows <sup>®</sup> BMP	$\checkmark$	$\checkmark$

#### File Formats Supported (as of software version 3.00):

Note that layers or compression, in any file format, are not supported.

#### **Importing stills or still sequences**

TV Format	Pixel Dimensions	Pixel Aspect Ratio	Field Render Order	Bits Per Pixel (Color Depth)	Color Format
480i	720x486	0.9	Upper	8	RGB
480p	720x486	0.9	None	8	RGB
720p	1280x720	1.0	None	8	RGB
1080i	1920x1080	1.0	Upper	8	RGB
1080p	1920x1080	1.0	None	8	RGB

**<u>Pixel Aspect Ratio:</u>** When creating stills for import into the switcher, it is important to know not only the television standard the switcher is running in (480i, 576i, 1080i, 720p, etc), but that format's pixel aspect ratio. For example, standard definition television (480i/p) uses 720x486 pixels, but has a pixel aspect ratio of 0.9:1 (for 4x3) or 1.2:1 (for 16x9). In other words, the pixels in standard definition are not square. HDTV (either 1920x1080 or 1280x720) uses an aspect ratio of 1:1, or square pixels. If the stills you import into the switcher have the incorrect pixel aspect ratio, they will not look correct when viewed. Most software designed to be used with broadcast video, such as Adobe After Effects or Adobe Photoshop CS (version 8.0), easily deals with different pixel aspect ratios.

#### Field Order

When creating still sequences of an animation for import into an interlaced video standard, attention must be paid to the field order. When importing into the switcher,

please use upper field first. This differs from the D1 standard, which usually uses the lower field first. For non-interlaced video standards, such as 480p, 720p or 1080psf, still sequences should be rendered without fields.

#### Alpha Channel Information

The MVS/DVS supports an embedded Alpha Channel in both the TIFF and TGA file formats. When the import function is started, the switcher will separate the RGB and Alpha data into two Frame Memory stills that are paired together. The switcher's keyers support using both shaped and unshaped (straight or pre-multiplied) video/key signals. The final keyed image can be made to look correct, depending on the alpha channel's render mode, with the **CLEAN MODE** function in the MVS/DVS key type menu.

#### **Miscellaneous File Information**

The MVS/DVS does not support compressed file formats, such as LZH compression commonly found in both TGA and TIFF files. Also, if you have the choice, always select a PC byte order.

#### Color and Bit Depth

The MVS/DVS requires 8-bit per pixel, RGB color and does not support 16-bit color.

#### Naming conventions

Still sequences can be played back, at frame rate, by creating keyframe timelines on the desired Frame Memory pair. Sony has included a utility in the switcher software that will automatically create timeline keyframes from a still sequence. For the switcher to recognize the still names as a sequence, please use the following naming convention: AAAAA### (where "A" is an alphanumeric character and "#" is a numeric digit). Below are some examples of recognizable and unrecognizable file names:

$\checkmark$
×
×
$\checkmark$
×
$\checkmark$

#### File name and subdirectory examples

Each file name should begin with at least one alpha character and end with at least three numeric characters. The ending numeric characters should increment for each frame of the animation sequence. Leading 0's should be used for the numeric block of characters. DOS filename conventions must always be followed (maximum 8-characters, no spaces or reserved characters are allowed). Finally, the filename's extension should match the file format used (.TIF or TGA or BMP).

Note: Even though more than 99 frames can be imported, the maximum amount of keyframes for a single effect is 99. Therefore, at this time, it is not possible to have more than 99 frames in a single animation sequence.

### **Importing the stills**

Place the stills to be imported on your removable media device and insert the device into the switcher's USB/PCMCIA reader. Go to menu page 7162, Import/Export. The switcher will scan the memory card, look through the root and all subdirectories that have DOS supported filenames and display a list of stills that match the file type selected in the menu. If you want to choose a different file type, please select it from the pop-up window (see below).



On the right table, select the still(s) you want to import into the switcher. On the left table, select an open block of register memory that matches the number of stills to import. If you select stills that are already in the frame memory, they will be overwritten with the imported stills. Keep in mind that importing 32-bit files with an alpha channel will require *two* frame memory locations for each imported still. If you start your import of 90 stills with alpha channel into memory location #300 (on a DVS-9000), you will receive an error as the switcher reaches its limit of 444 frames.

After everything is set, press the IMPORT button. When the switcher is finished importing, the popup window will disappear.

## Creating Keyframes for frame-rate playback

On menu page 2152, select the frame memory pair you want to use for the animation (if you're not using a key signal you don't need to select PAIR).

On the browser, you will see any sequences of frames the switcher has identified. If yours is not present, please check the filename to make sure it matches the supported conventions above or manually create your keyframes.

On the switcher's 10-Key pad, select the USER region associated with the FM output you've selected. For example, if USER1 has been assigned to FM1+2, select USER1.

Next, using the menu knob, select the effect register to insert the new keyframes. Please note, the register you choose can not be recalled as active or the switcher will not create keyframes. If desired, you can scroll the VIEWER knob to see the animation play manually.

Finally, press the CREATE KEY FRAME button to delete the selected effect and create new keyframes. One keyframe will be inserted on the USER's timeline for each frame in the animation. Again, remember that at this time, the switcher supports a maximum of 99 keyframes in a single effect. Therefore, it is not possible to have an animation longer than 99 frames.



After the import is complete, you will need to set the duration of each keyframe. This can be done by rewinding the effect, pressing KF DUR on the keyframe panel and entering 1 as the new keyframe duration. Then you can select ALL followed by MOD to apply the new duration to all keyframes. A faster solution is to set an EFF DUR to 1 frame. Since, obviously, it would be impossible for an effect with multiple keyframes to be only one frame long, the switcher will set the effect duration as close as possible, by making each keyframe 1 frame in duration.

#### **Exporting**

Users can also export frame memory images, whether originally imported or frozen from live video, onto a memory device. This allows images to be transferred to other hardware and software platforms, edited and possibly brought back into the switcher.

The switcher supports the same file formats as import: TGA, TIFF and BMP. The switcher will also export the sub-channel (key or alpha channel), but it will not encode a 32-bit file. For each frame memory pair you export, you will get two different files on the memory card, one for video, one for key. If you desire a 32-bit file, you can use an application like Adobe Photoshop to combine the images.

Similar to the import function, select the stills on the left table that you want to export. Please note the appearance of an (S) in the table means it is the sub-channel (key or alpha channel) of the still with the same name. For instance, if you wanted to export both the main and sub-channel of the still called SONY, you would find SONY and SONY (S). Keep in mind that due to memory management, the two files may not be adjacent in the table.

Finally, press the EXPORT button to transfer the images to your memory device.

#### Frequently Asked Questions & Troubleshooting

**Q:** My sequenced animation looks jerky when played forward, but looks fine in reverse. **A:** This is caused by an incorrectly rendered field order. To obtain the proper field order for the MVS/DVS, the upper field should be rendered first. This differs from the D1 standard, which uses the lower field first.

Q: It takes a long time for the stills in my animation sequence to change on the timeline. A: The switcher uses the default keyframe duration setting (menu page 7326.2) when generating automatic keyframes in the animation menu. Unless a user has changed this value, it is set to one second, by default. Therefore, each keyframe will be 1:00 long. To reset the keyframe duration values, position the timeline to the first keyframe, press **KF DUR** on the Keyframe Panel then enter a value of 1 on the 10-Key pad. Follow that up by selecting **ALL** then **MOD** on the Keyframe Panel. This will set all keyframes to one frame each. Another, possibly faster, method is to set the whole effect's duration to something so low that the switcher will have no choice but to make each keyframe duration the smallest amount possible, which is one frame. To do this, press **EFF DUR** on the Keyframe Panel, then enter **1** on the 10-key pad. This will tell the switcher you want the entire effect to be one frame long. Unless you have only one keyframe, it will be impossible for the entire effect to be only one frame, so the switcher sets each keyframe to the smallest possible value, which is one frame.

Q: The stills I imported seem to be cropped or have black edges.

A: Either the video format or the pixel aspect ratio doesn't match the current switcher format. The stills you import must match both the video format (720x486, for example) and the pixel aspect ratio (0.9, for example) of the switcher's operating mode. If they are mismatched, the switcher will ignore any other data that doesn't fit into what it's expecting. For example, if your switcher is currently set to 480i/60 (720x486) and you attempt to load in an HD still created at 1920x1080, the result shows only the "upperleft" corner of the still. This is because the switcher is expecting only 720x486, but is receiving 1920x1080. So, it will read the first 720 pixels on each line, up to 486 lines. When it gets to the last line (486) it will stop reading in data. This results in what looks like a cropped image. The opposite is also true. If you are in 1080i/60 (1920x1080) and import a 1280x720 still, you will end up with black on the bottom and right. This is because the switcher is expecting and right. This is because the switcher is no data, the import function substitutes black.

**Q:** The images of my imported stills are too tall or too wide.

A: This is probably a pixel aspect ratio mismatch. Make sure the pixel aspect ratio you've set on the still to import matches the video standard you're using. For example, if you're using 720x486 but set the pixel aspect ratio to square pixels (1.0), the image will appear too tall as the horizontal pixels will be compressed slightly, which is normal for the D1 format. Fortunately, the HDTV formats use square pixels so this problem should only occur with SD formats.

**Q:** I get an error before the import process has completed.

A: Although there can be several reasons for an error like this, the most common is that you have too many stills to fit in memory. Even if your frame memory is empty and you're only importing 5 stills this error can still occur. The switcher begins importing at the frame memory register you choose from the import menu. If you start your import at register 443 and have 5 stills, it will bump up against the limit of 444 stills (DVS-9000 only). Also, don't forget if you're importing 32-bit files (RGB and Alpha channel) that it will require *two* frame memory registers for *each* still you're importing.

**Q:** After I imported stills, some of the frame memories I had already loaded are gone. **A:** When importing stills, it is important to select an empty range of frame memories in the import menu. If you start importing 5 stills at location 10, but have a still already in location 11, it will be replaced with the still you're importing.

**Q:** I pressed **CREATE KEYFRAMES** to automatically generate keyframes for my animation, but it didn't make keyframes for all the stills.

A: You may have more frames in your animation than the switcher can have keyframes in a single effect. At this time, the MVS/DVS supports a maximum of 99 keyframes on a single timeline. Effectively, this means that the longest sequenced animation you can

have play out of the frame memory would be 99 frames. Also keep in mind that each region on the switcher (M/E 1, M/E 2, USER1, USER2, etc) has a maximum "pool" of 500 keyframes (this does not include the DME which can have 8000 keyframes). If all these keyframes are used, on USER1 for example) you will not be able to have any more keyframes on a timeline. This limit is generally hit when frame memory timelines that are no longer needed still exist in the switcher's effect memory and have never been deleted. Either delete old timelines that have effect data that is no longer used, or try recreating the keyframes on a different USER region.

**Q:** The switcher can't find any stills to import on my memory card.

A: There are several possible reasons for stills not showing up on the Import Menu.

- 1. The inserted memory device has not been set to PRIMARY (menu page 7317).
- 2. The stills are in a subdirectory name that does not conform to DOS standards
- 3. The incorrect file type has been selected (the switcher only looks for and imports/exports one file type at a time).

#### Notes:

The BMP, TIFF and TGA import functionality has been tested with Adobe Photoshop version 7.01 & Photoshop CS (8.0) and Adobe After Effects version 5.51 & 6.0 (Standard and Professional), but may not be possible to use these files when created with some other software.

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