Echo Digital Audio Corporation

Darla20, Gina20, Layla20 and Darla24 WDM install
Version 6.02 beta

Disclaimer

This is a beta release. While we have tested these drivers extensively, there may still be bugs lurking. Please be aware that these drivers are used at your own risk; Echo Digital Audio Corporation is not responsible for any damage, including bodily harm, incurred by the use of these drivers.

Introduction

Version 6.02 beta of the WDM driver introduces many new features and fixes several minor bugs. We recommend that all users running Windows Me, 2000 and XP upgrade to this version of the driver. Users of Windows 98SE or earlier are urged to use the 5.06 VxD drivers, available on our website.

For a complete list of changes in this driver see the version history at the end of this readme.

Please read through the “New Features” section of this readme for full documentation of the enhancements built into this new driver.

This readme file also includes background information on WDM drivers and a tutorial on enabling 5.1 channel playback with WinDVD (Other DVD playback programs will function similarly.

New Features

Wave Device Configuration with Super Interleave (Layla and Darla24 only)

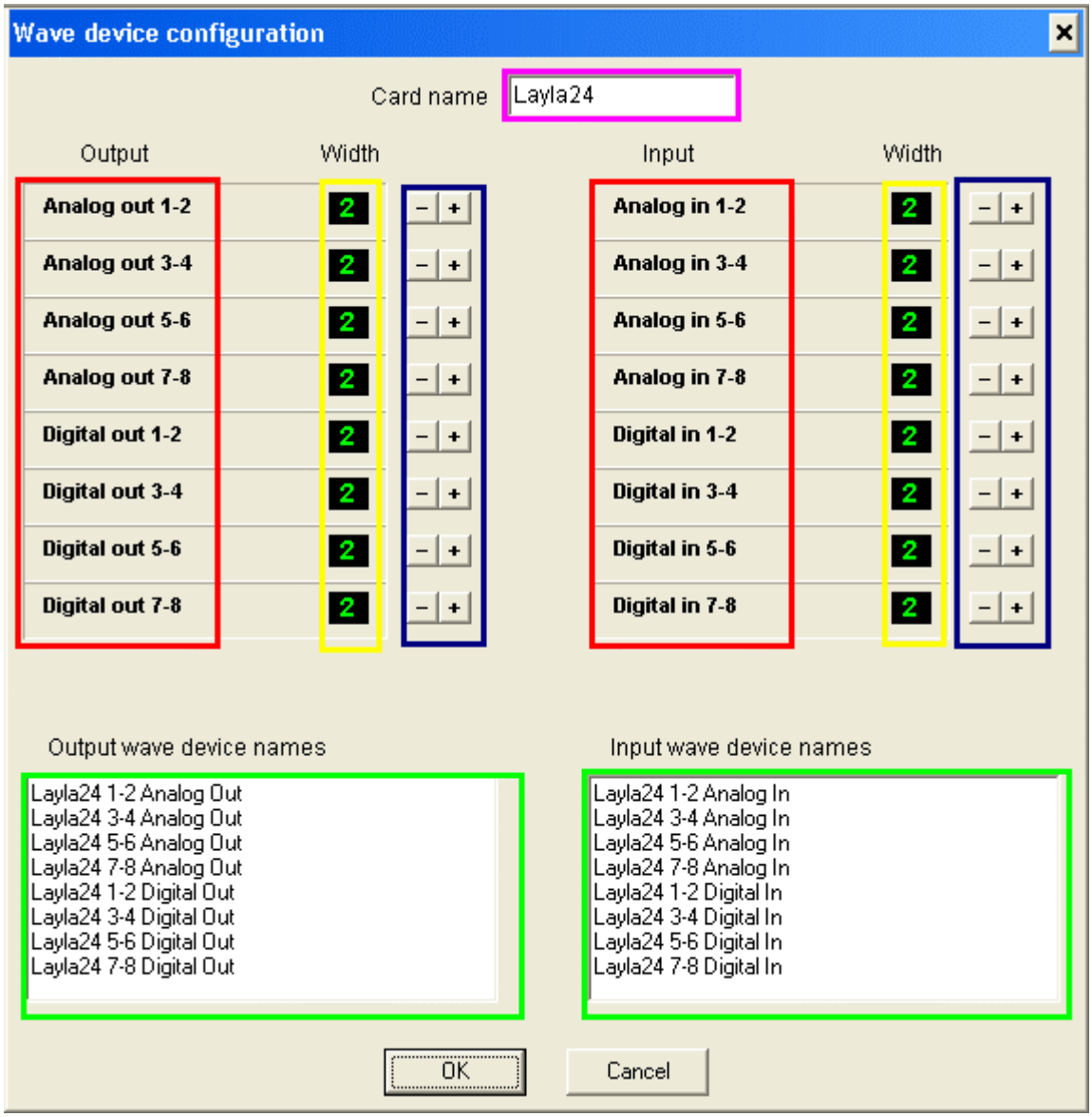
Usually, multi-channel computer audio systems appear to Windows as multiple stereo devices as opposed to one *n*-channel device. Therefore, Layla24 would appear in the Sounds and Multimedia Control Panel playback menu as: Layla24 1-2 Analog out, Layla24 3-4 Analog out, etc. Now, with Echo's new Super-Interleave feature, Echo Audio hardware can be represented in Windows as one large 16-channel sound output device or multiple smaller devices of arbitrary channel widths. For example, you could configure Layla24 to be represented as two devices, each eight channels wide. The devices would show up in the Windows Sound Playback control panel as Layla24 Analog 1-8 and Layla24 Digital 1-8. Recording devices can be configured in a similar fashion and don't have to "match" the sound output devices you have set up.

Why would I want to use this feature?

The Super-Interleave feature is useful when using a program that requires a multiple channel device for playback, such as WinDVD, which requires a six channel device for 5.1 surround sound playback. Secondly, users of "kernel streaming" programs such as Cakewalk's SONAR can enjoy better audio performance with one large device than with multiple stereo devices. This is because SONAR doesn't have to communicate with each stereo device separately; it can just do it once for each Super-Interleaved device. In addition, the **Super-Interleave feature has no effect on ASIO based programs** such as Steinberg's Cubase and Nuendo; it only affects wave-based and kernel-streaming programs.

How do I set up Super Interleave?

Open the console and click on the "Settings" button. Then click on the "Advanced…" button under the "Driver" tab. Clicking on this button displays the "Wave Device Configuration" window shown below. By default your Echo Audio hardware will be divided into eight stereo pairs as shown in the figure below.



Card Name - In the area outlined in pink, you can enter a name for your Echo card. This name will be used in applications such as the Windows Sounds and Multimedia control panel. Choose this name carefully, as any profanity entered in this box may offend sensitive computers.

Input/Output - The areas outlined in red indicate which stereo pairs are grouped in a Super-Interleaved device. The gray separator line disappears between grouped channels. Only contiguous stereo pairs can be grouped together. For example, you can't group together Analog 1-2 out and Analog 5-6 to form one four channel device.

Width - The areas outlined in yellow indicate how many channels "wide" the wave device is.

Plus and Minus buttons - The plus and minus buttons outlined in blue are used to change the width of the device. Notice that clicking the plus button always incorporates the pair below it into its Super-Interleaved group.

Input/Output Wave Device Names - The boxes outlined in green show the names of the wave devices that will be created. When both analog and digital pairs are grouped together the names

will display something like “Analog 3 - Digital 4 out” for a ten channel output group. Again, only contiguous stereo channel pairs can be grouped together.

Note: On Windows 2000 and XP, your computer will be unresponsive for a period of time after clicking OK while the driver restarts. The delay time will depend on the number of channels you are grouping together. More devices will mean a longer delay.

For Windows Me, you will need to reboot for your changes to take effect.

Console Sessions

Console settings can be saved as a console session to be reloaded later. To save a console session, click the “Save” button in the console. To load a previously saved session, press the Load button in the console. The current session can be “fast saved” by pressing the F key; this will overwrite the most recently opened session file with the current settings.

By default, a directory with your card name is created, and all sessions for that card are saved to it. Sessions are not cross-compatible between different types of hardware; that is, a Gina session cannot be used with a Layla.

All console settings are saved, including:

- Volume and pan sliders
- Mute, gang and nominal level settings
- Digital mode
- Input clock

The various options available in the “Settings” dialog are not saved as part of the session.

Card Naming – Layla20 and Darla24 only

You can now assign Layla20 and Darla24 a distinct name. This is particularly useful if you are using multiple Echo cards in the same system.

To change the name of your card follow these steps:

-Open the Console3 application and press the “Settings” button.

-Under the Driver tab press the “Advanced…” button.

-Your card name will appear in a field near the top of the dialog box.

-Type the new card name here, and press OK.

On Windows 2000 and XP, your computer will be unresponsive for a period of time after clicking OK while the driver restarts. The delay time will depend on the number of channels you are grouping together. More devices will mean a longer delay.

On Windows Me, you will need to reboot for your changes to take effect.

For Darla20 and Gina20, each card will be automatically assigned a unique name.

Console3 launcher enhancement

If a card is disabled in Device Manager, the console tray launcher will correctly recognize which cards are active.

Power Management

The Layla20 breakout box can be power cycled without restarting the computer. The box will be re-initialized when you play or record audio.

Power management is now fully support for all cards.

Hot Keys

The console supports several hot key functions:

F1-F12 Selects the output bus
F Fast-saves the current session
L Loads a session
S Saves a session
T Opens the settings dialog

Ctrl-click a fader to set to 0 dB
Ctrl-click a pan slider to set to center
Shift-click a fader to negate the gang button

AC-3 streaming (Layla20 and Gina20)

This was supported in 6.0 but was not documented.

An AC-3 digital audio bitstream can be sent out of the S/PDIF port.

In order to use this feature follow these steps:

-Select the digital output of your card in the Windows “Sounds and Multimedia” control panel, under the Audio tab.

-In your AC-3 playback application, enable digital streaming.

For example, in WinDVD select “Properties…” and under the audio tab select Enable S/PDIF output. If it is grayed out, double-check the control panel settings, then quit and restart WinDVD.

WinDVD – Example 5.1 output

Super Interleave can be used to play 5.1 channel Dolby Digital and DTS encoded data if you have a software decoder such as WinDVD. Configuring Windows for 5.1 output is a non-trivial task. Be sure to fully follow the following steps. While this tutorial references WinDVD, the concepts will be similar for other DVD playback programs.

1. Set up your output speakers.

-Select which 6 outputs to use for your 5.1 mix. You must use a contiguous group of outputs: e.g. Analog 1 – Analog 6.

-Plug in your speakers according to the following order. (This order is dictated by the operating system.)

Output 1 – Left Front
Output 2 – Right Front
Output 3 – Center
Output 4 – LFE (Sub-Woofer)
Output 5 – Left Surround
Output 6 – Right Surround

2. Use Super Interleave to create a 6 channel wave device.

-Open the console, and click the "settings" button.

-In the settings dialog box click the Advanced… button under the Driver tab.

>>The window that opens is where you control your Super Interleave settings.<<

-Under the output section click the plus sign next to the first device in your group, twice. For example, to create a 6 channel wave device starting on Analog 1 – Analog 6, click twice next to Analog 1.

-When you have set up your Super Interleave group correctly, the box below "output" should have a line that reads something like "Layla24 1-6 Analog Out."

-Click OK. **The console will disappear for several seconds while it restarts the driver.** In **Windows Me** you will be prompted to **restart** your computer.

3. Set the Microsoft Sound Mapper to the correct output.

-Open the "Sounds and Multimedia" control panel in Windows Me or 2000.

or

-Open the "Sounds and Audio Devices" control panel in Windows XP.

-Click on the Audio tab.

-In the Sound Playback->Default device pop-up menu select your 6 channel wave device, e.g. "Layla 24 1-6 Analog Out."

-Once the correct output is selected, click the "Advanced…" button.

-Select "5.1 Surround Sound Speakers."

-Click OK to close the "Configure Wave Devices" window. Click OK again to close the control panel.

4. Set WinDVD to play 5.1 audio.

-Open WinDVD.

-Select “Properties…” by right clicking in the WinDVD playback window or by clicking on the “wrench” button in the WinDVD player.

-Select the Audio tab.

-Select “6 speaker mode (5.1 channel).”

-Click OK.

>>You may need to close WinDVD and open it again for the “6 speaker mode” option to be available.

5. Check for 5.1 output.

If your speakers are connected correctly, you be enjoying 5.1 channel output. You can also check for output by looking at the output meters in the Echo console.

Other DVD playback applications will work similarly.

WDM - Known issues

Plug-n-play confusion:

We've seen at least one case of Windows getting really confused between our hardware and a competitor's USB MIDI interface. The solution was to uninstall all the audio hardware in the system (not just ours), and then reinstall all of it.

Windows Me issues:

-In some cases only the first six channels of a device set to Super Interleave greater than six will play back.

-The Windows volume control application does not work when devices are using Super Interleave.

Operating systems

For Windows 2000 and XP, we strongly recommend having at least 256 MB of memory. The driver doesn't require this much, but you will find that audio applications are memory-hungry.

For Windows Me, 98SE, 98, or 95, you should have at least 128 MB.

Windows 95: Requires the VxD driver.

Windows 98: Requires the VxD driver.

Windows 98SE: We strongly recommend running the VxD driver on Windows 98SE. However, if you really want to run the WDM driver, you can – the installer will give you the choice. Windows 98SE has a significant number of problems with WDM audio. To learn more about this issue, you can go here:

Microsoft KnowledgeBase article

We have not tested the WDM driver with Windows 98SE. We do not anticipate ever officially supporting Windows 98SE with WDM drivers.

For a more detailed discussion of Windows 98SE and WDM, check out the FAQ section in the Echo console manual.

Windows Me: You can use either the WDM driver or the VxD driver with Windows Me; however, the VxD driver is compatible with more applications.

Windows 2000: Requires the WDM driver. This driver will install and run under Windows 2000. Please be aware that for older applications there is a limit of 10 wave input devices and 10 wave output devices on Windows 2000; this is not a driver problem, but an operating system limitation.

For Windows 2000, you should have an absolute minimum of 128 MB of RAM; we strongly recommend 256 MB.

We have tested this driver with Service Pack 2, and the driver functions well. We recommend you at least install Service Pack 2.

Windows XP: Requires the WDM driver. The 10 device limit from Windows 2000 has been increased to 32.

WDM - Audio Application Issues

Cool Edit Pro: We have seen problems recording and playing in 24-bit mode. 16 and 8-bit work fine.

SONAR: Here are the required settings for using SONAR with our driver:

Note: The settings below will need to be reset *every* time you reconfigure your wave devices.

Go to Options/Audio.

On the "General" tab, set "Audio Driver Bit Depth" to 24.

On the "Advanced" tab, we suggest selecting "Trigger & Freewheel"

On the "Driver Profiles" tab, uncheck "Access Driver In Mono". Be sure to set "Stream > 16 bit data as" to "32 bit PCM, left justified".

You may get a message that your audio devices are not compatible with the specified format; you may need to restart SONAR several times. Make sure each time that the settings are correct; once SONAR starts successfully without the "not compatible" message, be sure to run the Wave Profiler under Options/Audio/General.

We recommend installing the latest SONAR patch.

If you have problems with audio stuttering and distorting, you may need to set "Buffers in Playback Queue" to 3 under Options/Audio/General.

To get the smallest possible latency, you should only enable input and output drivers that you actually intend to use.

Cubase VST: Check out the WDM - ASIO section below.

Vegas: 24 bit recording and playback works fine in Vegas. However, to get full duplex to work you will need to use the sample rate lock feature in the console. Also, Vegas is not able to take advantage of the Super Interleave feature. It will use the first stereo pair in the group and hide the rest of the channels in the respective group.

Sound Forge: You may have problems recording or playing back 24-bit audio with Sound Forge 5.

Wavelab 3.0: You may have problems recording or playing back 24-bit audio.

GigaStudio: This driver supports GSIF; you will need at least GigaStudio version 2.5.

GigaSampler: We have been told by Nemesys that they do not intend to add WDM support to GigaSampler.

WDM - ASIO support

This driver release includes full ASIO 2.0 support. The WDM ASIO driver includes a number of improvements over the VxD-based ASIO driver:

-Rewritten for maximum performance – audio latencies should be improved.

-Supports mixing older and newer cards in the same ASIO application – you can now run Layla20 and Layla24 at the same time

-Only shows available channels– if another program is using an input or output, Cubase will still run and not give you the annoying "No ASIO driver error."

When you run Cubase, you may not see some of your outputs. This is probably due to the fact that another program is using them. The most likely culprit is the Microsoft wavetable synthesizer, which is being opened by Cubase as a MIDI output device. Exit Cubase and run the "Setup MME" program. Select "Microsoft GS Wavetable SW Synth" and click the "Set Inactive" button. Run Cubase again.

If your outputs still don't show up, you may have some other software synth installed that's doing the same thing. Look in the "Setup MME" program for other programs that may be grabbing audio outputs or inputs.

Why is my first input monitor always muted when I run Cubase?

This is because we support ASIO 2.0 Direct Monitoring. Direct Monitoring gives Cubase control over the hardware monitors. When Cubase starts up, it uses DirectMonitoring to mute that monitor.

We realize that this isannoying. As far as we can tell the concept behind Cubase is that you should have all your monitors muted at first and then enable them within Cubase in the Channel Mixer window as you prepare to record tracks, etc.

If you don't like this behavior, you can always go to Options/Audio Setup/System…., click on "ASIO Control Panel" and uncheck the box labeled "Enable ASIO 2.0 Direct Monitoring". This will cause our ASIO driver to reject any Direct Monitoring commands and prevent the mute on startup. Of course, it also means that you can't use Direct Monitoring.

Hey! My first two outputs are missing in Cubase!

They are probably being used by the Microsoft wavetable synthesizer; see above for the solution.

WDM - Windows volume controls

The WDM driver supports the Windows volume control program.

When you run it (Start/Programs/Accessories/Entertainment/Volume control), you should see a slider marked “Line volume”. This slider doesn’t do anything; it’s a dummy control that has to be there for the program to run.

Adjusting the “Wave” and “Synth” sliders will set the volume levels for the Windows kernel mixer, not the hardware. These settings are *not* the same as the volume sliders in the console. The console sliders adjust the levels in the hardware; the Windows volume controls are for adjusting the levels in the Windows mixer.

WDM - Troubleshooting

If you are running Windows 2000 or XP and your computer spontaneously reboots on you, you probably have experienced what Microsoft calls a “bug check”, but what everyone else calls the Blue Screen of Death (BSOD).

The default setting for the BSOD is not to show the BSOD, but to reboot the computer. This isn’t very helpful for tracking down problems. If you are experiencing blue screens, here’s how you can help us track it down (these are for Win2000, but XP is similar):

Select Start/Settings/Control Panel/System
Go to the Advanced tab and click on “Startup and Recovery”
Uncheck “Automatically reboot”
Set the memory dump to “Small Memory Dump”

Now, next time you get a blue screen, look at it. See if the crash occurred in echo24.sys or echogals.sys; if it did, then it’s probably something we need to fix.

Restart your computer and find the most recent .dmp file – this is the memory dump. It’s probably in \winnt\minidump.

Zip up this .dmp file and send it to techsupport@echoaudio.com along with a description of how it happened. This will really help us track down problems.

Unfortunately, Windows Me doesn’t have this facility, but chances are if we are crashing on Me someone else will see the same crash on 2000 and we’ll be able to track it down.

Version History

6.02

-Fixed the shutdown problems
-Fixed MIDI sysex output
-Super interleave
-Configurable wave devices
-Surround sound playback – four speaker, 5.1, and 7.1
-Console sessions
-Card naming
-Support for dynamic card removal in the console launcher
-Power management
-New hot keys
-Less non-paged memory usage
-New integrated DSP code

6.00
-Version number change

0.66
-Fixed a problem with the PC locking up while seeking or pausing playback

0.65
-Fixed a major problem where Darla20 and Gina20 could not record.

0.64
-Fixed problems with saving/restoring settings
-Memory usage has been reduced
-Fixed problems with mixer support for some cards

0.63
-Added GSIF support
-Windows mixer support
-Fixed bug with ASIO driver where you couldn't select the sample rate in Cubase
-We think we've finally fixed the infamous blue-screen-when-I-run-the-console bug; this was happening when the driver either ran out of memory or couldn't initialize the hardware. Now, the console will display an informative error message and refuse to run.
-Driver now uses less non-paged memory
-Fixed a memory leak in the ASIO driver
-Fixed a bug with Mia and ASIO 2.0 DirectMonitoring; the monitors could be unmuted but not muted again.
-The ASIO driver will remember the most recent sample rate; this means that the sample rate will not revert to 44.1 if you switch between Cubase and another application.

0.62
-Added ASIO support
-Worked around a problem where Windows was locking up on multiprocessor machines
-Fixed a bug with Mia not saving/restoring virtual output settings
-Fixed a potential blue screen that could happen if two apps were trying to open the same wave device
-Fixed a bug that could cause lockups on MIDI output
-Fixed the sample rate lock so it works properly
-Fixed a bug where Mona wouldn't let you set professional S/PDIF mode
-Cleaned up code that saves/restores mixer settings

-The driver installer has been improved.
-Fixed some minor bugs in the driver installer.

0.61
- Darla20, Gina20, Layla20, and Darla24 are now supported
-MIDI input and output is now supported for Layla20 and Layla24
-This driver will run much better on Windows ME
-All of the audio outputs should now appear as wave devices (i.e. the “asymmetry problem” has been fixed).
-Improved multi-client support
-New driver installer
-Some internal changes for better SONAR support – you should see fewer of the “Format not supported” messages.
-Analog input +4/-10 buttons now show up on the console for Mia.
-A typo was fixed in the Mia INF file

0.60
- First public release