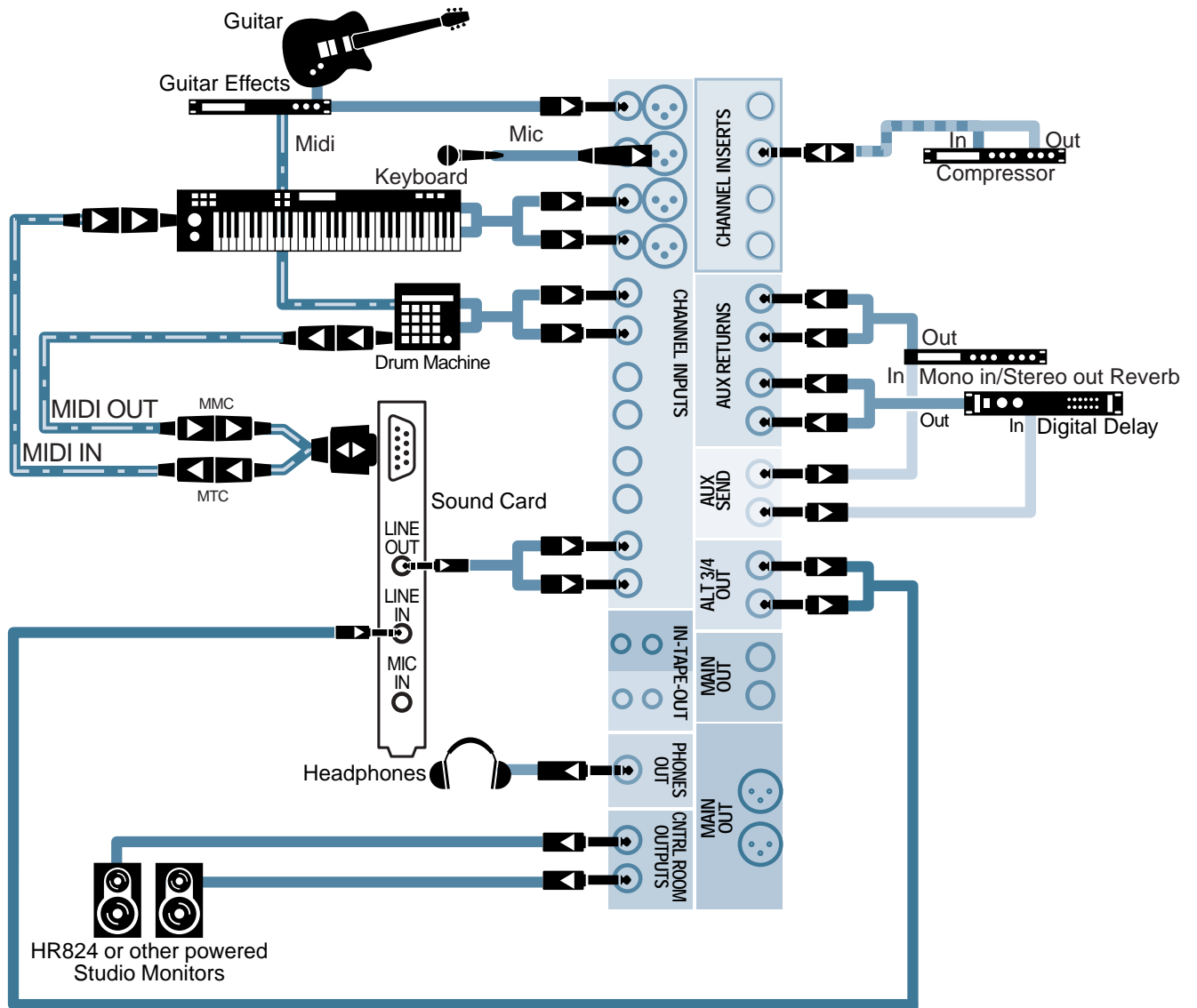


1202/1402-VLZ PRO and Onyx 1220/1620 Computer Sound Card/MIDI Setup



The 1202 and 1402-VLZ PRO and Onyx mixers make managing a computer-based audio and MIDI system easy. In this setup, we've shown a computer with a sound card and MIDI interface combined with both MIDI and audio sound sources. The computer serves as the main audio recorder as well as the MIDI sequencer. This setup has a lot in common with the 1642-VLZ PRO MIDI Studio, so refer to that section for details.

Audio Connections

Stereo and mono sound sources are connected to the mixer channel inputs. The ALT 3-4 outputs are used to feed the computer sound card. Sound card playback is through stereo LINE INPUTS. An optional mixdown recorder such as a DAT or CD recorder can be connected to the TAPE or MAIN OUTPUTS.



The sound card outputs can also be monitored through the TAPE INPUT rather than through a pair of channels assigned to the MAIN mix. This is very helpful if you find it difficult or impossible to control the "input monitor" function of your sound card. Connect the sound card outputs to the TAPE inputs and press the TAPE button in the CR/SOURCE group to hear playback from the computer. You'll still be able to monitor the sound card output along with sequenced MIDI synths which are not recorded, but played as virtual tracks.

MIDI Connections

In this example, the keyboard is used as the MIDI master controller for sequencing, and the computer's MIDI OUT feeds the drum machine and keyboard synth to play the sequenced tracks. The MIDI connection to the guitar processor allows the sequencer to switch to the appropriate patch on cue, freeing up your hands or feet. It's optional, of course.

The MIDI path for sequencing is straight from the MIDI OUT of the keyboard to the MIDI IN on the computer interface.

For playback, the computer's MIDI OUT is connected to the drum machine MIDI IN. MIDI THRU (a duplicate of whatever comes in to the MIDI IN port) from the drum machine goes to MIDI IN on the keyboard, and MIDI THRU from the keyboard goes on to the guitar processor.

Real and Virtual Tracks



You can record the audio outputs of your MIDI synths on to the computer disk or leave them as virtual tracks – your choice. A virtual track is one that's controlled by the sequencer. With virtual tracks, you'll hear the synth tracks play, but they aren't actually recorded as audio until the final mixdown. Virtual tracks were pretty important for achieving a clean recording when working with analog tape (particularly multitrack cassettes), but digital recording has eliminated the primary reason for recording of the synth sounds as late in the project as possible. It's your choice, and it will be largely dictated by your software, how well it integrates audio and MIDI recording, how many audio tracks your computer can handle, and how easy it is for you to operate.

Today, with soft synths being so popular and powerful, we rarely use MIDI synths and virtual tracks, but there are still some really nice sounds available from the keyboards of the MIDI era, and you know what they say – what's old is new again.



When MIDI instrument outputs are assigned to the MAIN bus, as long as they're receiving MIDI data, you'll hear them playing even if audio (guitars, vocals, etc.) has not yet been recorded on disk. If you're recording the synth audio output to disk (that is, not using virtual tracks), once you've recorded the synths, be sure to MUTE the synth channels on the mixer when listening to playback from the computer. Since the computer will be spitting out MIDI data when it's playing, there's a possibility of hearing the same MIDI sound twice – from the computer audio playback and again from the synth directly. Since response times of the audio and MIDI paths are different, you'll hear an "echo" or perhaps "phasing" – rarely desirable.

Recording

To assign any input source to the computer sound card, send it to the ALT 3-4 BUS (MUTE/ALT button down)

To hear playback from the computer, bring up the faders on the stereo channel to which the sound card outputs are connected (11-12 in this example). With the proper sound card monitor settings, you can do most of your monitoring while tracking by listening to these inputs without the need to switch monitoring sources.

Overdubbing and Mixing

Since there are only two tracks coming out of the sound card, you'll be mixing your audio tracks in the computer, and that mix is what you'll monitor while overdubbing. Consult your software manual for specific instructions.

If you're using MIDI controlled synths as virtual tracks, you can control the balance between those synths and the recorded audio from the computer by using the mixer faders. In this case, you're mixing to the MAIN outputs, where the mixdown recorder is connected.

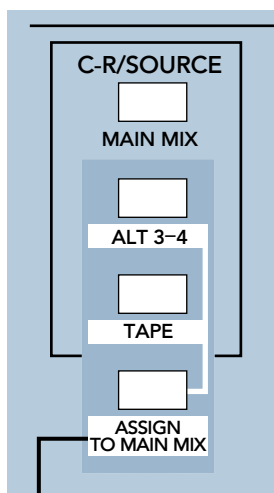
Input Monitoring While Tracking

We've been steering you toward your sound card software to send the input signal to the output mix so you can hear yourself while tracking, but there's another way you can monitor, which may be easier to work with in your software.

All multitrack audio recording software has the ability to turn off a track in the output mix, even if it's only to turn that track's volume down all the way. Usually there's a Mute button or check box. Hunt for it.

So we have several tracks recorded, you have them mixed, at least roughly at this point, and the mix is coming out the sound card's stereo output and into the mixer – to a pair of line inputs which you've assigned to the L/R MAIN MIX. With the MAIN MIX button in the CR/SOURCE matrix pressed, you'll hear that sound card mix playback in the headphones and control room monitor speakers. Just like normal.

Now the cool thing about these CR/SOURCE buttons is that you can press more than one at a time, combining sources into the monitor section of the mixer. Remember that the source we're recording (the mic, the guitar, whatever) has been assigned to the ALT 3-4 bus? Well, there just happens to be a button for monitoring the ALT 3-4 bus. Press that button together with the MAIN MIX button and now the sound card tracks (with the input source muted) will be mixed in the headphones with the input source coming from the ALT 3-4 bus.



If you want to tweak the balance in the headphones between the previously recorded tracks and the new track you're recording, it's pretty simple. Just remember that the record level going into the sound card is set by the fader or gain knob on the input channel, so once you've established that setting, leave it alone and use the faders on the sound card output channels to adjust the balance between the new and original tracks.

If you've opted for connecting the sound card outputs to the TAPE inputs, you can use this same technique (selecting TAPE rather than MAIN MIX as one of the CR/PHONES sources) only you won't have control over the balance between the new and original tracks since the Tape input is at a fixed (unity) gain.

How Latency Affects Monitoring



Aside from not having to fool with your software quite so much, there's another good reason for using this method for monitoring your inputs when recording with a sound card. When you're singing and listening to yourself on headphones, there are actually two sound paths between your vocal cords and your eardrum. The first is through the headphones, the other is through the holes in your head – everyone has some. It takes about the same amount of time for sound to travel through these two paths, so unless your mic or headphones are out of phase, they combine in phase at your eardrum.

But along comes Mr. Latency, delaying the headphone sound by a millisecond or two. Add a sound to itself with a small delay and you'll notch out a band of frequencies – the result is that your own voice sounds funny when you're recording but OK when you listen to the playback. This is not only confusing and confounding, but annoying when you're trying to pay attention to what you're singing. You may have noticed that effect. Now you know why it occurs. By listening to the direct sound from the mixer rather than the delayed sound from the sound card, we've solved that little problem.

Effects

We've included a couple of effect processors in this example. Their inputs are connected to AUX SENDs, and outputs connected to AUX RETURNs in the conventional manner. They're right where you expect them, convenient for use in mixdown.

When recording in this manner, since tracks are being mixed in the computer, you can't get to the effect processors to add an effect to a track when mixing, so sometimes you'll want to record a track "wet" – with an effect. If you move the processor outputs from the AUX RETURNS to a pair of Line inputs, and then assign those channels to ALT 3-4, you'll be able to add the effect in when you're recording. With practice, you'll be able to get the right amount of the effect mixed in. You can also patch the effect in-line with the source, either directly (if it's a line-level source) or by using the channel's Insert jack.

Recording an Effect Track

A neat trick that can give you some flexibility when mixing is to record an effect track to go along with a dry track. If, when mixing, you decide that a dry track needs some reverb, you can send that track back to the mixer, turn up the AUX send that's feeding the reverb unit, and record the output of the reverb on a new pair of tracks.

How? Patch the reverb's output into a pair of Line Inputs, and assign them to ALT 3-4. Mute all the tracks in your recording program but the one to which you want to add the reverb. Now, on the mixer channels with the sound card returns, turn up the AUX SEND that's feeding the reverb. You don't have to worry about how much level to send – give it plenty so you're recording a nice hot reverb-only track. Now, play the dry track while recording a new track containing the fully-wet version of the track that needs reverb.

Now, when you mix the tracks in the computer, you can adjust the level of that reverb track just like you'd adjust the send level to a reverb processor in mixdown. Clever, eh? You can of course do this with a chorus or any other effect, not just reverb.

Today, many audio recording programs have effect plug-ins so you don't have to do this, but it's nice to know how.

A Last Word about Sound Cards

The idea of using a computer as a recorder, particularly a multitrack recorder, is very seductive. It's an inexpensive approach that's capable of producing very high quality audio. But working with a computer, sound card, and mixer in a multitrack recording and overdubbing environment can be very tedious and, at times frustrating. Doubly so if you're making a move up from a nice, secure and reliable 4-track cassette recorder/mixer. There will be times when you'll want

to throw the darn computer out the window, and your Mackie mixer along with it.

What's the problem? Well, aside from the fact that you have to get the recording software working reliably, you may find it awkward or next to impossible to follow our instructions for monitoring. If you've read any of the discussions here about multitrack recording, you'll know that we've stressed the importance of monitoring recorder returns, and the use of a recorder's automatic switching from input monitoring to playback that facilitates that.

Well, switching the sound card's output from input to playback is the responsibility (and privilege) of the card's driver software, not the computer, the recording program, or even the Mackie mixer. Until the ASIO driver specification was developed, there was no way for the driver to know whether the program was recording or playing, so it didn't know when you wanted the input signal or the playback to appear at the sound outputs.

All sound card drivers provide an on-screen control panel to switch the output to input monitoring, but you have to find it, learn how to use it, and when overdubbing, you'll have one more mouse click to deal with. You'll have to fill in that step yourself. There's nothing that Mackie can do to make this any easier (well, we do make a nice audio interface and throw in a software program that integrates things nicely). We've provided the best general instructions we can, but your mileage can, and will, vary.

As more modern audio software is written and computer audio hardware evolves, this function will become as transparent on a computer workstation as it is with a dedicated hardware recorder.

The good news is that when using the computer as a two-track mixdown recorder and editor, life is beautiful. Take the path of multitrack recording with a stereo sound card in small steps and make sure you understand the operation of both your recording program and the sound card's mixer/control application. It will help you to understand how to relate our operating guidelines to your particular hardware and software combination.