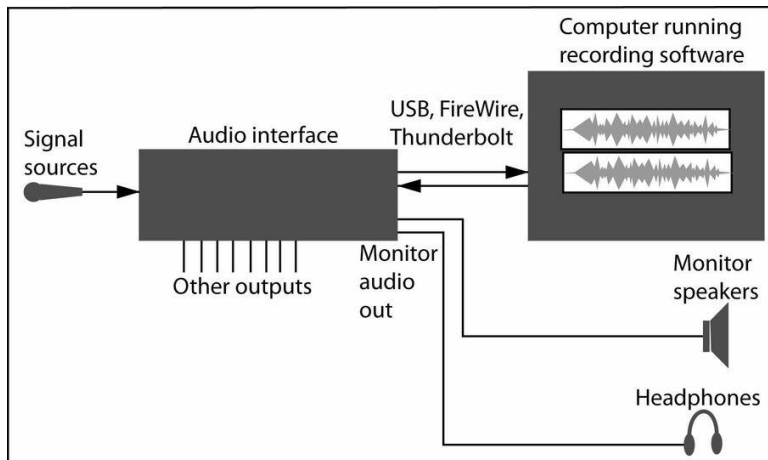


BEGINNER'S GUIDE TO HOME RECORDING ON A BUDGET

Part 2: Audio interfaces



An audio interface is an electronic device that gets your music into and out of a computer so you can record it. An interface is a small box with connectors, knobs, switches and LED lights. It's the heart of the studio, to which you connect mics, instruments, speakers, headphones, and your computer.

You connect a mic or an electric instrument to the interface. A preamp in the interface amplifies the signal, then an A-to-D converter changes the analog signal from your mic or instrument into digital audio. A data cable (USB, Firewire or Thunderbolt) connects the interface to your computer, which is running recording software.

The interface, computer and software are called a Digital Audio Workstation or DAW. This system lets you control the recorded sound of your instrument or voice, record it on a track in your computer's hard drive or SSD, play it back, and mix it with previously recorded tracks.

The recording signal path is this:

Mic or instrument > Audio interface (connector > preamp > A/D converter > USB encoder > USB connector) > USB cable > computer USB connector > recording software > hard drive or SSD.

The playback signal path is this:

Recorded tracks or streaming audio from your computer > USB cable > audio interface > monitor speakers or headphones.

The interface plays a mix of the computer playback and your live mic or instrument. The monitoring (listening) signal paths are these:

(1) Mic or instrument > Audio interface > monitor speaker jacks (also called control room outputs) and headphone jack > monitor speakers and headphones.

(2) Playback of recorded tracks in the recording software > computer USB connector > USB cable > audio interface > monitor speaker jacks and headphone jack > monitor speakers and headphones.

A USB microphone has an audio interface built in. You connect the mic directly to your computer with a USB cable. A USB mixer also has a built-in interface.

Those are the functions of an audio interface. Now let's consider the parts of an interface: connectors, controls, indicators and switches.

Connectors:

XLR: A connector with 3 tiny holes arranged in a triangle. You plug a mic cable's XLR connector in here. Some interfaces have just one XLR connector, some have 2, 4, or 8. With 8 input XLR's you can record an entire band at once.

1/4" or phone input: A connector with a 1/4" diameter hole. Here you plug in an electric guitar, electric bass, or keyboard.

Combo: A combination XLR and 1/4" connector.

USB: A connector that accepts a USB cable. Here you plug in a USB cable, and plug the other end of the cable into a USB connector in your computer. It transfers digital audio between the interface and your computer. Similar data connectors are FireWire and Thunderbolt.

1/4" or phone output: A connector with a 1/4" diameter hole. Here you plug in a cable going to a powered monitor speaker so you can hear what you're recording and playing back. There are two output connectors, left and right, for stereo monitoring.

Headphone jack: Here you connect headphones to hear what you're recording and playing back.

Controls:

The **MIC GAIN** knob controls the recording level of a mic that you plug into the interface. Some units have a **MIC/LINE GAIN** knob. A line signal is the signal from a music-playing device like an mp3 player or cassette deck.

The **INST GAIN** knob controls the recording level of an electric instrument that you plug into the interface.

The OUTPUT knob (also called LINE OUT 1-2 or CONTROL ROOM) affects how loud the monitored sound is in your monitor speakers. Another OUTPUT knob (called PHONES) affects how loud your headphones are.

Indicators:

The SIG or SIGNAL light flashes when the interface is receiving a signal from your mic or instrument and the GAIN knob is turned up enough.

The CLIP or OVER light flashes when the signal level is too high, causing distortion (a gritty sound).

In your recording software, the recording level is the strength or voltage of the signal being recorded. If it is set too high, the CLIP light flashes on the interface, and you'll hear distortion. If the recording level is set too low, you'll hear hiss, which is background noise like wind in trees. To set the recording level, play your instrument loudly, and turn up the mic or inst GAIN knob until the CLIP or OVER LED in the interface flashes. Then back off the GAIN just until the clip LED goes out.

Also, in your recording software is a level meter that shows how high the signal level is. Adjust the GAIN knob to get a maximum level of about -6 dB on the recording-level meter. If you can set the meter mode, set it to peak, not rms.

Switches:

A DIRECT MONITOR switch routes the input signal from your mic or instrument directly to the headphone jack. That way, you hear the sound without any delay (latency), which you would hear if you were monitoring the input signal through your recording software.

A PHANTOM POWER switch turns on 48 volts DC at the mic connectors to power the circuitry in condenser microphones.

How to use an audio interface:

1. Connect everything mentioned before to the interface. While recording, turn off any powered monitor speakers, or turn down the Control Room GAIN knob in the interface. That's to prevent feedback from your mic.
2. Turn on the interface.
3. In your computer's sound settings, set Output to "Speakers (USB audio codec)" or the name of your interface.
4. In your computer's sound settings, set Input to "Microphone (USB audio codec)" or the name of your interface.
5. Launch your recording software.
6. In the recording software Options or Preferences, enable "Play other tracks while recording" or something similar. Turn off "Software playthru of input" or something similar.
7. Turn up the Output level in your interface. Push in the Direct Monitor switch in your interface so you can hear the live mic or instrument.

8. Start a recording project. Set the input of track 1 to match the input connector that you're plugged into. Set the output of track 1 to the stereo output of your interface. Repeat for other tracks if you're recording more than one source at once.

9. Play your instrument or sing loudly into a mic. Set the recording level and monitor levels.

10. Click the Record button in your software. Play the song. Click Stop when done.

11. While listening to recorded tracks, overdub or record a new part on an open track. Repeat for all the tracks you want to record.

The interface plays a mix of the computer playback and your live mic or instrument. Use the faders in your recording software to set the loudness of the recorded tracks or streaming audio.

12. In your recording software, play all the tracks, edit them, and set up a mix. That's a topic for another article.

Do a Google search for audio interfaces to find manufacturers and reviews.

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Bruce Bartlett is a professional recording engineer and microphone engineer (www.bartlettaudio.com). His latest books are "Practical Recording Techniques 7th edition" and "Recording Music On Location 2nd edition".