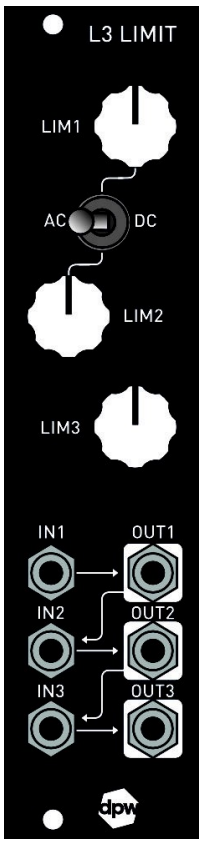
L3 Limit, Triple Limiter

The L3 is a three individual soft knee limiter module in Eurorack format. An all analog unit.
It can be used for audio signal manipulation or as a utility module for control voltages. The three channels can be AC or DC coupled.
It can be used for normal limiting/compression but also for creative wave shaping or feedback patching.

The soft knee of the limiter is actually 8 consecutive soft knees for each channel starting at -6dB compared to 5V and spread evenly up to 5V.
The limiter will brick wall limit to +/- 5V both in AC and DC mode.

In other words it gradually increase the compression from +8dBu and brick wall limits at +14dBu.



Controls

For each channel there is a volume control that sets how hard the limiter is driven. When the knob is at 9 o'clock what passes through is almost unaffected only compressing high peaks. Turning the the knob to full on will give 5 times amplification drive in to the limiter, giving a rounded distorted sound.

The three channels are completely independent.

AC/DC coupling for Lim1 and Lim2 is done with the switch on the panel.

AC/DC coupling for Lim3 is done by a jumper on the back of the module.
When the jumper is mounted Lim3 is DC coupled.
The module is delivered with the jumper mounted.

If you want a higher compression than just one limiter you can chain several limiters, this is pre-patched via normaling.
If nothing is connected to IN on channel 2 or 3 they will get their input from the channel above as shown by the dotted lines on the front panel. This is also so you easily can get tree different compressed versions of the same sound out.
Connecting something in on 2 or 3 will disconnect the noramling.

Device specs

Module size:	6 hp wide, 32 mm deep with power connector.
Input impedance:	20 kohm
Output impedance:	1 kohm
Power requirements:	+/- 12V. Max power consumption +/- 20 mA Connect the power cable with the red stripe (-12V) down. The unit is protected for reverse power.

Use case examples

A few examples, just to get your imagination going.

Normal limiting/compression

As there are three limiters two of them can for instance be used for a stereo drum bus and you still have one more for an additional effect.
The limiter can be used to add more weight to sounds like for instance a kick. Or a way to bring out the tails of plucky sounds by compressing the transients and amplifying the rest of the sound. Another useful case is to compress thin sounding sounds so they sit better in a mix with analog synths.
The L3 is also very handy to have in feedback patches.

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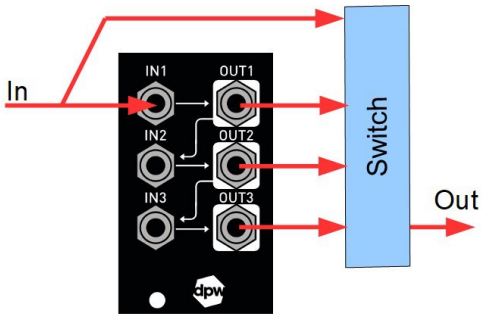
Level protection

If you set the L3 low you will not be able to hear the effect of the compression, it will sound transparent but will never allow peaks above +/-5V. This can be a way to protect your sound card or the front of house mixer from high peaks if you are playing in a club.

Waveshaping AC mode

Can be used in AC mode to drive signals to shape it through the limiter. Mild settings will add a bit of harmonics and hard drive will add a mild distortion. Try it on sine waves to get some pleasant harmonics and make the sine cut a bit better through the mix.



Also try mixing different waves going into the L3 and compressing them together.

As the chanels are normalled in series you could have three different versions of compressed signals out with just one signal in. This can be used for variantions of your sound by connecting a switch for selection of output.

Waveshaping DC mode

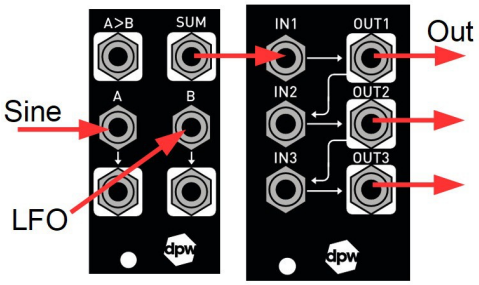
As above for AC mode but for LFOs, envelopes or other slowly changing signals.

By mixing several LFOs you can get a result higher that +/-5V. The L3 can be used in DC mode to guarantee that the result never will be above +/- 5V.

Can also be useful if you use envelopes that are +8V as control voltages and you want them to be max 5V.

PWM of any signal

Set the L3 to DC mode. If you offset your audio signal with a voltage you can drive the signal harder in to one side of the limiter to give an asymmetric wave.



This can be done by connecting an AV3 before the L3, using channel A for audio and the B knob for voltage offset. SUM connects to the input of L3.

You don't have to use an AV3. Any DC coupled mixer will do.

If you connect an LFO to the B input of the AV3 then the LFO will carry the audio and drive it harder in to the positive and negative limits of the L3. This will give the possibility to do some kind of PWM of sine waves or any other signal.

You can as shown in the picture like in the waveshaping example get different versions of this PWM like signal out if you don't connect anything in on channel 2 and 3.

Please check www.dpw.se for updates of the manual and demo videos.