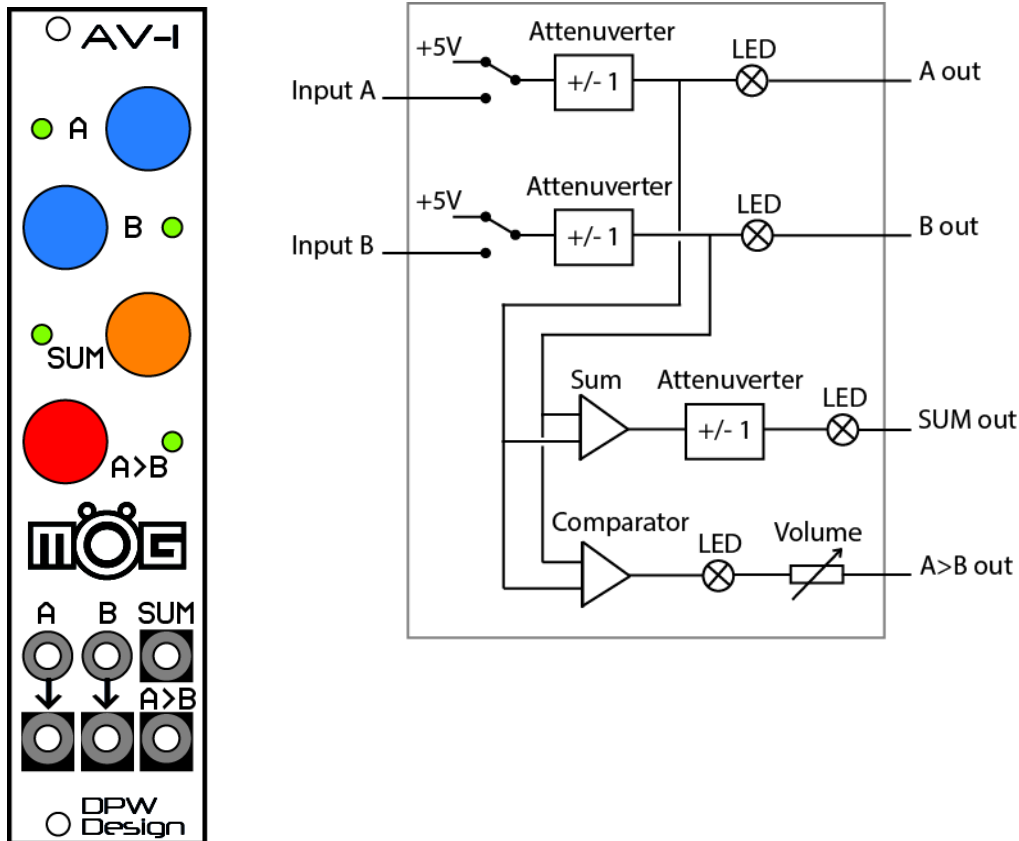


# AV-1 Attenuverter

The base-function of the AV-1 is a dual attenuverter. To the two attenuverters a summing function with attenuverter and a comparator is connected.  
The unit can be used as a utility unit or to run audio through.

## Block diagram



## Input A and B

When nothing is connected to A or B the input of the attenuverter is connected to +5V. This gives the possibility to set the output from -5V to +5V DC out via the knob.

When something is connected to A or B that signal can be attenuated or inverted and attenuated via the knob. In the middle position the output is zero. Max counter clockwise the output is -1 times the input. Max clockwise the output is 1 times the input, and passes through unaffected.

The LED shows the output voltage. Green is positive and red is negative voltage.

## SUM

SUM is the sum of A and B after their attenuverters.  
The knob on SUM is an attenuverter as on A and B.

The LED shows the output voltage. Green is positive and red is negative voltage.

## A>B

A>B is a comparator that is comparing A and B after their attenuverters.

If A is more positive than B the output A>B will go high. If B is the highest the output will go low.

The output is -5V to +5V and has a volume control.

The output can be used as a control signal or to trigger other modules depending on A and B.

It can also be used as a square wave output that can be PWM modulated.

The square wave out on A>B is a bit wave shaped to get a different character than a super clean square wave when used for audio.

The LED shows the output voltage. Green is positive and red is negative voltage.

The LED shows the level before the out volume control so you can see for instance how the comparator is reacting before turning up the volume and and triggering something with it.

## Device specs

Module size: 6 hp wide, 25 mm deep with power connector.

Input impedance: 50 kohm

Output impedance: 1 kohm

Power requirements: +/- 12V. Max power consumption 45 mA

Connect the power cable with the red stripe (-12V) down.

The unit is protected for reverse power.

## Use case examples

A few examples of use for more than just as dual attenuverter.

### PWM modulation

Connect a sine audio signal to A. Set the A knob to max clockwise position.

Connect a sine LFO to B. Set the amount of PWM with the B knob.

A>B is the audio out in this case.

If you want an extra fat and wide PWM stereo sound you can use two AV-1 modules.

Connect the same signals in to A and B on both units and the A>B from the two units will be your left and right audio out.

Experiment with different settings of the A and B knobs.

The left and right side PWM will always differ a bit even if knobs are set the same because of small differences in component tolerances. This is one thing that gives the sound life.

### Rhythmic pattern generator

The AV-1 can be used to produce pseudo-random like rhythm patterns to trigger other modules.

Connect a sine LFO to A and an other not synced sine LFO to B.

Use the A>B output as a trigger to some other module.

By just varying the setting of A and B you can get at number of interesting rhythmic patterns with variable length that has a base in multiples of the two LFOs in.

If one of the LFOs are synced with for instance a drum machine this pattern will make rhythmic sense together with the drum machine but still have what seems to be a life of its own.

When used this way you also got the outputs A, B and SUM to modulate your rhythmic pattern.