

# CGS738 - Mangler



The Panther CGS7xx Series are authorised re-releases of the popular Cat Girl Synth Series of modules from Ken Stone. Each module is revisited to determine if any improvements can be added to the original design and has been adjusted, where applicable, to fit the smaller profile of the EuroRack module size.

## The CGS738 - Mangler Module

The CGS738 – Mangler is Ken Stones Saw Pitch Shifter/Wave Multiplier and is an experimental combination of op-amp summers and comparators with surprising results, ranging from complex wave shaping to pitch shifting of saw tooth waves.

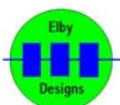
### Some ideas on how to use this module:

As a waveform mangler - feed it any combination of waveforms, or a waveform and a control voltage and adjust as needed. For example, feed a waveform from a VCO or LFO into one input, and adjust the input level for differing effects. Use a control voltage as an offset signal to introduce variation. This can be from an envelope generator, keyboard or LFO or another VCO.

As a sawtooth frequency doubler - feed in a single sawtooth wave, and adjust the associated gain. When the gain reaches 2, assuming a 0 to 5 volt waveform, the result will be a sawtooth of twice the frequency at the first output.

As a sawtooth pitch shifter - feed an audio frequency sawtooth wave into one input, and a sawtooth wave from an LFO into the other. Disable one input using the switch, then adjust the input level of the other input until the LED lights, then back off until it goes out. Disable the other input using the switch, then repeat the procedure for the other input. Return the switch to the centre position. The LED will now work as a "signal present" indicator and can be ignored. One output will be the sum of the two frequencies, and the other should be the difference, depending on the relative slopes of the two sawtooth signals. If the result sounds rough, tweak one of the inputs until it sounds clean.

Note that getting the pitch shift to work correctly takes some experimenting and tweaking. The input waveforms should be in the range of 0 to 5 volts - specifically with the bottom of the waveforms actually hitting 0 volts. An external offset may need to be mixed in if this cannot be achieved. The downward shift output is very sensitive to gains and offsets, and is unlikely to be as pure as the upward shift output. If you want a more accurate downward shift, swap the direction of one of the input waves, and upward shift output will act as a



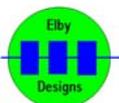
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downward shift output and vice versa. Some very powerful sound can result, even with impurities in the shifting, especially when the incoming frequency, and the up and down outputs are mixed together.

Also note that this is NOT a frequency shifter - the relationship between the harmonics are preserved.



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