

THAT'S A TAKE!!!!

An **audio interface** (or “**interface**”) is the hardware that connects your microphones and other **audio** gear to your computer. A typical **audio interface** converts analog signal into the **digital audio** information that your computer can process. Since interfaces have anywhere from 1-16 mic preamps. You should buy based on your input needs (# of mics, guitar cables etc.)

- Focusrite, Presonus, MOTU, Avid, Apogee, RME, Universal Audio

A **digital audio workstation (D.A.W.)** is an electronic device or computer software application for recording, editing and producing audio files such as songs, musical pieces, human speech or sound effects.

- Pro Tools, Logic, Sonar, Studio One, Reason, Ableton Live
- Free: Reaper, Ardour, Audacity,
- Favorite Free Plugins from Massey.

Technically, a **keyboard controller** is a device with piano or synth-style keys, and usually a selection of knobs, buttons, and sliders. All of these transmit **MIDI** data to external sound modules (synthesizers), computer software synthesizers, or a hardware or software sequencer.

My affordable favorite setup (not including computer):

- DAW
 - For creation -Logic Pro X: \$200 download. 50+ gigs of samples/sounds
 - For recording editing: Pro Tools
- Interface – Focusrite Scarlett: \$150 - \$350
- Microphones
 - Condenser - Rode NT1: \$200
 - Ribbon - Cascade Fathead: \$200
 - Dynamics – SM57, SM58, Telefunken M80: \$75 - \$200
- MIDI Keyboard (any keyboard you have with MIDI out/in will work)
 - Novation, M-Audio, Arturia - \$100 - \$200
 - Many MIDI keyboards do not have sound included in them.

JOHN ROBERTS - MSU BILLINGS

RECORDING TECHNOLOGY IN THE CLASSROOM II

Condenser Microphones

While carbon microphones signaled the end of the acoustic recording era, the electrical era was ushered in by the invention of condenser microphones, which enabled high-fidelity music recording. Condenser (sometimes called capacitor) microphones use a very thin metal-coated diaphragm and an electrically charged plate to capture sonic vibrations in extremely fine detail. While early models required their own special power supplies, Neumann established the now universal +48V phantom power standard in 1966 on the KM84, originally designed to run off the 48V power supplies used by the Norwegian Broadcasting Corporation's auxiliary lighting system. When looking for accuracy and sensitivity, condenser microphones are a good place to start, like the large-diaphragm condensers first favored by early crooners such as Frank Sinatra and Rudy Vallee that have a natural warmth to them. The less colored sound of small-diaphragm or "pencil" condensers is ideal for capturing the fine details of acoustic instruments.

Condenser Mic Types

Another defining characteristic of condenser microphones is the type of amplification incorporated into the mic. Tube condenser microphones, such as the iconic AKG C12 and the popular Mojave Audio MA-300, exhibit an even, harmonic distortion that adds warmth and color to sound, making them favorites for recording vocals, brass, and other acoustic instruments. Solid-state condensers tend to be more accurate and less colored. Some, like the Neumann U47 fet, use field-effect transistors (FETs) and an output transformer to deliver their unique sound. Modern solid-state condensers, with transformerless outputs such as the AKG 414 XLS, are highly revered for their clarity.

Dynamic Microphones

The design for the dynamic, or moving coil, microphone was patented in 1931, and it has become a staple in the recording industry. Right from the start, the low cost and robust nature of dynamic microphones have made them popular, and mics such as Shure's SM57 are found in virtually every recording studio. Due to their general ability to handle high SPLs (sound-pressure levels), dynamic microphones are the go-to choice for miking drums and electric guitar cabinets, leading to specialty microphones such as the AKG D112 and Sennheiser e609.

Ribbon Microphones

A distinct subset of dynamic microphones emerged in the early '30s utilizing a ribbon element instead of a moving coil. Pioneered by RCA, these ribbon microphones, which use a ribbon suspended in a magnetic field, quickly became popular for their clear and natural sound. The RCA 44B and 77 DX ribbon mics are two of the most iconic and recognizable microphones in history. The fragility of early ribbon microphones caused them to fall out of favor with many recording engineers until modern ribbon mic makers such as AEA and Royer Labs brought them back in more robust form. Today, you can find new reproductions of classic ribbon microphones such as the AEA A440 or new designs like the Royer R-122 MKII. These microphones are fantastic for anything from instruments to vocals, and many professional recording engineers swear by them for miking guitar cabinets. And while ribbon microphones are often characterized by having a dark sound, their extreme clarity allows you to equalize them dramatically and get stellar results. [Learn More](#)

Resources:

- Sweetwater
- Matt Bowman
- Berklee School of Music
- Sound on Sound articles
- Youtube DAW lessons