

AI Synthesis AI002 Mixer: Manual

This is the Build Guide for the AI002 Mixer, you can purchase it by going to:

<http://aisynthesis.com/product/eurorack-audio-and-cv-mixer/>.

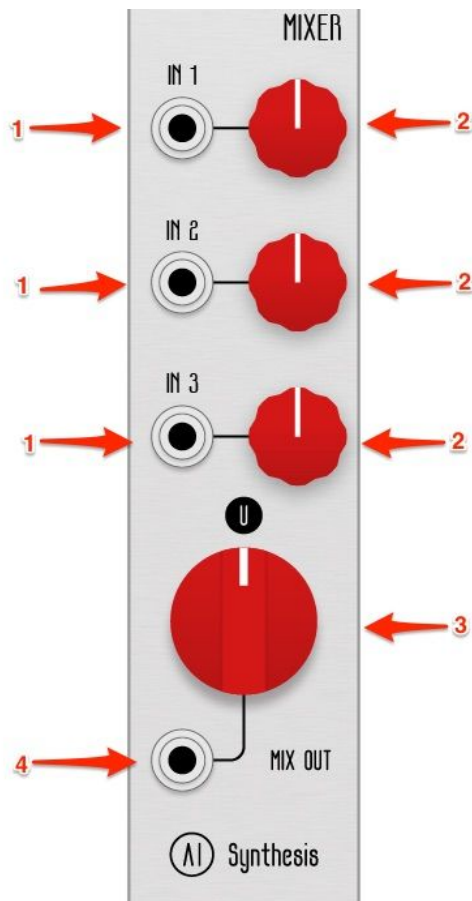
1. About the Mixer

If you are new to DIY electronics, this is the second module you should build. The first module, the **AI001 Multiple** is ideal for beginners, as it teaches how to solder, and familiarizes the builder with the concepts of signal and ground, the basis of electronics. If you successfully built the multiple, this mixer kit will familiarize you with the other components you'll be seeing: resistors, capacitors, ICs, and power.

The **AI002 Mixer** is an active signal mixer. This mixer can operate on +/- 12 or +/- 15 volts with no adjustments. This mixer is a DC mixer, meaning it can be used to combine audio and/or cv signals. This mixer could be used to feed multiple oscillators into a filter, or to feed multiple cv sources into, for instance, the cv in of a filter.

The circuit itself is quite simple, and uses two Operational amplifiers in a unity gain inverting configuration. The P1-4 pots attenuate the input signal then feed it through 100k resistors for protection into the first op-amp, which mixes the signal. The 5th pot controls feedback into the op-amp, in order to control master output of the mixed signal. The output is then inverted. The second op-amp is a simple inverter, that then provides a non-inverted output. In audio mixing, an inverted signal is essentially irrelevant, but for CV, you typically want a non-inverted signal. Otherwise, your envelope will be inverted.

2. Controls



1. Mono Inputs. These inputs accept mono audio or voltage signals.

2. Input Volume. The position of these knobs control the volume of each input. These knobs are passive attenuators.

3. Master Volume. The position of this knob controls the volume of audio and or voltage of the Mix Out..

4. Mix Out. This is the primary voltage output, with levels ranging from 0 to 7.5V.