

Using Dakota with Cakewalk Pro Audio

Released 000528

This application note was created based on:

- Cakewalk Pro Audio version 9.02
- Dakota driver v2.05

Cakewalk includes wonderful help documents and tutorials. Please refer to them for help with topics that are not directly related to Dakota set-up and use.

Audio Set-up

The first time you open Cakewalk with Dakota installed, the “Wave Profiler” runs automatically to set Cakewalk’s internal parameters for each input/output device pair. You can examine and modify the resulting settings in Cakewalk’s Options/Audio/DeviceProfiles tab. Make sure that the “Use Wave Out Position For Timing” checkbox is enabled as shown in Figure 1, so Cakewalk will use Dakota’s accurate audio timing. If you ever want to run the Wave Profiler again, go to the Options/Audio/General tab (Figure 3), and click the “Wave Profiler” button.

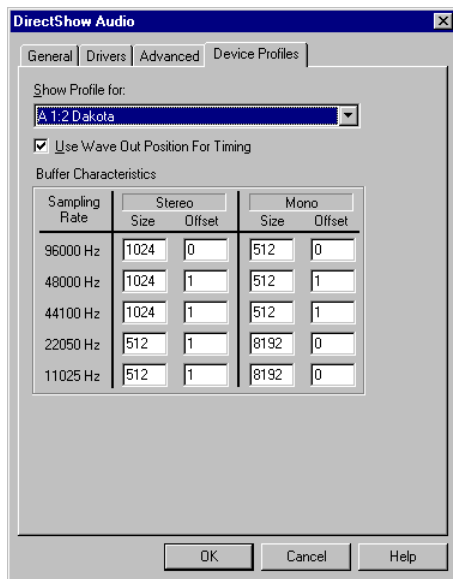


Figure 1

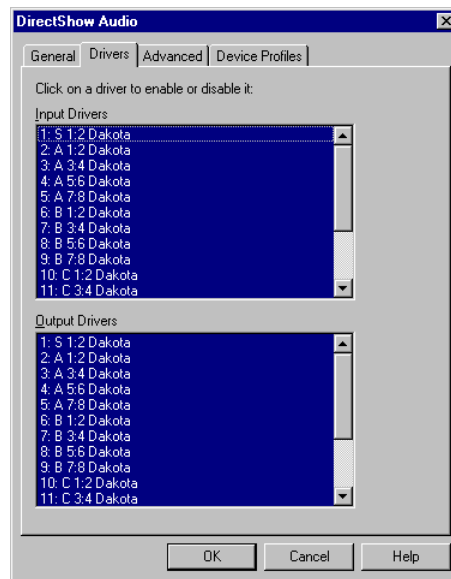


Figure 2

To enable the Dakota input and output devices, go to the Options/Audio/Drivers tab (Figure 2), and click on all the devices you want to use for recording and playback. A highlighted device is enabled; clicking on it again disables it. For example, highlight “S 1:2 Dakota” if you want to record through Dakota’s stereo SPDIF input (coax, optical or CD-ROM). Close and restart Cakewalk for the changes to take effect.

In the Options/Audio/General tab (Figure 3), set the Playback Timing Master and Record Timing Master to Dakota devices, preferably ones that you’ll be using anyway. In the section labelled “Default Settings for New Projects” (see Figure 3), you can also set the File Bit Depth (typically 16 or 24). You can change the bit depth after starting a project by selecting “Change Audio Format” from the Tools menu.

The “Mixing Latency” settings affect how quickly Cakewalk responds to control inputs such as mute buttons or console faders. There is always a tradeoff between low latency and safe (click-free) audio. Many systems can get great audio performance with fewer than 5 buffers and with very small buffer sizes, but the only way to know what your system can handle is by experimenting with these settings in a large project. See “Reducing Mixing Latency” in Cakewalk’s online help for more details.

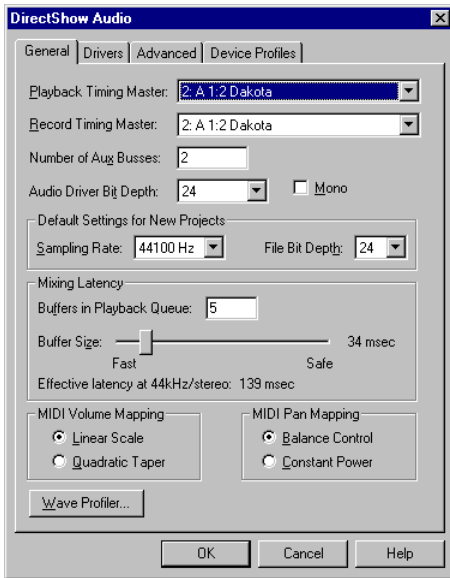


Figure 3

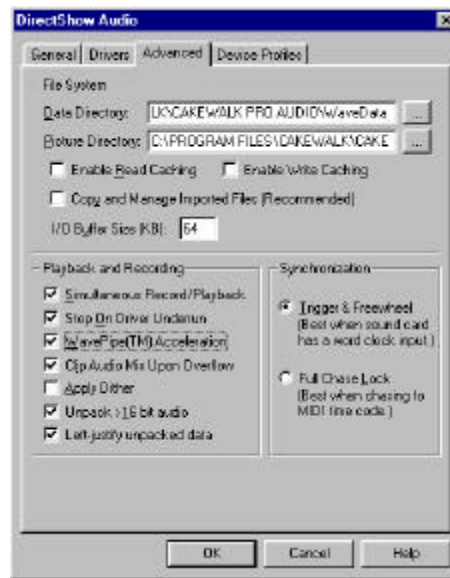


Figure 4

The Options/Audio/Advanced tab contains many audio-related settings. Our recommendations are shown in Figure 4. If you use MTC or SMPTE timecode for synchronization from a digital device, such as an Alesis BRC, we strongly recommend using the “Trigger & Freewheel” setting, so that Cakewalk won’t alter incoming digital audio to keep it locked to the MTC. For more details about any of the settings shown in Figure 4, please refer to Cakewalk’s online help.

Before recording or playing audio, go to the Options/Project/Clock tab, and set the Source to “Audio” (Figure 5) to make Dakota the master timing source for Cakewalk.

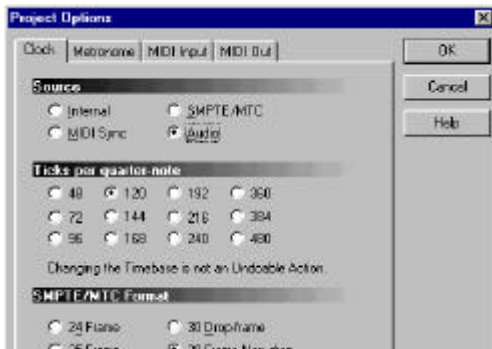


Figure 5

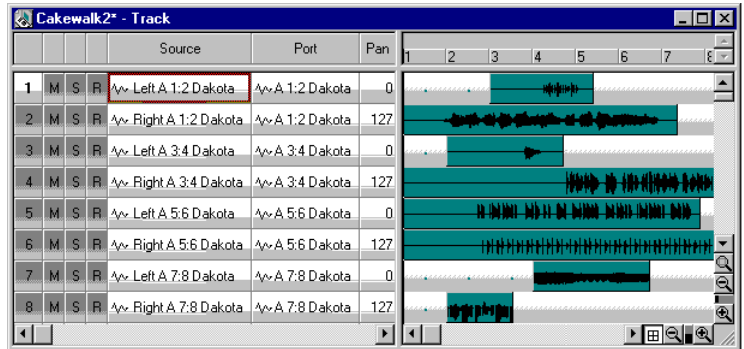


Figure 6

Version 9 of Cakewalk supports both mono and stereo tracks. However, the outputs are always stereo (listed in the Port field). When you first create a mono track (by recording or importing), the default Pan setting is 64 (centered) which means that the mono track will play through both audio output channels. If you want to play individual mono tracks, remember to set the Pan field for each track to 0 (hard left) or 127 (hard right). The example in Figure 6 shows track 1 panned left (to play only through Dakota output A1), track 2 panned right (to play only through WCPCL output A2), and so on for 8 mono tracks.

MIDI Set-up

To use Dakota's MIDI ports, you must enable them in two places. First, go to the System tab of the Dakota control panel, and set the Midi Mode to "2x2" as shown in Figure 7 (or to "8x8 – Sierra, if you have the Sierra MIDI/SMPTE expansion box connected to Dakota). Reboot your computer for the change to take effect.

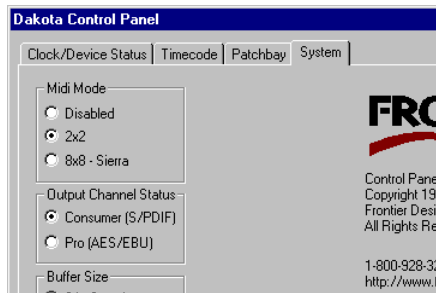


Figure 7

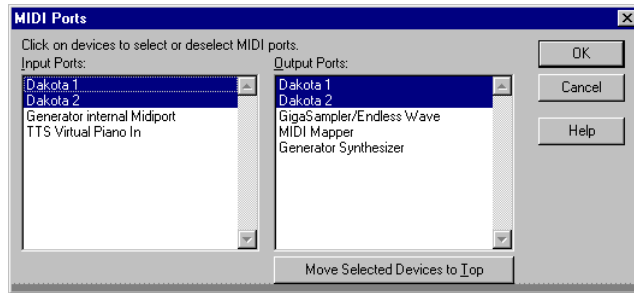


Figure 8

To enable the Dakota MIDI ports in Cakewalk, select "MIDI Devices" from the Options menu, and click to highlight the "Dakota 1" and "Dakota 2" ports for recording (input) and playback (output), as shown in Figure 8.

Recording and Playback

Cakewalk's Track screen includes several columns, which you can re-arrange. In this example, we display the Mute, Solo, Record, Source (Input), Port (Output), and Pan columns. We'll record audio on Track 1 and MIDI on Track 2.

1. Connect an audio source to channel 1 of Dakota's ADAT optical input A.
2. Double-click in the Source or Port column for Track 1 to open its Track Properties window (Figure 9).
3. Set the Source field to a Dakota device, such as "Left A 1:2 Dakota" for ADAT optical input A1. ("Right A 1:2 Dakota" is for ADAT input A2, and "Stereo A 1:2 Dakota" is for ADAT inputs A1 and A2).
4. Set the Port field to a Dakota device, such as "A 7:8 Dakota" and set the Pan field to "0" (hard left) for ADAT optical output A7. (Leaving the Pan set to "-1" would center the audio on outputs A7 and A8.)
5. In the Dakota control panel, open the Patchbay tab, and route input A1 to output A6 (Figure 10) so you'll be able to monitor the input through output 6 of an ADAT-compatible D/A converter.

Note: Cakewalk uses Dakota's MME driver, and the MME driver takes priority over the Patchbay. Therefore, any outputs that are designated as ports for Cakewalk tracks cannot be used for input monitoring. In this example, you must route input A1 to an output *other than* A7 or A8 in the Patchbay, since those outputs are already designated as ports for playing back track 1.

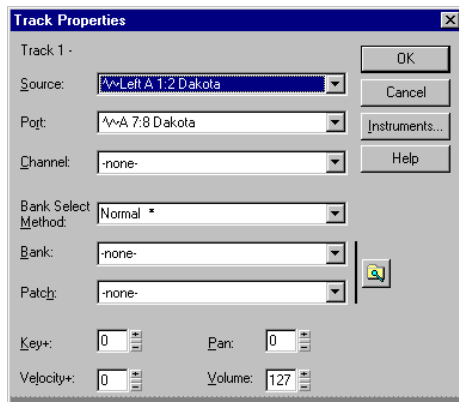


Figure 9

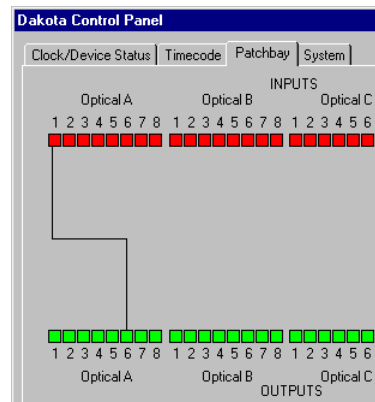


Figure 10

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6. Double-click in the Source or Port column for Track 2 to open its Track Properties window (Figure 11).
7. Set the Source field to a Dakota MIDI input channel, such as “MIDI Channel 3.”
8. Set the Port field to a Dakota MIDI output, and set the Channel field to the desired MIDI channel.
9. In Cakewalk’s View menu, open the “Console” window so you can activate the Record Meters (Figure 12).

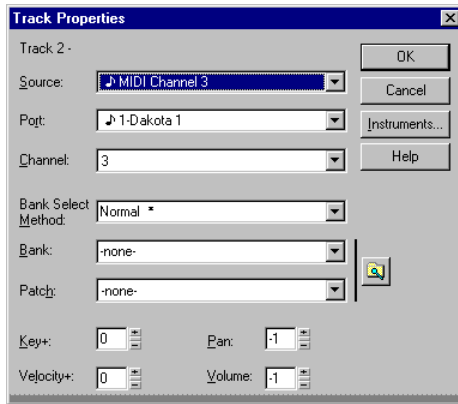


Figure 11

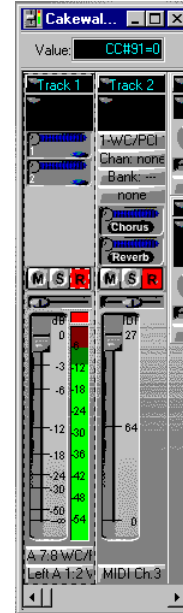


Figure 12

10. To arm the tracks for recording, click the “R” column for Track 1 and Track 2 (Figure 13). In the Meters window (Figure 12), you can adjust the audio input level for channel 1 to make sure it’s hot but not clipping.
11. Click the Record button at the top of the Track screen to start recording.
12. Click the Stop button to stop recording.
13. To unarm the tracks, click the “R” column for Track 1 and Track 2.
14. To play back the tracks, click the Play button at the top of the Track screen.

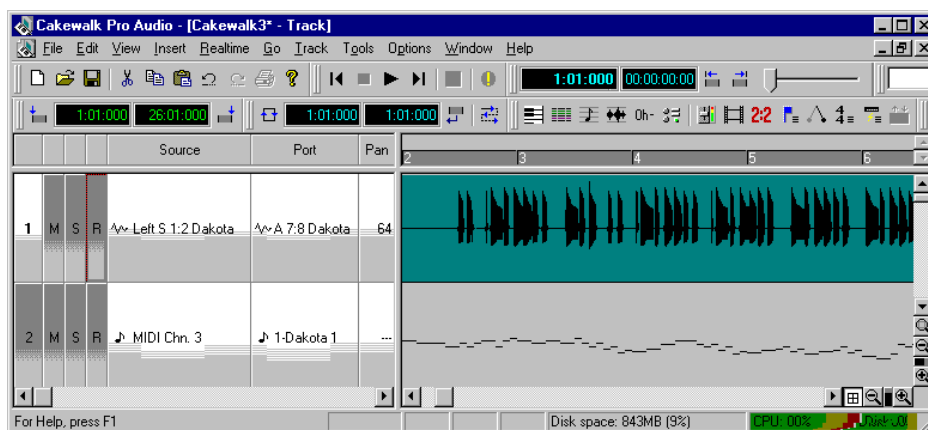


Figure 13

Cakewalk's Tuner

Cakewalk includes a chromatic tuner (Figure 14). To use the tuner with Dakota, ignore the Help information provided by Cakewalk, and use this procedure instead:

1. Make sure the input channel that is recording the instrument to be tuned is *not* armed (not record-enabled).
2. From the Windows Start menu, go to Settings > Control Panel > Multimedia > Audio (Figure 15).
3. In the Recording section, set the Preferred Device to the input device you want to tune.
4. Make sure that "Use only preferred devices" is enabled.
5. In Cakewalk, select "Tuner" from the Tools menu. Make sure that there is sufficient input level to tune well. (There is a level meter at the bottom of the Chromatic Tuner window.)

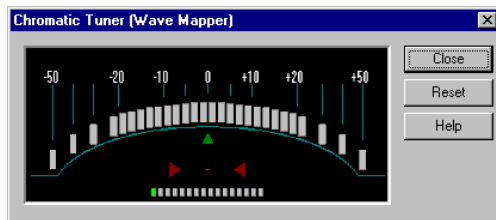


Figure 14

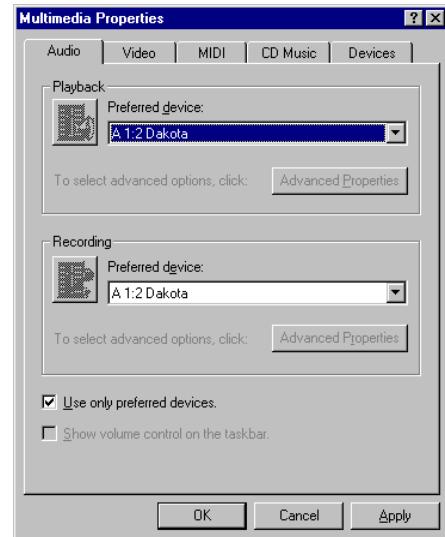


Figure 15

Synchronization

Dakota supports a variety of timecode sources — SoDA (SMPTE on Digital Audio), ADAT 9-pin sync, MTC (MIDI Time Code), or SMPTE via dedicated jacks on the Sierra expansion box. Regardless of which timecode source you're using, you follow the same steps to synchronize Cakewalk to the incoming timecode.

First, you need to select the Clock Source in the Dakota control panel. To follow timecode via Dakota's ADAT 9-pin sync input, set the Clock Source to ADAT Sync In. To follow SMPTE timecode from a tape machine, set the Clock Source to SMPTE/MTC (as shown in Figure 16).

Make sure that the sample rate listed in the Dakota control panel matches what your application expects.

If you're using MTC, make sure that the digital audio and MTC clock sources derive from the same master device, or else they will slip relative to each other. For example, MTC sent to Dakota from a BRC will work with digital audio sent to Dakota from an ADAT that is controlled by the same BRC.

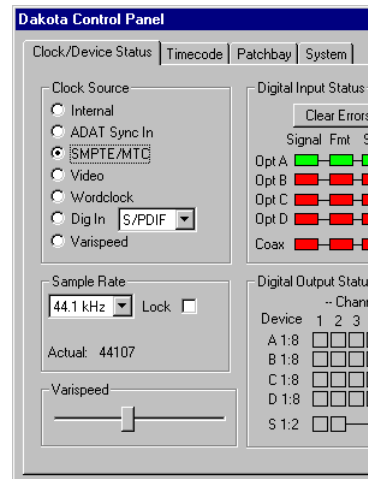


Figure 16

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Next, you need to select the timecode source and format in the Timecode tab of Dakota's control panel. For example, Figure 17 shows 30ND SMPTE timecode coming in audio port A3 (using Dakota's SoDA feature).

Regardless of which timecode source you're using, Dakota will convert it to MTC (the only timecode that Cakewalk understands internally). In the "Timecode Destinations" area of the Dakota control panel, there are 8 check boxes labeled "MIDI In devices (to software)" that let you specify which Dakota (or Sierra) MIDI input will send MTC to Cakewalk. If you're only using Dakota's 2x2 MIDI (you don't have Sierra connected), then check boxes 1 and 2 are the only useful ones. In the example shown in Figure 17, MTC is sent to Cakewalk through MIDI input 1. NOTE: Do *not* send MTC to Cakewalk through more than one MIDI input. Cakewalk gets confused if it receives redundant MTC packets.

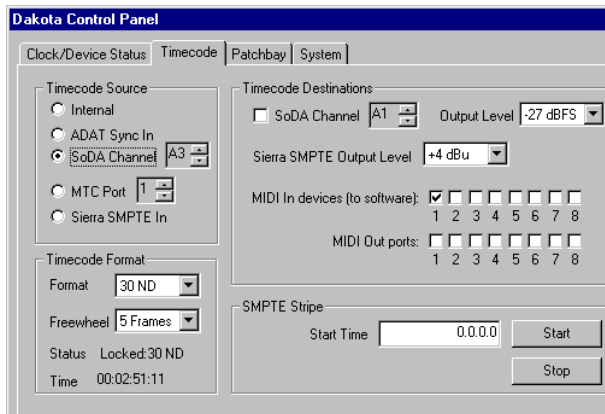


Figure 17

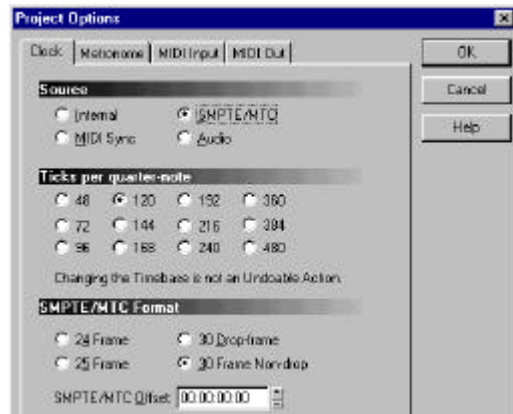


Figure 18

In Cakewalk, change the Clock Source in Options/Project to SMPTE/MTC, as shown in Figure 18. Make sure the SMPTE/MTC Format listed in Cakewalk's window matches the Timecode Format listed in the Dakota control panel.

Now when you click Play or Record in Cakewalk, a message in the status bar will indicate that Cakewalk is waiting for incoming timecode. Once you start your timecode source, Cakewalk will take a moment to verify a solid lock and then it will follow the timecode.

Optimization

This suggestion comes from Cakewalk's online Help file. Usually, as the number of tracks increases, it becomes difficult to achieve a very low latency value without suffering dropouts during playback, but with the right hardware, and not too many real-time effects (plug-ins), you may be able to achieve low latency even when playing a large number of audio tracks by making the following adjustment:

1. In the Options/Audio/General tab (Figure 3), reduce the number of Playback Buffers to 2.
2. Exit Cakewalk.
3. Navigate to the directory where your Cakewalk software is installed, and use Notepad (or any text editor) to open the AUD.INI file.
4. Locate the line that says "MixScheme=0", and change it to "MixScheme=1"
5. Save the file.
6. Launch Cakewalk, and replay your project. If your project plays without a problem, you may be able to push the latency slider further to the left, depending on the number of tracks, clips and real-time effects in your project.

If you encounter dropouts or other problems during playback, undo the above changes; you'll have to make do with a more conservative mixing latency setting.