

LjunggrenAudio RYO Ampmix
A 4-channel amplifying mixer in 8hp

Quickstart – what is the Ampmix and how do I get going?

An easy to build 4-channel amplifying mixer/attenuator with 2.0x gain (6dB) and 5.0V offset on each channel in an 8hp module. No calibration required.

Ampmix was designed as a handy CV mixer and processor with good precision, high input impedance and buffered outputs. It can even be upgraded for even better precision as described in the assembly manual. It will also work great with audio, including full gain giving some distortion possibilities or driving external gear.

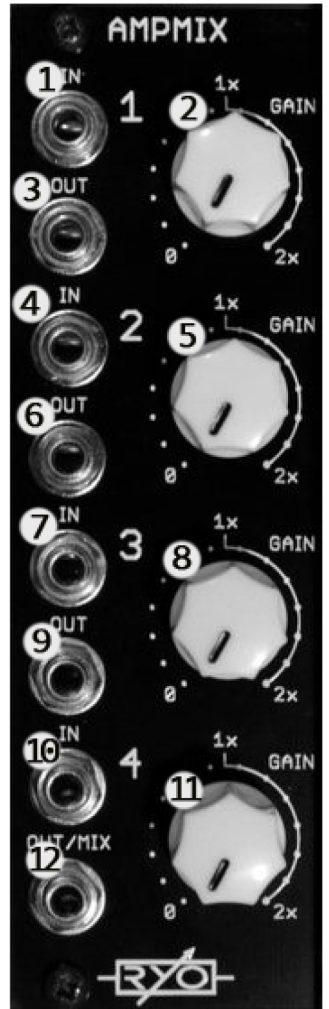
RYO Ampmix

- ① high impedance input (offset normaled to channel, gives upto +5V @knob full cw).
- ② buffered output
- ③ Gain knob (past 50% amplifies up to 2.0x gain (6dB) max)
- ④ high impedance input
- ⑤ Gain knob (past 50% amplifies up to 2.0x gain (6dB) max)
- ⑥ buffered output
- ⑦ high impedance input
- ⑧ Gain knob (past 50% amplifies up to 2.0x gain (6dB) max)
- ⑨ buffered output
- ⑩ high impedance input
- ⑪ Gain knob (past 50% amplifies up to 2.0x gain (6dB) max)
- ⑫ buffered output/mix out

Can be configured as

4 channel mixer,
1 attenuator + 3 channel mixer, 2 attenuators + 2
channel mixer or, 4 attenuators.

Width: 8hp



Installation

To begin installation, please make sure that:

- you have a standard pinout eurorack bus board
- you have +12V and -12V power rails on that bus board [no +5V supply is required]
- the power rails are not overloaded

!!!Before installing this module disconnect the power from your system!!!

- Double check the polarity of the ribbon cable - The red stripe should be aligned with the -12V rail, on both the module and on the bus board

[we use shrouded headers but it's still possible a cable has been assembled with the stripe on the wrong side of the shroud so always double check!].

Also make sure when using busboards without shrouded headers that the pins aren't transposed a row vertically or horizontally – all pins should insert into holes on the cable.

Although we use both PTC fuses and schottky diodes to provide reverse polarity and excess current protection, we do not take any responsibility for damages caused by wrong power supply connection!

After you have connected everything, double checked it and ensured your case is closed such that no power lines can be touched by your hand or any stray cables drop into holes, turn on your system and test the module

The Ampmix Kit is a novice-friendly project, it is a low part-count, single-PCB build that only requires the most basic experience in PCB soldering and module assembly.

It works as:

- **4 channel mixer,**
- **1 attenuator + 3 channel mixer,**
- **2 attenuators + 2 channel mixer, or,**
- **4 attenuators.**

(With up to 2.0x gain (6dB) on each channel.)

If you chain channels you can get greater gain. You can chain any combination of channels it doesn't have to be in the described order.

Patch signal to with **Input** to **IN1**, and **OUT1** -> **IN2**, then **OUT2** will have 4x gain (12dB) total.

Continuing with **OUT2** -> **IN3** then **OUT3** will have 8x gain (18dB) total.

Finally, Continuing with **OUT3** -> **IN4**, then **OUT4** will have 16x gain (24dB) total.

An offset voltage is generated then normalized to the inputs of the 4 channels, giving them a maximum of 5V output each with knobs turned full clockwise (2.0x gain). Please note that these offsets will affect the mixing if the channel hasn't been patched on its input or output, so turning all unused channels fully counter-clockwise/left (off) is advisable for a clean mix.

The module can be used as a basic attenuator; by patching a signal to any channel and taking it's individual output as the out, whilst keeping gain between fully CCW and 50% as desired.

Dimensions

Height:	3U (128.5mm)
Width:	8HP (40.30mm)
Depth:	35mm (with power cable attached)
Weight:	110g (approx w/cable)

Current consumption

+12V rail	22mA
-12V rail	22mA
+5V rail	no +5V supply required

Basic specifications

total frequency controllable range	dc to 50kHz
max input/output audio signal	20Vpp
CV input range	0V to +10V

Max gain	6dB (2.0x) gain per channel 24dB gain with all channels daisy-chained
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Nominal impedances

Audio signal input:	22k ohm
Audio Signal output :	in loop compensated
CV input:	n/a

Patch ideas:

Although uses of mixers in patch examples and ideas are found readily online and in some books, and similarly those familiar with using attenuators will be familiar with the basics, there are other less obvious ways to use the Ampmix in patches in your modular rig:

below i've include some inspiring words to encourage other patches that might be tried; and, as ever, experiment – RYO modules are designed with all necessary protection and fail-safes so you can just start plugging in patch cables and see what happens!

Overdrive other modules:

many modules can be fed a hot signal to overdrive the input stage giving a nice distortion or warm tonality – this is especially true for VCAs, filters and some mixers.

Boost/attenuate less commonly varied signal:

not only commonplace signals like the main audio in an output chain or the end output of a patch might need boosting if gain is low, also try boosting as well as attenuating FM modulators, AM modulators and other secondary waveforms in a patch so that the resulting sound output from a carrier VCO/VCF/VCA is different.