DJ Steele's hardware guide to Recording your mixes on your computer

1.0 Introduction

This guide covers only the Hardware aspects of recording your mix, since those are the questions most often asked. Software may be covered at a later date, but since there are so many varieties of software it may not ever come to be unless it's a collaborated project.

DISCLAIMER - if you damage your equipment following this guide, I AM NOT RESPONSIBLE FOR IT IN ANY WAY (including financially or otherwise). This is a guide, which is correctly written at the time of writing. If you damage something, you probably did something wrong. Go back and read it again.

1.0.1 Changelog

03/01/2006 – Initial release (not dated)
03/09/2006 – Added changelog, information about digital audio, fixed some minor formatting problems, fixed some spelling errors and such.

1.1 Requirements

First off you must have the following:
- Computer with a soundcard (section 1.2) and software to record with (not covered in this guide)
- DJ gear consisting of a mixer and some source like CD Players or Phono Turntables (section 1.3)
- Cables to get sound from the mixer to the soundcard (this will be covered more in detail in section 1.4).

1.2.1 Analog and your Computer

Your computer, be it a laptop or desktop, should have an analog soundcard in it already (some have both analog and digital). You can identify the analog connections because they are usually what your speakers or headphones are plugged into, or they look like this:

Fig 1. – Laptop

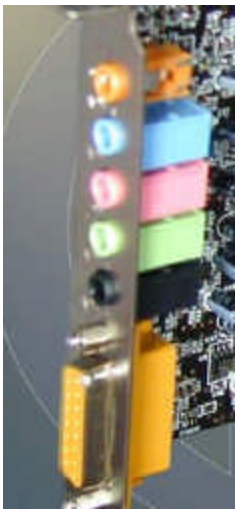

Fig 2. – Desktop (not installed in PC)

Note that laptops may have only 2 jacks instead of 3, and they may be color coded. Also, desktop boards may NOT be color coded.

As a general rule, on a desktop board, the blue jack is the line in – this is what you want, but check your card's manual to be sure (download it online if you don't have it).
If your soundcard doesn't seem to be where the rest of your expansion cards are (in the slots below where you plug in your keyboard, and usually next to where you plug in your monitor), then you have an on-board soundcard. This is bad. Don't use it. It's noisy and probably won't sound great. Spend some money and go buy a PCI soundcard ala SoundBlaster or similar. Speak to the computer representative at your local store for the proper soundcard. If you have a few extra dollars, go buy an external USB soundcard from your DJ Gear store. Common ones are the M-Audio and Edirol lines (see Fig. 4). These are usually your best bet, and what I would most recommend (rather than internal SoundBlaster cards), until you start getting into the really high-priced production quality ones, which also come in USB (example is the Hammerfall Digi series).

On a laptop, there MAY NOT be a line in – although usually there is – as signified by the right-hand jack and symbol in Fig. 1. If it looks like the symbol in the middle jack, it's a microphone, and you DON'T want to be plugging into that. It'll cause headaches.

Fig. 3 – 1/8" Jack

All of these inputs are what are known as 1/8" jacks, sometimes called mini-TRS (Fig. 3). They are the same size as your headphone jack without the ¼" adaptor on it (that's my headphone jack shown in Fig. 3, without its ¼" adaptor, which is shown sitting next to it). You could plug this into your portable CD player or iPod if you wanted.

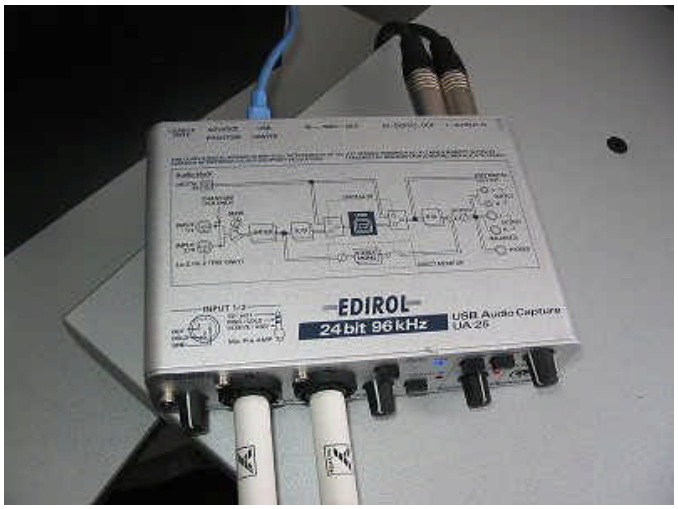

Fig. 4 – My external USB soundcard (Edirol UA-25)

Cables are going to be covered below in section 1.4.

1.2.2 Digital and your Computer

Many questions have come up about digital connections to computers, so let's cover them here.

Digital audio comes in two flavors – digital coax or S/PDIF (sometimes pronounced spidif), and TOSLINK or Optical. Of the two, the most common for the DJ industry is the digital coax or S/PDIF, found on the backs of most new CD players and most mixers.

Both of these cables will be covered in the Cables section below (section 1.4).

Digital is unique from analog in that it is designed to carry all of your audio information in one cable. Digital audio was designed to carry at least 8 channels of discrete audio information on one cable. The DJ industry doesn't use digital to its full capacity, since most everything we do is in 2 channels, but digital is considered to be better because you have no signal degradation from things like weird power, bad electrical components and the like. A general rule is, 'keep it digital as long as you can', and that works. Since CD players, and now most mixers, are all digital, you can theoretically keep things digital all the way to the amplifier (which are starting to go digital as well, but they're very expensive), or in the scope of this guide, all the way into your computer, and you'll have the cleanest possible signal.

1.3 Mixer

I'm not going to cover hooking up your sources (i.e. CD Players and Turntables) to your mixer; you should already know how to do that. If you don't, check the manual for your mixer or CD player or Turntable.

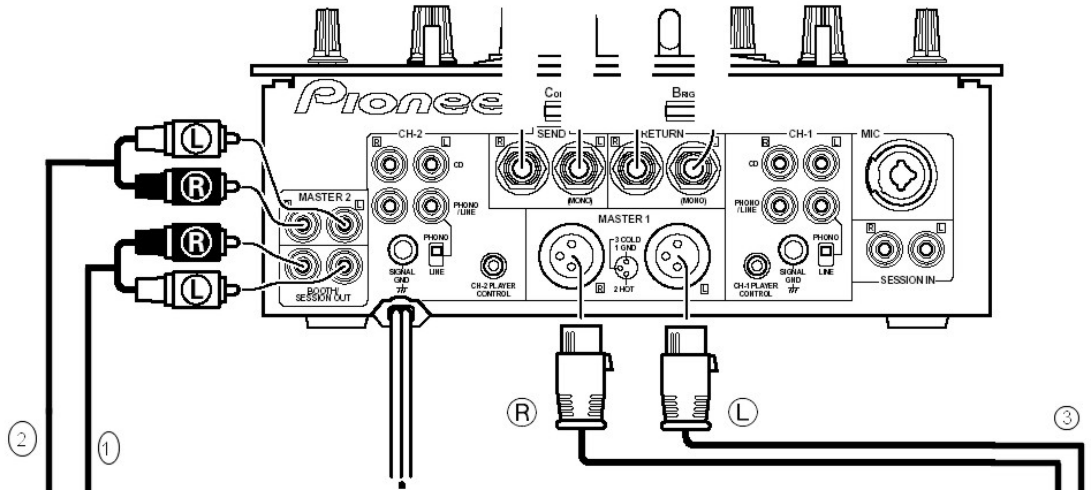

Fig. 5 – Typical Mixer Outputs (Pioneer DJM-909 shown)

Your mixer should have several kinds of outputs on it, as seen in Fig. 5. Typically, they'll be labeled. Common ones are: Master (sometimes accompanied by a number, like Master 1 or Master 2), Booth, Record (sometimes just Rec), Session, Send. Any of these can have the word "Output" or "Out" after them, but often do not.

Preferred order of outputs for recording:

1. Record/Session (number 1 in Fig 5)
2. Master 1 (number 3 in Fig 5) or 2 (number 2 in Fig 5)
3. Booth
4. Send

On the DJM-909 and -707 from Pioneer, they have labeled their Record/Session output as Session/Booth. Ordinarily, I would say STAY AWAY FROM BOOTH OUTPUTS but on these mixers in particular it doesn't matter, since there's no booth volume control. On the DJM-500 and -600, however, there is a booth volume control that if you accidentally turn it down, suddenly you won't be recording anymore. Oops. Use the Record Out where you can.

Fig 6a – Coax / S/PDIF Digital Out

Fig 6b – TOSLINK / Optical Digital In / Out

***NOTE – Fig 6. is included for clarity, since Fig. 5 doesn't have any digital inputs or outputs on it. Note that the most common kind of digital cable, coax (or S/PDIF, Fig 6a) looks EXACTLY like a standard RCA connector. That's quite simply because it is. In theory, you can use a standard RCA connector here and not have any problems. However, it is best to buy Digital cables, because they have slightly different electrical properties and are designed for digital signals. Digital coax RCA connectors are almost always colored Orange.

In Fig 6b, you can see TOSLINK/optical connectors from the back of my Edirol UA-25 soundcard. At the moment, they both have their covers on. Because it's optical, if anything gets in the way of the signal, you have a degradation. So it's best to keep the connectors and the cables clean and safe with protectors if they have any. If you pop the output cover off when it's running, you'll see a (usually) red light – this is the optical signal.

1.4.1 Cables - Analog

The different kinds of analog cables are shown in Fig 7:

Fig. 7a – ¼" Cable, also known as TS (left) or TRS (right)

Fig. 7b – XLR Cable, male (right) and female (left) ends shown (female is what will plug into your mixer's output)

Fig 7c. – RCA Cable

It is also important to note that TRS (which stands for Tip/Ring/Sleeve) and XLR cables are usually also known as BALANCED cables – this is an electrical definition and not worth repeating here, but suffice it to say that BALANCED=GOOD, so do your best to stay balanced whenever possible. TS (which stands for Tip/Sleeve) and RCA cables are not balanced (if you're confused, note that TRS and XLR both have 3 wires on them – you can clearly see the 3 on the XLR cable but to see the 3 on the TRS, look at the actual part that plugs in (the thinnest part of the pictured cable in Fig 4a.) – You'll note that there is 3 parts to it, separated by thin black lines. These are the 3 wires.)

When hooking up your mixer to your PC, you have to decide which output to use, and after you've decided that you have to get the appropriate cable. For example, if your computer has 1/8" inputs on it and you decide to use the Record Out on your mixer which uses RCA jacks, you'll have to go out and buy a 1/8" – stereo RCA cable, or you'll have to make one using adaptors (see Fig. 7).

Fig. 7 – 1/8” - Stereo RCA cable made using adaptors

If at all possible, try to avoid using adaptors. There are more connections, and so there is more that can possibly go wrong. Go buy the appropriate cable.

The distinction of STEREO there is important – since if it’s not in stereo, obviously you’ll only be recording one channel, which probably isn’t what you want.

1.4.2 Cables – Digital

Fig 8a. – Coax/ S/PDIF cable

Fig 8b – TOSLINK/Optical cable

Digital cables are similar to analog cables, however they are unique in the fact that you only need 1 to do the job of as many as 8 analog cables. They are connected in exactly the same way as analog, however most devices (mixers and CD players) only have 1 input and 1 output, so you don’t have to choose how you’re hooking it up. Just connect the cable and presto! It should work.

Coax cables get plugged into the ORANGE RCA connector, whereas TOSLINK/optical cables can only be plugged into one place, and they can only be connected in one way. Just be careful that TOSLINK/optical cables don’t get a huge 90° bend in them or get dirty, since that impedes the flow of light and you’ll get degradation, if you get signal at all.

It’s also important to note that some PC sound cards, like the Soundblaster Audigy 2, have a 1/8” jack that is colored orange, which IS digital coax, but make sure you check if this is digital IN or digital OUT. In the case of the Audigy 2 (the basic one), it’s digital OUT – trying to put digital IN into it won’t work. Some have digital in and out on one cable (they use STEREO 1/8” jacks), but this is rare.

In the case of a 1/8" digital in, you can use either a mono-1/8" – RCA adaptor, or find a mono-1/8" – RCA digital cable. Either way should work.

2.0 Conclusion

To get everything going, make the appropriate connection, start up your recording software, and make sure you have signal… and voila! (if this confuses you, don't worry, in the next parts of the guide (coming soon) I'll get more into detail for the whole process.)

Thanks for reading. Hope it was helpful! If you have questions, comments or would like me to correct something, please send an email to spacejock_1@hotmail.com with the subject line "Recording Guide Question/Comment".

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