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DVD Authoring Tips

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Introduction

The following tutorial tries to provide some guidelines and suggestions for authoring DVD discs that will work properly with the Dave Jones Design DVDplay synchronizers. This page will change over time as new tests and suggestions from our customers are made. This is an attempt to make you aware of possible conflicts between the synchronizer and the discs that you make. We can not guarantee that this tutorial defines all potential problems. It contains all that we are aware of at this point, but DVD authoring is such a complex process and has so many features that there are likely to be other conflicts that we are not yet aware of.

Our speciality is making hardware, such as the DVDplay synchronizers, not operating the various brands of authoring software. If these tips contain suggestions that you do not understand, you may have to contact the publisher of your specific DVD authoring software to find out how to implement them.

What the Synchronizer Does

The DVDplay communicates with, and controls the DVD players directly. The user of the synchronizer programs a starting and an ending point into each channel of the synchronizer. They then connect the synchronizer to the players and turn everything on. After that the synchronizer takes over and does it's job.

Once the synchronizer is powered up, it spins up each of the discs and searches out the point on each disc that were programmed into the channels, as their start point. When all of the channels have reached their starting points, the synchronizer starts and plays the channels in synch with each other. As each player reaches the point on the disc that the synchronizer has been programmed to use as an ending point, that channel seeks back to it's starting point and again waits for the other channels. Once they are all ready, they again start playing, again synchronized together. This repeats over and over again all day long, unless the synchronizer is being used with the "Network" option which allows you to remotely start the playback loop.

Must Have Audio

This is very important. The DVD spec says that you must have an audio track along with your

video track. Some authoring programs allow you to make a disc with no audio track. Do not do that. You must include an audio track in with the video track on every title. It can be a silent audio track. You don't need to actually have any sound, but because the audio track is digital and contains some kind of timing information, the players need this track to exist in order to ensure accurate synchronization. Without it the synchronizer could be off by a second or more.

Minimize Special Features

Because the synchronizer does all of this controlling, there is no need to program any of these functions into the DVD disc itself. You do not need to force the disc to start playing. You do not need to force the disc to loop. In fact there are times when authoring these features into a disc will interfere with the operation of the synchronizer.

The synchronizer plays a segment of your discs between two points. Because of this, if you author special features in the area between these points, they might interfere with the playback. It is best to simply have normal video between these points. No menus, no jumps, no still frames, etc...

Having an Ending Mark

One place where people making discs and programming the synchronizer get confused is the "Ending point" or Stop point on the disc where the synchronizer stops playing and seeks back to the start point. The synchronizer needs a specific mark of some kind to use to know that it has reached the end of the segment you are playing. This ending point is typically a frame or a chapter, and in some cases is a title. The problem comes in understanding that the synchronizer does not play the chapter or title that is used as the ending mark, but only plays until it reaches that ending mark.

Ending on a Chapter

For example, if you program the synchronizer to start at Title 1, Chapter 1, and end at Chapter 2, then it will just play chapter 1. It does not play chapter 2. When it is playing back and reaches the beginning of chapter 2 it has reached the mark that you defined as the ending point, and at that time seeks back to the start of chapter 1 and gets ready to play it again.

The problem with this is that you must have a chapter 2 on your disc in order to define it as the ending point. If you program the synchronizer to end on chapter 2, but chapter 2 doesn't exist, the synchronizer won't even start playing. If you want to use this method you will need to place a second chapter after the first, typically containing 15 or more frames of black video. If you already have a second chapter in that title, you can simply use it as a mark for the end of playing the first chapter, but remember that it will not actually play. It is possible that the first frame of that chapter might play, so it is best if the first frame or two are blank or contain the image you wish to freeze on during search back to the beginning.

You can play multiple chapters, or play chapters other than the first one. The key is that if you

want to use a chapter as an ending point, it must exist but will not play. So if you want to play chapters 3, 4, and 5 as a loop, and want to use a chapter as the ending mark, you need to have a 6th chapter to use for that mark.

Ending on a Frame Number

You do not need to add an extra chapter in order to use the synchronizer. You can program the synchronizer so that the last frame of your chapter (or any frame within that title) is the ending mark. People just often find it easier to program a chapter as the ending mark rather than have to manually search their disc to find out what the frame number is for the last frame in a chapter.

Ending on a Title

This same technique is required if you start at a specific title and want to play until you reach another title. In fact, when playing more than one title you do not have the option of ending on a frame number. That only works when the loop is within one title. To play more than one title you must use another title as the ending mark. Since that title will not play as part of your loop, that ending title must be an extra title after the titles that you are playing. It should simply contain 15 or more frames of black video.

Single Sequential PGC

The pioneer players controlled by the synchronizer generate the frame numbers on the fly. Because of this, certain things that you do in authoring can cause the player to not calculate the frame numbers correctly. If you plan to use frame numbers or chapters either as the starting or ending marks of the segment you are playing, you need to author that title on the disc as a single sequential PGC. Multiple PGCs within a title will confuse the player's frame number counter. Your authoring software also must not suppress the time numbers that get encoded into the PGC.

Some lower cost authoring programs, DVDelight for example, are not capable of authoring a disc that has a single sequential PGC, and are not capable of placing multiple chapters or time numbers within a title. With low cost software like that, your only option is to program the synchronizer to start at a title and end when it reaches another title. It is very important in this case to have an extra title at the end of the disc or you will not have anything to use as the ending mark for the synchronizer.

Testing Your Discs

You can use the remote control for your Pioneer 7200/7300/7400 player to test your discs and be sure that they will work with the synchronizer.

The player must be able to search to both the starting point you will use, and the ending point. If it can't do it, neither can the synchronizer. Hook the player up to a monitor and put your disc in. Start

playing the disc. There is a button on the remote called "Display" that will turn on a number overlay on the image. This overlay will show the title and chapter number that is playing. Hitting it several times should also show the playback time and the frame numbers.

The buttons on the remote are slightly different for the 7200 and for the 7300/7400. On the 7200 there is a button for Title and another one for Chapter/Time/Frame. Push the one you wish to search on and use the number pad to enter the Title, Chapter, Time, or Frame number. Then on the 7200 hit "Next". On the 7300/7400 hit "Search". If the player let you enter a number and then searched to that place on the disc, then it is a valid point on the disc to use for a start or end mark. If not, then your disc may not contain the proper title, chapter, time, or frame number, or may not have been authored with a single sequential PGC per title.

Using DVD Studio Pro

We have discovered that by default Apple's DVD Studio Pro software disables using frame numbers to search on a DVD. There is a very simple change to the DVD Studio Pro settings for your project that must be set in order to allow using frame numbers. Follow these instructions:

1 - Bring up your project settings window (typically by just clicking within the main project window).

2 - The lower section of the project settings is called "Remote Control". The last setting in that section is called "Time Search / Time Play". By default it is set to "Prohibited". Change it to "Permitted"

3 - Save the project.

Recommendations

As you can see there are many ways to make the discs to use with the synchronizer. If you are not sure which methods to use, then follow these recommendations:

1 - Though the authoring cost may be slightly higher, make each disc to contain just the one channel of program material. Each disc i\n the set is different and holds just one channel.

2 - If the image starts out as black (or white), then fades to black (or white) at the end, edit the video with an extra 5 seconds of black (or white) at the end to match. Do this in the video editing software, NOT in the DVD authoring software.

3 - If you want the last frame of the video to be held while the synchronizer is searching back to the beginning, then add 5 seconds of that frozen image at the end of the video clip. Do this in the video editing software, NOT in the DVD authoring software.

4 - Place that single video clip in the authoring software. It will become Title 1 and by default frame 1 will become Chapter 1.

5 - Add an extra chapter mark (called a "Marker" in some authoring programs) at the first of the frozen frames of video, or the first frame of black. This chapter mark will then be 5 seconds before the end of the video clip.

6 - If your audio goes right up to the very last frame of the clip, just before the 5 extra seconds that you added in step 2 or 3, then make that chapter mark be an additional 2 frames past the end of the sound (this will make that last chapter now be 2 frames short of 5 seconds long)

7 - The synchronizer can now be used right out of the box, without needing programming, unless you want the last frame of video to be held while searching back to the start, in which case you do need to program the synchronizer so the "Squelch" is turned off.

The above method is by no means the only way to make your discs. It is just what we recommend for people that are unsure of the best way to do it, or are looking for the most foolproof and simplest to use method.

Some people want to save money by placing all channels of their video onto a single disc and then simply making multiple copies of the same disc. This is fine, but it does mean that you will need to program the synchronizer to match. There are 2 common ways to make a disc with all channels on it, and program each channel of the synchronizer to play one of those channels:

1 - Your can create your disc with multiple titles, each title being made as described above, with 2 chapters. Then program each channel of the synchronizer to play one of the Titles. *note: if you can't figure out how to place extra chapter marks on your discs, be sure that your authoring program enables frame controls, or you must place an extra title with 5 seconds of black on it at the end of the disc.*

2 - Some low cost authoring programs do not allow multiple titles, or when using multiple titles you end up making discs that do not have a single sequential PGC per title. This will make the discs useless to the synchronizer. The alternative is to make a single title with multiple chapters.

a - If the video starts with black and ends with black, then in the video editing software you would edit all channels into a single clip of video, and add an extra 5 seconds of black at the end. Then in authoring you would place chapter marks at the start of each channel's video, plus one extra chapter mark at the start of the extra 5 seconds of black. So, for example, if you were making a 3 channel piece, the disc would contain 4 chapters.

b - If you will be holding the last frame of video during rewind, then you should edit the video so that the last frame of each channel is held frozen for 5 secnds at the end of each channel. When authoring, you would place a chapter mark at the start of each channel, and also at the start of each of those 5 second segments of frozen image. This means that you would have twice as many chapters as channels in the synchronizer. For example, a 3 channel piece would have 6 chapters.

Summary

* You must have an audio track with every video track.
* You don't need to automatically start playing the disc
* Do not author the disc to automatically loop (at least not within the segment you will be playing)
* Do not author menus, still frames, or jumps within the segment of the disc that the synchronizer will play
* Place an extra chapter containing 15 or more frames of black at the end of each title
* If you plan to hold the last frame while searching back to the start, be sure to either (1) have that frame frozen for 10 or more frames at the end of the chapter and program the synchronizer to end at the first of those 10 frames (end mode = Frame), or, (2) have the last frame of the chapter be that image, and have an xtra chapter after the chapter you are playing that also has that image frozen for several seconds, and then program the synchronizer to end when it gets to that extra chapter (end mode = chapter). This method doubles the number of chapters on your title (but that's not a problem)
* If you plan to play multiple titles at once, place an extra title containing 15 or more frames of black as a final title on the disc
* If you are using frame numbers, timecode, or chapters for the start or ending marks, author each title as a single sequential PGC
* On DVD Studio Pro, be sure that "Time Search / Time Play" is permitted in the "Remote Control" section of the main project settings.

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