

# M A U D I O

## DELTA 1010

*Flexible, high-quality  
24/96 audio recording,  
mixing, and routing.*

By Allan Metts

M idiman's new M Audio division was created to focus solely on digital recording products for Macs and PCs. The Delta 1010 audio interface, the division's current flagship product, is a fine way to kick things off.

The Delta 1010 consists of a PCI card and a 1-rackspace breakout box with ten discrete channels of 24-bit, 96 kHz audio I/O. The system also provides one MIDI In and one MIDI Out port, word-clock I/O, and comprehensive mixing, monitoring, and routing capabilities.

### PLUG IT IN

One of the first things I noticed about the Delta 1010 was its extensive driver support. I prefer a Windows NT environment and was happy to see that my OS of choice is supported, as is Windows 2000. If you use Windows 95 or 98, the Delta 1010 supports DirectX, ASIO 1, ASIO 2, EASI, and GigaSampler drivers. Macintosh users get support for the

Apple Sound Manager, ASIO 1, and ASIO 2 (the EASI driver for the Mac was in beta testing at press time).

You can also use the Delta 1010 under Linux; drivers can be downloaded from 4Front Technologies ([www.open-sound.com](http://www.open-sound.com)) and the ALSA Project ([www.alsa-project.org](http://www.alsa-project.org)). A limited-time download of the 4Front Open Sound System (OSS) driver is free, but you'll need to pay a \$40 licensing fee for a permanent version. There is no charge for the ALSA driver.

I popped the Delta 1010 card into a spare PCI slot and had no trouble installing the appropriate drivers. My PC also contains a LynxStudio Lynx-One card, and the two products coexisted beautifully, with no compatibility problems. If you have enough spare PCI slots, as many as four Delta cards can be installed into the same computer.

The PCI card includes stereo S/PDIF input and output on RCA connectors. A DB-25 connector accommodates the cable to the rack unit; everything else is on the breakout box. This is a nice arrangement because it keeps all the DACs, and therefore the analog audio, well away from the electromagnetic and grounding nightmare inside your computer. It also reduces the number of cables that leave your equipment rack.

Speaking of cables, the Delta 1010's 6-foot DB-25 cable wasn't long enough to reach from my computer to my preferred rack location, so I connected a cheap DB-25 extension cable to the stock cable, and it worked fine. (M Audio now ships the Delta with a 10-foot cable—

the officially recommended maximum length—but has successfully tested the system with 12-foot cables.)

### RACK OF AGES

The Delta 1010's rack unit houses all the A/D and D/A converters and provides the I/O connectors for analog audio, MIDI, and word clock. The front of the unit is rather spartan, providing only MIDI In, MIDI Out, MIDI activity indicators (for both input and output), and a power indicator.

The action is on the back of the unit, which sports eight analog inputs and eight analog outputs, all on 1/4-inch tip/ring/sleeve connectors. Each input and output has a button switch next to it that lets you configure the connector for either +4 dBm or -10 dBV signal levels. I really like the ability to establish the signal level for each connector, and the back-panel switches are great for "set and forget" installations. However, I wired the Delta 1010 into a patch bay, so I didn't always know what I'd be connecting the unit to. In such a situation, software control over the setting would be much more convenient.

Rounding out the rack unit's back panel are BNC connectors for word-clock I/O, a DB-25 connector for the computer cable, and a power connector for a lump-in-the-line transformer. All in all, the Delta box is laid out in a logical fashion. I could make arguments for moving the MIDI I/O to the back and putting one or two channels of audio I/O at the front. I also would prefer a built-in power supply. But these features would most likely have led to a higher price for the system.

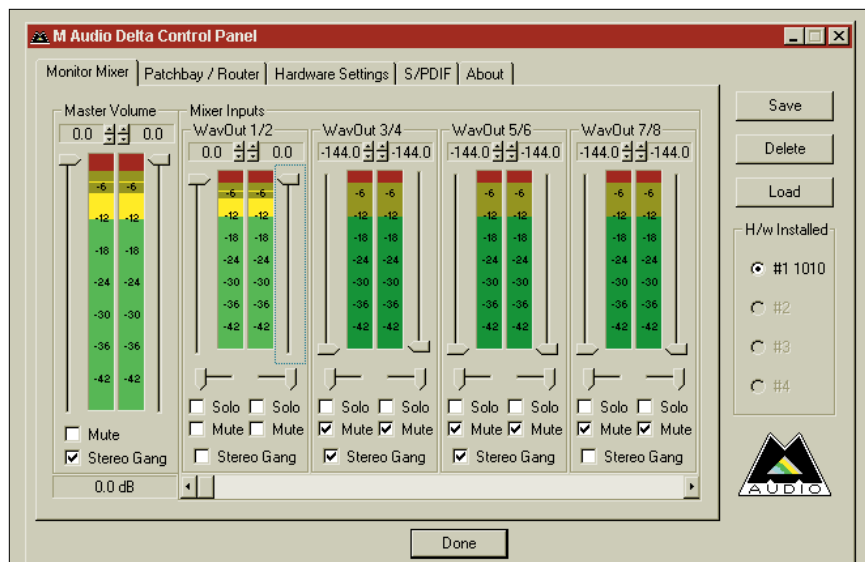
### SOFT GOODS

When you install the Delta 1010 software, you get a new applet in your Windows Control Panel folder, *Delta Control Panel*. I immediately set up a more convenient shortcut to this program, because I knew I'd be accessing it often. Launching the program brings up *Delta Control Panel*, with several pages of controls. If you install multiple Delta cards, they will all share the same Control Panel; a set of radio buttons within the applet lets you choose between the cards.

The Delta 1010 comes with a built-in digital Monitor Mixer that can mix up to ten stereo sources (five playing from disk, plus ten hardware inputs configured as stereo pairs). Each source gets its own fader group on the



The rack-mount breakout box for M Audio's Delta 1010 contains all the converters and the TRS analog I/O jacks, as well as the word-clock and MIDI ports and the MIDI activity indicators. The audio ports are in the rear; the MIDI ports are, oddly, in the front. S/PDIF I/O is provided on the PCI card (top), which connects to the box via a standard DB-25 cable.



**FIG. 1:** *Delta Control Panel's* onscreen controls allow you to mix live audio appearing at the hardware inputs with tracks played back from disk.

Monitor Mixer page of the Control Panel (see Fig. 1). The inputs from disk are labeled “WavOut 1/2,” “WavOut S/PDIF,” and so forth, matching the names of the outputs you can choose in your audio-recording program.

Each fader group includes level and pan controls for both the left and right channels. Two pan controls? You read correctly. With two pan controls, you can send the right input channel to the left channel on the master bus, and vice versa. For most stereo mixing, you'll keep the left channel panned left and the right channel panned right.

The left and right level controls can be ganged together and operated as one. But if you do this, both controls must occupy the same position, which means you can't set one fader 3 dB below the other and have them maintain that relationship as you move them. Numerical displays indicate the fader position, and handy little up/down buttons are for fine-tuning.

Separate mute and solo controls are provided for the left and right channels of each input. Tricolored virtual peak/level meters indicate the signal at each source to round out the fader-group features. Unfortunately, the Delta doesn't come with a persistent indicator to show a digital-overload condition. The Master fader group lacks solo and pan controls but is otherwise just like the Input fader groups.

Overall, I found the Monitor Mixer to be useful and intuitive. However, the *Delta Control Panel* window isn't resizable,

and only four Input fader groups are visible at a time. (You access the others by moving a scrollbar at the bottom of the window.) I have a 19-inch monitor and would welcome the ability to see all of the faders and meters on the same screen.

### VIRTUAL PATCHING

Let's say you're mixing signals to a Master fader group; where does the output of this Master go? The Control

Panel's Patchbay/Router page lets you choose one stereo input source for each stereo output (see Fig. 2). The analog inputs and outputs are all grouped into stereo pairs—1 and 2, 3 and 4, and so forth—so you can't choose one source for analog output 7 and a different one for output 8.

Each output can internally connect directly to any hardware input (bypassing the Monitor Mixer and any audio programs you may be using). This opens up some interesting possibilities. Need an extra A/D converter? Just connect the S/PDIF output to a pair of analog inputs. Or do it in reverse for a D/A converter. How about a five-way stereo signal splitter-merger? Simply connect all five stereo outputs to the same stereo input. You can even reverse the left and right channels of the S/PDIF input.

The Delta allows you to connect each output to a playback signal from your audio program (again, these are called WavOuts in the Control Panel). In this case, you can't choose just any WavOut for any output; WavOut 1/2 is only for hardware outputs 1 and 2, WavOut S/PDIF is only for the S/PDIF output, and so forth. This scheme makes some sense: you have the ability to choose your output destination in your audio program, and it could be very confusing if WavOut 5/6 were being

## Delta 1010 Specifications

<b>Analog Inputs</b>	(8) balanced ¼" TRS
<b>Analog Outputs</b>	(8) balanced ¼" TRS
<b>Digital I/O</b>	(1 pr.) RCA stereo S/PDIF (on PCI card)
<b>Sampling Rates</b>	8 to 96 kHz
<b>Sampling Resolution</b>	8 to 24 bits
<b>Sync Ports</b>	(1 pr.) BNC word-clock I/O; can also sync to S/PDIF
<b>Other Ports</b>	MIDI In, Out; DB-25 connect to breakout box
<b>Indicators</b>	MIDI activity LEDs
<b>Drivers Supported</b>	Windows 95/98/NT/2000: DirectX, ASIO 1, ASIO 2, GigaSampler, EASI; Mac: Sound Manager, ASIO 1, ASIO 2 (EASI driver in beta); Linux: third-party drivers
<b>Bundled Software</b>	<i>Delta Control Panel</i>
<b>Operating Level</b>	+4 dBm or -10 dBV (individually switchable per analog I/O port)
<b>Dynamic Range</b>	D/A: 108 dB; A/D: 109 dB
<b>THD (@ 0 dBFS)</b>	D/A: <0.0015%; A/D: <0.001%
<b>Power Supply</b>	9 VAC lump-in-the-line external
<b>Dimensions</b>	1U × 5.25" (D)
<b>Weight</b>	4.62 lbs.

rerouted to hardware outputs 3 and 4.

To mix all of the available Delta 1010 audio channels with an external audio mixer, you connect each hardware output to its corresponding WavOut source and run all the cables to your mixer. Alternatively, you can mix down with the Monitor Mixer. Analog outputs 1 and 2 have the Monitor Mixer as an available source that can be connected on the Patchbay/Router page. The S/PDIF output can be connected in the same way, which is useful for connecting to a DAT or other mastering deck. I would prefer that analog outputs 3 to 8 also allow connections to the Monitor Mixer. Although I don't really need such a capability, not allowing these connections seems like an unnecessary restriction.

### LIFE IN THE DELTA

When the Patchbay/Router page and Monitor Mixer are used together, the Delta 1010 offers tremendous flexibility. Working with the system, I realized I could use it without an external mixer in a small studio. To put this theory to the test, I set up some typical recording scenarios without a hardware mixer.

Actually, the first scenario didn't involve any recording—I call it the “just sit down and play” scenario. Most sound cards fail this test. Sometimes I don't want to fire up my audio program and configure tracks for recording; I just want to play a keyboard and hear the music I'm making. Creating

this simple setup was easy in *Delta Control Panel*: I just routed the output of the Monitor Mixer to the set of outputs that connects to my studio monitors. I could even have bypassed the Monitor Mixer altogether had I used only one pair of the Delta 1010 inputs.

The second scenario was another common one. For this, I wanted to record ten tracks simultaneously and then mix it all down. For tracking, I created ten tracks in my audio program and assigned each of them to a Delta 1010 input. I monitored the tracks by connecting my studio monitors to analog outputs 1 and 2 on the Delta 1010 and then assigning the Monitor Mixer to these outputs. Only one stereo mix is available at a time, however—so if you're tracking a band, no one can have a separate custom mix.

For mixdown, I assigned the tracks in my audio program to the five stereo WavOut devices and connected my mixdown deck to the S/PDIF output on the Delta 1010. The studio monitors were still patched to analog outputs 1 and 2. I connected both sets of outputs to the Monitor Mixer feed in *Delta Control Panel* and performed the mixdown—albeit clumsily, because the Monitor Mixer doesn't support any automation or external hardware controllers. Too bad.

Scenario 3 was a little more complex. Here I wanted to record audio tracks while listening to a mix that contained previously recorded audio as well as

M AUDIO  
Delta 1010 audio interface  
\$1,000

FEATURES ■■■■

AUDIO QUALITY ■■■■■

EASE OF USE ■■■■■

VALUE ■■■■

1 2 3 4 5

**PROS:** Offers 24-bit, 96 kHz operation; balanced I/O; comprehensive driver support; and powerful built-in mixing and routing capabilities. Outputs can be routed internally to inputs. Sound quality is excellent.  
**CONS:** *Delta Control Panel* is a fixed-size window. No automation or external controller support. Connector and trim-switch placement is inconvenient for some applications. Ganged L/R faders must have identical values.

what I was currently playing. This scenario also was not difficult to set up. I simply assigned my audio program to the inputs I wanted for recording, and I played the previously recorded audio to the WavOut devices. Because the Monitor Mixer can mix signals from the WavOuts and hardware inputs simultaneously, I was all set.

Scenario 4 was just like the third one, except I wanted to patch in an external effects processor for the audio I was recording. No problem. I routed my source directly to a set of outputs that went to the effects processor, bypassing the Monitor Mixer. With this configuration, I couldn't share the effects unit with any other inputs, but I did have access to both the wet and dry signals within my audio program.

### THE KITCHEN SYNC

The Delta 1010 can act as its own synchronization source, or it can slave to incoming word-clock or S/PDIF signals. An indicator on the Hardware Settings page in *Delta Control Panel* tells you when you have successfully locked to an incoming sync source. The system supports sampling rates as low as 8 kHz and as high as 96 kHz. Unless you're syncing to an external source, you'll typically choose a sampling rate in your audio program, but you

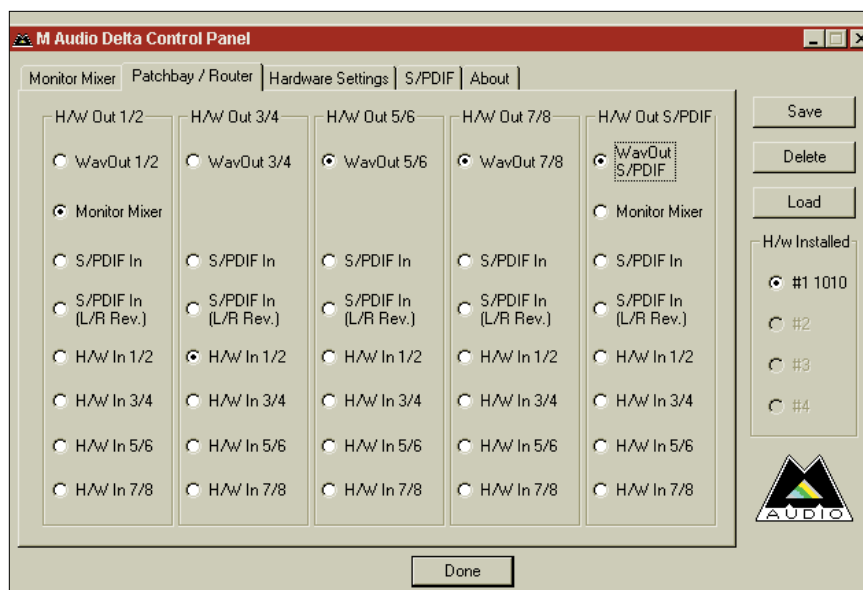


FIG. 2: The Delta 1010 provides extensive signal-routing capabilities that can be configured in *Delta Control Panel*.

can also select it in the Control Panel.

Because the chosen sampling rate affects the fidelity of the Delta 1010 mixer, you might want to take advantage of two additional checkboxes. The first, Rate Locked, prevents an external audio program from changing the sampling rate to anything other than what is selected in *Delta Control Panel*. The other checkbox, Reset Rate When Idle, allows an external program to change the sampling rate; however, the rate snaps back to the Control Panel setting whenever the Delta 1010 isn't being used. This is handy for keeping the mixer running at a high-fidelity setting while still allowing lower-fidelity recording when the need arises.

Besides the sampling rate, you have control over the DMA buffer sizes the system uses. (There are separate settings for WAV and ASIO audio.) You can also tell the Delta 1010 to synchronize the start of playback and recording across all audio channels.

You have a choice between two digital interface formats: "consumer" (true S/PDIF) and "professional," which is actually an AES/EBU data stream over

S/PDIF electrical connections. You also have control over the SCMS copy-protection bits and signal preemphasis.

### DELTA FORCE

If you haven't figured it out by now, the Delta 1010 provides a treasure trove of audio routing, mixing, and recording features. You can even save entire sets of *Delta Control Panel* settings to disk and restore them whenever you like. With this capability, you can set up the Patchbay/Router and Monitor Mixer just right for tracking, then switch to a mixdown configuration with a few mouse clicks.

The product's documentation is clear and complete. You get a nice printed manual that thoroughly describes both hardware and software and provides details on several typical configurations. (Electronic versions of the manual are available on the Midiman Web site.) *Delta Control Panel* has no online help, but I didn't need it.

While we're on the subject of things that are clear and complete, the audio quality of the Delta 1010 is very good indeed. The sound is clear as a bell,

#### Delta 1010

##### Minimum System Requirements

**Mac:** G3; 64 MB RAM; Mac OS 8.6 (MIDI port requires OMS 2.3.7)

**PC:** Pentium/300 MMX (Pentium II/350 for 96 kHz operation); 64 MB RAM (128 MB for 96 kHz operation); Windows 95/98/NT/2000; UDMA EIDE or SCSI hard drive

and I found no nasty digital artifacts during my tests. For a system in this price range, that's impressive.

The Delta 1010 is a great product at a fair price. You can pay less for similar products, but you'll probably have to give up some of the features the Delta provides. If you have a need for ten channels of audio I/O, extensive routing capabilities, and a nice digital mixer—and who doesn't?—give the Delta 1010 a good, hard look.

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