

## Focusrite Pro 26 i/o and Pro 10 i/o Multi-Channel Firewire Audio Interfaces

Mike Rivers  
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Windows and ASIO are strange bedfellows. The nature of the ASIO device driver model is that a program that uses that driver can talk to only one unit at a time. The Macintosh OSX is able to “consolidate” multiple ASIO devices so that, to a program, they appear as a single device with the total number of inputs and outputs on the various connected devices. Windows has no such capability, with the exception of the short-lived CEntrance Universal ASIO Driver and some device-specific drivers. I was pleased to hear, when chatting at the Focusrite booth at the Summer NAMM show, that up to three interfaces in this series could be stacked up (for a whopping 78 possible inputs and outputs) and accessed by a DAW. When EM review editor Geary Yelton invited me to review the Pro10, I said “Let’s get two so I can test out the multi-device capability” and here we are.

The Focusrite Saffire Pro 26 i/o and Pro 10 i/o (Pro26 and Pro10 for short) are close cousins. They’re multi-channel Firewire audio interfaces, differing in the number of I/O ports and a few other goodies. The Pro10 supports sample rates from 44.1 kHz to 96 kHz, with the Pro26 offering its full complement of analog I/O at 196 kHz as well. Power is supplied by the Firewire bus or a “line lump” power supply with a sturdy locking connector. The 1 rack-space high chassis is at home in a rack or on a tabletop (though my desk would have appreciated non-scratching feet on the bottom), with rack ears supplied but not installed.

Drivers and the Control PRO control panel and mixing console are provided for Windows XP-SP2, 64-bit XP, Media Centre, and 32- and 64-bit Vista. On the Mac side, minimum requirement is Mac OS 10.3.3, though the manual says “may require updates.” As one who flies on the trailing edge of technology, I tested the Pros using Windows XP.

An important feature of the Saffire Pro series is its DSP mixer. When tracking, you can monitor all of the inputs plus a stereo mix of recorded tracks with substantially less latency than you get when the input source must take a detour through the computer before getting to the headphones. The mixer retains its current settings when disconnected from the computer so, while controls are limited, it can serve, for example, as a keyboard mixer on a gig.

Normally, when using the Saffires for tracking, you’ll want to take advantage of the mixer. However there’s a mode called “Hardware Monitoring” where the analog inputs are routed nearly directly (they go through A/D and D/A conversion) to the analog outputs without going through the Control PRO mixer. This is useful if you prefer to use a hardware mixer for monitoring or for making

mixing live to a 2-track recorder with more control than you have with the Control PRO mixer.

## **Gozintas and Gozoutas**

Both models offer eight mic preamps with gain controls and clip LEDs on the front panel XLR connectors on the rear panel. 48V phantom power is switchable in banks of four channels with a pair of hardware buttons on the Pro10. Phantom power for the Pro26 inputs is normally engaged via the ControlPRO console, but when off-line, the Dim and Mute buttons become phantom power switches.

The eight front panel line input jacks override their corresponding mic inputs when a plug is inserted. This may disappoint users with a lot of gear who want to keep everything connected all the time, but it means you can leave your mics connected and patch in a synth when you need it. Line inputs 1 and 2 can be switched to become high impedance instrument DI inputs. Digitally, there's a stereo IEC-958 (S/PDIF coaxial) input, MIDI In and MIDI Out, and two Firewire 400 jacks.

The Pro26 offers some extra goodies; a switchable high pass filter on each mic/line input, a low impedance (300Ω) switch for Mic inputs 1 and 2, and polarity (phase) reverse on Channel 1. A button on the software console converts Line Inputs 5 and 6 to Insert jacks for channels 1 and 2. Two ADAT™ inputs provide sixteen additional channels at 44.1/48 kHz or eight channels using the S-Mux protocol at 88.2/96 kHz. Finally, there's word clock input and output.

Each input has a corresponding output. Typically analog outputs 1 and 2 feed the control room monitors. ADAT outputs could be used to feed a backup recorder for live sessions or to feed a multi-channel headphone monitor system.

A software button links the mixer's analog output level controls to the front panel Monitor volume knob. You'd normally link the control room monitor outputs (1 and 2) to the Monitor knob, but you can selectively link the other output pairs to it as well. This almost works when feeding a surround monitor system, but not quite. While you can adjust the volume of multiple outputs with the single knob, the Mute and Dim buttons associated with the Monitor volume control don't follow the linking and only work on outputs 1-2. If you're monitoring in surround, you'd like all the speakers, not just one pair, to mute when you press the button.

Another small annoyance is that when outputs are linked, you can't have them set to different relative levels with a single master control. This is what you want for calibrated surround monitoring (I'm sure this was what was on Focusrite's mind) but you want to experiment with changing a single channel's level, you'll need to either unlink it or go into the mix.

The Monitor volume control is digital with 1 dB steps, causing zipper noise when you spin it. Also, there's quite a bit of hash on the outputs while the Saffire is in the process of starting up, so you'll want to power up your monitors last. That's always a good policy, but not everyone does it. Apparently in an earlier version of the firmware, the units came up with the monitor output muted, which, although it's one more thing to remember to do, was probably a good idea. Maybe Focusrite will bring it back in an update, or even better, mute for the first 15 seconds or so and then unmute automatically.

Two front panel headphone jacks, each with its own volume control, can be fed either the control room or a semi-custom mix consisting of the input mix and an alternate mix from the DAW. Since each headphone output can take its DAW part of the mix from output pairs 1-2 or 5-6 and 7-8, you have some flexibility for the two different headphone mixes if you know your DAW well enough to set this up. Generally you'll want to construct stereo auxiliary sends for the recorded tracks, assign those to outputs 5-6 and 7-8, and use those in your headphone mixes.

While this offers some monitor mix flexibility when tracking, since there's only one input mix, everyone has to live with that in their headphones. Say you're tracking the rhythm section live in the studio. The bass player wants to hear the keyboard louder than the rhythm guitar, the guitarist doesn't want to hear the keyboard, and the drummer can't hear himself. You'll need to negotiate diplomatically.

I/O operating levels are in the "professional" range. Maximum output level is +20 dBu. At maximum input gain, -45 dBu into the mic preamp corresponds to full scale record level (0 dBFS) which is about 5 dB more sensitive than many other mic preamps in its class. Quiescent noise at full gain is -75 dBFS, which, considering that it's relative to +20 dBu analog output level, is pretty good. All inputs except the Inserts (Pro26 only) are differential and all the outputs with exception of the headphones and Insert outputs are electronically balanced. Balanced outputs use a cross-coupled circuit topology which, unlike the impedance-only balancing more common on low cost units today, has a true differential output. The nature of the circuit allows connecting the output to either a balanced or unbalanced input without compromising signal level or headroom.

Recording is 24-bit at sample rates from 44.1 to 192 kHz on the Pro26 or 96 kHz on the Pro10. The Saffire Pros retain all their analog I/O at all sample rates, but at higher rates, functionality and I/O is reduced. At 88.2/96 kHz, you lose one pair of ADAT I/O ports to the S-Mux protocol. At 176.4/192 kHz, all ADATs and the mixer go away, so you also lose direct input monitoring.

## Controls

In addition to the previously mentioned controls, there's a very British power switch (ON is down) with a multi-function LED indicator – green when AC powered, red when bus powered, blinking slowly green when first powered up without a Firewire connection (it eventually decides it isn't going to find one and turns solid green), blinking rapidly while it's connecting to a Firewire port, or amber to indicate a fault (which I never experienced).

The main act in the Control PRO software console is the input mixer - eight faders and pans with tabs to select which group of inputs (analog, ADAT1, ADAT2, or S/PDIF) they control. Each of the four stereo outputs has a slider to adjust balance between the input mix and DAW playback, a volume control (linkable to the hardware Monitor knob), Mute, Solo, and Dim buttons, and a switchable 12 dB output pad to fix the pesky "My outputs are too hot for my speakers" problem. The S/PDIF output has only an input/DAW balance slider.

The "control panel" section is where you select the sample rate and sync source, save or recall setups (mixer level and pan settings, sample rate, and sync source), and in a multi-unit setup, selecting which Saffire Pro the console is controlling. Other buttons found here switch MIDI Out to MIDI Thru, keep the console display on top of other open windows, and reduce the size of the screen display by eliminating the input mixer section while retaining all of the control buttons. Personally, I think that shrinking it the other way – removing the less often used configuration buttons and leaving the mixer – would be more useful. A curious switch labeled H/ROOM drops the maximum analog output level by 6 dB to avoid running out of headroom when bus-powered (the AC power supply runs the unit at higher rail voltages than the Firewire bus provides).

Sample rate must be set from this control panel; it doesn't follow the rate set in the DAW program. ASIO and Firewire buffer size are adjusted from a separate control panel which is not conveniently accessible from the Control PRO, but must be opened as a separate program. ASIO buffer size can be adjusted on the fly, but the Firewire buffer size cannot be changed with the Control PRO active.

## In Use

The audio quality is very good. Mic preamps are of the transparent sort (no euphoric distortion to get in the way when you don't want it) and they're reasonably quiet. Since I most often record acoustic music that isn't very loud, I appreciated the extra 5 dB of gain over some other preamps that I have. It's usable gain, too. Sure, you can hear hiss when you turn the knob up all the way but the signal-to-noise ratio is what counts, and that's quite acceptable.

The Pro26's low cut filters are 3 dB down at 100 Hz, 10 dB down at 60 Hz, and 23 dB down at 30 Hz, so they should do a good job of keeping rumble out of your

mics. I usually don't bother measuring frequency response of a digital device because it's typically dead flat from just under half the sample rate to lower than you need, but Focusrite went a bit overboard on the low end here. It's only down a couple of dB at 2 Hz!

I didn't find any mics that sounded better with the Pro26's Low Z switch engaged, but to be honest, I've only found one mic, one that I had in for review, that was improved with a low impedance load. Net rumors notwithstanding, most classic and classic style ribbon mics sound best into a high impedance input (10 kΩ or greater). An SM57 seems to prefer being loaded with about 600Ω, but the Focusrite's 300Ω is a little heavy for it and the mic loses some brightness. This could be effective with a hardware modification on Focusrite's part (I wouldn't recommend it as a DIY project without further documentation than what I have!) should they choose to make the functionality of this switch more effective with a very common mic.

There's no metering other than the clip LED. This comes on at a mere 0.2 dB below the onset of both analog and digital clipping, so it's important to set the gain conservatively and watch your DAW meters.

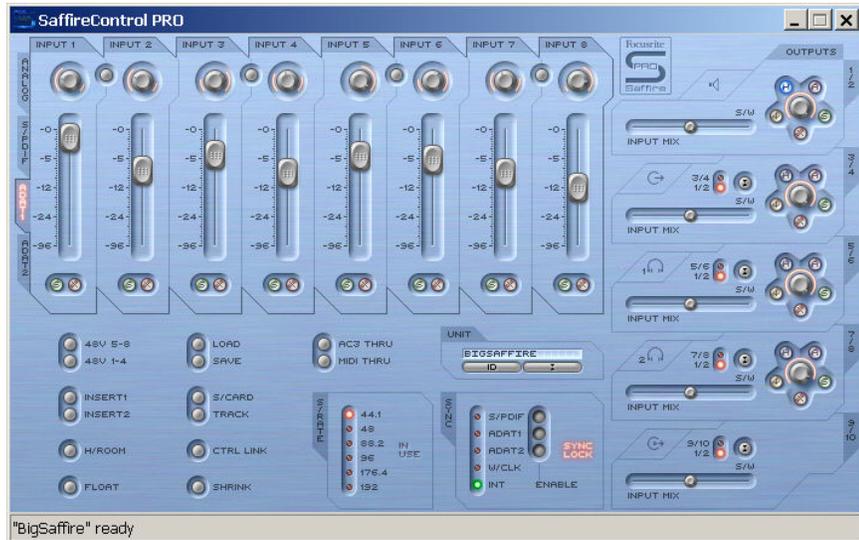
It took a while to get the hang of using the input mixer. It's functional, but with more than one bank of inputs, it can get pretty confusing. Focusrite calls the mixer "low latency" rather than "no latency," and reasonably low it is. A trip from mic in to headphone out takes 2.3 ms at 44.1 kHz and 1.6 ms at 96 kHz sample rates respectively, considerably faster than the typical 5-10 ms latency that can be achieved running through a well tweaked computer. See the sidebar for more detail on why even this small amount of delay may be significant.

I don't have enough hardware to fill up all the available inputs and outputs, but I checked out the ADAT connections using a Mackie Onyx 800R 8-channel mic preamp. In addition to verifying the ADAT inputs' functionality, it also offered the opportunity to compare the Saffire Pro preamps with those of the 800R, of which I'm quite fond. It was really a tossup. They sounded a little different but it was hard to put a finger on the difference, and I never had a clear preference for one or the other regardless of the mic or program source. This isn't a totally fair comparison of the analog path, however, since each chain passed through its own A/D converters which almost certainly contributed to the small difference in sound.

Initially I was too lazy to un-rack the 800R, and the only free TOSLink cable I had, a 2-footer, wouldn't reach between the Mackie and Focusrite units. Figuring that I should have a longer cable around, I picked up a 6 foot one at my local music store, hooked up the 800R, and was greeted by clicks on the Saffire ADAT channels. I removed the 800R from the rack so I could use the shorter cable, and it worked fine. I don't know if the 6 foot cable that I bought for this experiment was too long or too crummy – I'm hoping the latter.

The time offset between the analog and ADAT inputs with this setup is around 10 samples at 44.1 kHz (this is getting down to the resolution of my eyeball). It's not possible to determine what part of that time difference is attributed to the ADAT port and what's actually a difference in the A/D conversion times, but what really matters is the time coherence of the inputs, and, at least with the Mackie 800R, they're pretty close. It's even possible that the signal from the outboard preamp could arrive at the Saffire output earlier than through the internal path if the external preamp has a really fast A/D converter.

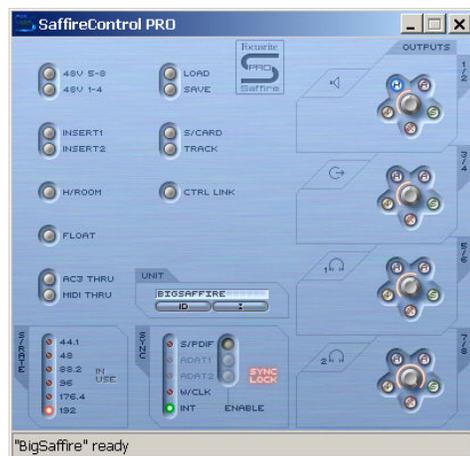
There's no polite way to say this, but I found working with the Control PRO console to be downright clumsy. Tiny screen fonts make legends difficult to read, and it's difficult to tell at a glance whether a button was pressed or not. The sliding pink band around the pan knob to indicate its position makes little sense to me.



Why not just make the practically invisible scribe line on the pan knob big enough to see easily? With no way to label the faders, I often grabbed the wrong one, or the right one in the wrong bank. Moving any mixer knob produces “zipper” noise, which got annoying after a while.

Given the versatility of the Saffire Pro, I dreamt of a dual-monitor tracking setup that emulated a split recording console, with the DAW mixer on one screen and the Control PRO on another. While I was able to set this up, it just didn't work well in practice. With more than 8 active inputs, I wanted to run screaming back to the security of my real hardware console.

The Hardware Monitor mode (which disconnects the inputs from the mixer) is selected from a pull-down menu, but there is nothing on the control panel indicating that you're in that mode. More than once I forgot that I had Hardware Monitoring set and wondered why the mixer faders didn't work.



Perhaps it would make sense to switch to the “no mixer” (192 kHz) display when in this mode.

There are a lot of ways to not get sound out of this gadget, and I think I found most of them. A clearer user interface would be very welcome. With a few extraneous buttons left over from a previous firmware version the Control PRO display is due for a makeover so maybe there will be some improvements.

Poor readability isn't just limited to the software console. The gold channel numbers on the silver front panel were also hard to read. Fortunately it's not difficult to count to eight.

One final operating note - the Saffire Pros run hot enough so that if nobody tells you that, you'll be asking “is this normal?”. I had them AC powered continuously for about two weeks with no smoke or flames so, yes, warm is normal.

Update – Focusrite's current I/O interface in this family, the Saffire Pro 40, has a much cleaner and more intuitive software control panel, as well as more informative metering and a more readable color scheme.

### Double Trouble

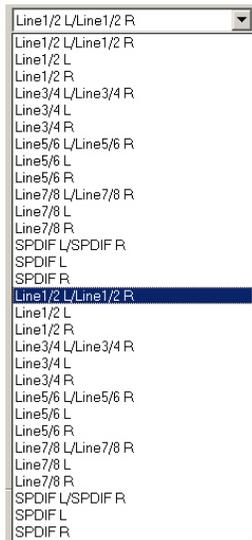
As I mentioned in the intro, I was eager to see how two interfaces worked together. After fumbling through the “adding another interface” instructions in the manual (which actually referred to an earlier version of the drivers) I discovered that after installing the first Saffire Pro, all I had to do was unplug it, connect the second one, let Windows find it (the Pro10 and Pro26 use the same driver and console software), and then re-connect the first one. Simple, and it worked the first time.



The Control PRO looks for the presence of ADAT channels to determine how many input mixers to display. When talking to a Pro10 or to a Pro26 with the ADAT inputs disabled, the mixer input tabs for ADAT1 and ADAT2

inputs disappear. You can name the interfaces, and that's a particularly good idea when you have more than one in a system. A button lets you select which one the Control PRO is controlling; assigning descriptive names will reduce the chance that you'll try to adjust the wrong one. In case you get confused, an ID button blinks the power LED of the currently active Saffire.

Using two Saffire Pros together is only a little different than using a single interface with more channels. It's a bit awkward in that, to the DAW program, the two interfaces



don't have separate identities. When selecting the source for a track, you'll see two Line 1/2 inputs, one from BigSaffire and one from LittleSaffire. It appears that whichever interface connects first is the one that appears first on the list. In my test setup with a Pro26 and a Pro10, the Pro26 channels always seemed to be listed first, but I'm not sure how I'd tell them apart if I had two Pro26s other than by selecting one and seeing which input makes the meters move.

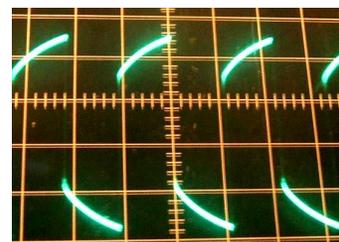
Since each Saffire's mixer has its own set of outputs, in order to be able to monitor the inputs from both through a common control room output, it's necessary to connect the output of one mixer to an input of the other. The S/PDIF input and output are handy for this. If your monitors are connected to Saffire #1, setting the S/PDIF Saffire #2's output to all input (no DAW mix) and connecting it to the S/PDIF input of Saffire #1 does the trick.

### The Kitchen Sync

In addition to its internal clock, the Pro10 and Pro26 can synchronize to the S/PDIF stream. In addition, the Pro26 can also sync to an external word clock through its BNC input, or can derive word clock from either of the two ADAT inputs. The Saffires can be a bit fussy about external synchronization. The external sync signal must be present before you select it as the word clock source. Also, if you were using ADAT sync when shutting down the Saffire, it "remembers" that. If, when you next fire it up, you don't have the ADAT input connected, it won't sync up until you switch back to internal sync, at which point the Saffire Pro disconnects and goes searching for the Firewire connection again. More than once, this apparently hung up the Firewire bus and I had to restart the computer in order to get things going again.

I found that I got frequent pops (even with my short TOSLink cable) when synching the Pro26 to the 800R ADAT output. With this configuration, I also had occasional Firewire sync dropouts, resulting in having to restart the whole kit and caboodle. (I had written a whole paragraph grumbling about instability before I discovered that this was the source of the problem.) Switching the Saffire to Internal clock and synching the 800R to the Saffire's word clock output worked fine. If you have two ADAT input sources connected, they'll need their word clocks synchronized, so things could get complicated without a master clock generator or distribution amplifier. I'm an advocate of using a separate word clock connection for synchronization when it's possible to do so.

The BNC word clock input is internally terminated, but the termination appears to be capacitive (word clock inputs are more commonly terminated with a 75Ω resistor), resulting in a poor-looking square wave. Daisy chained word clock inputs may not be happy with that shabby looking waveform.



## **Plug-Ins**

The Saffire Pro doesn't come with a bundled DAW program, but there's a nice bonus of four Focusrite plug-ins, which almost deserve a review of their own. The reverb is likely no better than the reverb bundled with your DAW software, nor is the amp simulator particularly exciting. The equalizer and compressor are quite nice, however. In addition to a full complement of controls, both have a useful "template" mode. Select the program source (voice, guitar, etc.) and it pops up an extra set of controls labeled in musical terms. The initial settings are a good starting point for tweaking. The grayed-out standard controls follow adjustment of the template controls, and at any time you can switch back to the standard mode for fine tweaking. These templates are a good answer to the question: "What's the right EQ for a female singer?"

## **Computer Glitches**

Every computer is different, and it's easy for a piece of software to encounter something on a particular system that the designer never anticipated or tested, therefore I'm reluctant to criticize a product based on computer glitches unless I find a clearly repeatable and annoying bug. I'm happy to report that this wasn't the case with the Saffire Pro, however, I'd be lying if I said that it was smooth sailing all the way. You may have fair seas, or you may spend more time hanging over the rail than I did. My experience was with Windows XP. The Mac version is totally uncharted waters here.

The first glitch I encountered was with the driver installation. With both the version on the CD packed with my review units and the latest version that I downloaded from Focusrite's web site, the first couple of steps went as expected and then the screen went blank – not the Blue Screen of Death, but black. This didn't instill a great feeling of confidence. There were occasional bright flashes that looked like a dialog box attempting to display, but nothing remained on the screen long enough to read. After a couple of aborts and retries, I restarted the installation and, applying the "Watched pot never boils" theory, went off to eat lunch. I came back half an hour later to find a real Windows screen with a real dialog box telling me that the installer had timed out waiting for a Firewire connection, and requested that I plug in the Firewire cable.

The installation instructions state that the Firewire cable can be connected at any time, but when I connected the Firewire cable after starting the installer, a message popped up telling me that I had made the Firewire connection before the program was ready and to please disconnect it. So I figured I'd wait until, like with most hardware installer programs, it asked for a connection . . . and sure enough, when it was ready, it did.

After re-connecting the Firewire cable, Windows brought up its usual “Found New Hardware” box, located the Focusrite driver, associated it with the hardware, and reported that it was ready to use. By gosh and by golly it was, and I was off and running. I tried the installation on another computer and had the same blank screen experience. Focusrite Tech Support had never heard of this and suspected that there might be another ASIO driver installed on the computer which was confusing things. Indeed there are several other ASIO drivers installed on both of these computers, but I didn’t want to un-install what I use on a regular basis in order to test the theory.

One disturbing problem was that the Firewire connection would drop out at random. Ultimately I traced this to using ADAT as the clock sync source. I just happened to be looking in the right place at the right time, and discovering that the unit was intermittently losing clock sync. The Pro26 doesn’t take loss of sync (whatever the source – after this experience, I tried them all) very gracefully and it doesn’t recover on its own, but rather, requires a shutdown and restart.

The number of tracks that can successfully be recorded and played back simultaneously without glitching is largely dependent on the computer and how well it’s tuned. I didn’t attempt to run that race and stopped at a very modest eight tracks (which worked fine) when I ran out of talent. Any such limit that I found on my system would likely not be relevant to your system anyway.

There have been issues (primarily unreasonably large latency from what I’ve read) with Apple’s Firewire Core Audio driver, which, rather than a custom driver, the Saffire Pro uses. The upside is that when Apple upgrades the OS, Focusrite won’t have to chase after it with a new driver. The downside is that the Core Audio driver in a new Mac OS version might need fixing, and that’s out of Focusrite’s hands. Every new release carries risk of a new problem, so be careful about updating too early and too often once you find something that works.

### **From The Complaint Department**

My gripe list is rather long, but upon reviewing it, I recognized that most of the problems I encountered were related to constantly switching things around to evaluate as many configurations as I could. In typical studio operation, once you establish a working setup, there will be few changes, so there will likely be few surprises.

My biggest gripe is with the documentation. When I get a new device, I like to sit on the couch and read through the manual before putting it to work, but in this case, the only manual is a PDF on the installation CD. The Focusrite web site contains additional information in the form of an addendum to the Pro26 manual (the Pro10 manual was more current), an answer base with useful supplemental information, and release notes for the current drivers, but you have to know it’s

there and then hunt for it. The Saffire Pro is a many-faceted interface and it deserves a complete and well written reference manual. Focusrite assured me that they're working on pulling the pieces together, and there should be an updated manual by the time you read this.

From the Department of Complaint Mitigation, I'm happy to report that Focusrite's tech support has been helpful; and relatively easy to access. I can be pretty grumpy when I'm frustrated and they took my frustration in stride. Primary support is out of the headquarters in Great Britain, so my interaction with them was only via e-mail. Generally I received a complete and helpful response within 24 hours. I also contacted the US support by phone and they were on the ball as well. While they didn't have all the answers to the tough questions, their explanations of things that were cloudy in the documentation, or of things for which I simply hadn't found the missing pieces of documentation, were clear and helpful.

### **Summing It Up**

These are an impressive pair of units with a lot of bang for not many bucks. Low price aside, they're hardly entry level products. You need some experience in order to put them to full use. If I had been working with a stereo sound card and a small mixer for a while, I'd be tickled to get a box as inexpensive as the Pro10 with eight excellent preamps, enough outputs for surround mixing, two good instrument Dis, and a convenient way of monitoring while tracking. It would take a while to grow into it however, and I wouldn't sell my mixer in order to pay for it. There will be times even with the Saffire Pro when that mixer will still come in handy.

The Pro26 is an even better deal although it costs a couple of hundred bucks more, but you need to have expansion in the direction of more inputs on your horizon in order for it to be worth while. To me, the Pro26's greatest potential is as remote recording interface which can be expanded as needed. Honestly, though, if needed to mix that many mics for a room full of fussy musicians with headphones, I'd prefer to do it on a real mixer with real hardware controls.

Overall, these are impressive boxes, hard to beat at the price.

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## Sidebar

### The 2 ms Latency Conspiracy

There's a potential problem with latency in this ballpark. When listening to your own voice on headphones, there are two paths from your vocal cords to your eardrum – the natural one through your throat and another through the phones.

You're probably aware of the golden rule of mic placement: Avoid picking up a sound source with two mics at unequal distances. When those mics are mixed, the arrival time difference becomes a 180 degree phase shift, and therefore cancellation, at a family of frequencies directly related to the time difference. This is called comb filtering because the frequency response of the system looks (sort of) like the teeth of a comb. The same thing happens when your natural voice and the latency-delayed headphone sound combine at your eardrum. Your voice will sound odd to you because it's being comb-filtered.

You'll sound normal to yourself on playback, and to anyone else listening to the same headphone mix or the control room speakers since only you are hearing your voice through two paths. When your singer questions the sound of his voice in the phones, he just might not be nuts.

Some people are really sensitive about this, some don't notice, and some run the headphone volume so loud that the acoustic sound is swamped out and the comb "teeth" are negligible. Sensitive folks almost always give a better performance when not worried about how their voice sounds, and a good performance trumps technology any time.

The monitoring latency through the Saffire Pro is in the range where, at its worst, can notch out frequencies that give a voice a lot of its character, around 430, 860, 1290, 1720 Hz and so on. Try it yourself and try to hear the change in character as you adjust the headphone volume.