

This tutorial describes the recording signal flow using Anvil Studio for a recording session.

Equipment used in this tutorial:

- Vocals using a Shure SM57 Dynamic Microphone
- Gibson L6-S guitar
- Peavey KB60 Amp
- Kurzweil PC88 MIDI keyboard
- Lexicon Omega audio interface
- Sony MDR-7506 Headphones
- Toshiba Satellite L640 laptop with an Intel Core i3 processor running Windows 7 and Anvil Studio with Anvil Studio Works.





XLR



1/4 inch TRS



1/4 inch TS



MIDI

Cable Connections:

Before any cables are connected, or devices powered up, all volume controls are set to zero to avoid feedback or cracking noises when jacks are inserted.

1. Shure SM57 microphone ←XLR cable→Lexicon Mic 2.
XLR cables are always *balanced*, meaning they can be long without picking up electrical noise from the environment and adding it to the signal. The microphone acts as a *transducer*, converting pressure variations in the air into voltage variations that are carried by the cable to the Lexicon. The Lexicon's 24-bit A-to-D converter acts as another *transducer*, converting the voltage variations to 24-bit binary numbers that *sample* the signal 44,100 times per second.
2. The +48 phantom power button on the back of the Lexicon Omega is turned off, because we are only using Dynamic, not Condenser Microphones which would require phantom power.
3. The 20 db Pad buttons on the back of the Lexicon Omega are turned off because the incoming signal from the microphone does not need to be attenuated (reduced).
4. Guitar ← TS cable →Peavey Hi-Gain.
Unlike XLR and TRS cables, TS cables are *unbalanced*, meaning they should be kept short, like 6-foot long, to avoid picking up noise from the environment.
5. Peavey Pre Amp Out ← TRS cable → Lexicon Line In 4.
Like XLR cables, TRS cables are *balanced*, so they can be long without introducing noise.
6. Kurzweil keyboard Left (Mono) ← TS cable → Lexicon Line In 3.
The Kurzweil PC88 has *unbalanced* outputs.
7. Kurzweil MIDI Out ←MIDI cable → Lexicon MIDI In
Even though we're recording the PC88's audio out, we're also capturing the MIDI events just in case we later want to later use a VST-Instrument to play the notes instead.
8. Lexicon Omega headphone ←Sony Headphones.
The Lexicon's output is monitored instead of the computer's output because it has nearly zero latency/delay.
9. Lexicon Omega USB ←USB cable → Toshiba Satellite USB

Setup process

1. Power up all devices.
2. Listen to the headphones while adjusting controls on the Lexicon.
3. Set the buttons between the Lexicon's Mic 1 and Mic 2 to USB 1-2, Monitor Stereo.
4. Set the buttons between the Lexicon's Line1 and Line 2 to Off (neither USB 1-2 nor 3-4)
5. Set the buttons between the Lexicon's Line 3 and Line 4 to USB 3-4, Monitor Stereo.
6. Set the Lexicon's Monitor Mix all the way to Direct.
7. Set the Lexicon's Output Level above the headphone jack to half volume.
8. Set the Lexicon Meter Assign to 1-2 so that it is responding to Mic 2's volume.

9. While singing the loudest vocal that is expected to be recorded, gradually turn the Mic 2 dial up. If you hear nothing through the headphones, go back to the beginning, checking cable and control settings. As soon as Mic 2's Peak indicator lights up, or the Lexicon's meter goes up into the red zone, back off 1/8th turn on Mic 2's volume. This will ensure that we make good use of all 24-bits in the Lexicon's Analog-to-Digital converter when capturing the signal, while leaving us adequate *head room* so that we don't record a distorted signal. This maximizes the recording system's dynamic range or signal-to-noise ratio.
10. Set the Lexicon Meter Assign to 3-4 so that it is responding to Line 3 and Line 4's volume.
11. Set the Kurzweil keyboard's volume to maximum, as this should provide a strong signal and cause no distortion.
12. While playing the loudest keyboard part that is expected to be recorded, turn the Line 3 dial up, backing off the same sequence as in step 9 above.
13. While playing the Gibson guitar, again, the loudest part of the song you expect to record, adjust the guitar's and Peavey amp's volume until you hear the sound you are going for.
14. While playing the guitar, turn the Lexicon's Line 4 dial up, following the same sequence as in step 9 above.

Congratulations. You've completed the equipment setup stage and you are nearly ready to begin recording.