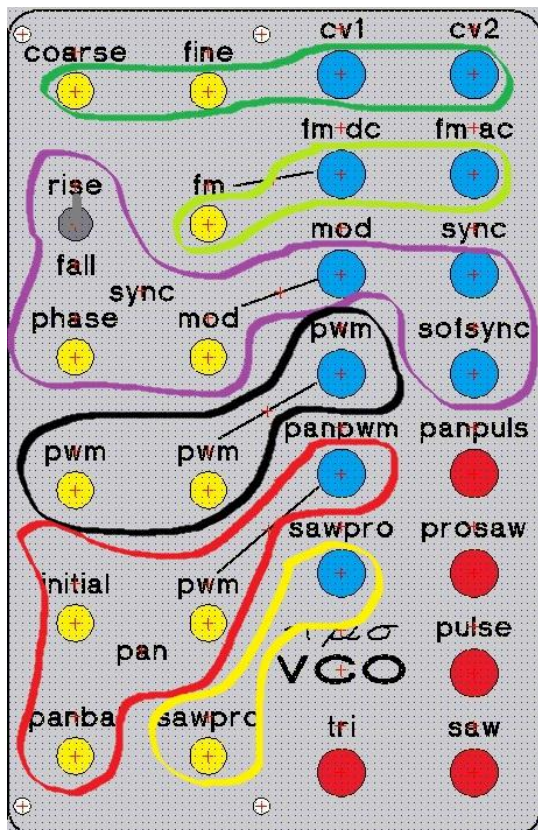nonllnearcircuits

VCO PANEL USER GUIDE

DEC 2012

VCO

The VCO is a standard Mikulic/Electronotes core with phase sync and pan-pulse circuitry from the Aries AR-338.

GREEN - The Coarse and Fine pots are fairly obvious. CV1 and CV2 are 1V/Oct inputs and are happy to accept any control voltage.

LIGHT GREEN - FM AC and FM DC are frequency modulation inputs, The DC input can be attenuated with the FM pot.

PURPLE - There are two types of sync, the simple version is the "sofsync" which will not cause the oscillator to reset when the capacitor is half full (or half empty).

The hard sync includes the rise/fall switch, phase and mod pots, mod and sync inputs.

Feed a signal from another VCO, anything will work but different waveforms will result in different behaviour.

The rise/fall switch selects whether sync occurs on the rising or falling edge of the waveform on the sync input.

The Phase pot manually sets where on the input waveform syncing will occur. The Mod input can be fed a control voltage to also control the sync point. The signal on the Mod input can be attenuated by the Mod pot.

BLACK – These are the PWM controls for the pulse signal, as the processed saw and pan pulse are both partly created by the pulse signal, they will of course be affected by the settings you choose here. The manual pot can take the pulse width to 0% or 100%, ie nothing. The idea is you then use a CV signal on the PWM to get the pulse back to a % where it can be heard, this affect is almost like a VCA in that the sound can be turned on and off by CV, envelopes, gates, etc.

RED – The pan-pulse output is based on the circuit last seen in the mid 70s on the Aries PMS VCO. It is a very hot signal at some settings reaching peaks of +/-10V. Strangely on a scope it looks very similar to the signals obtained from Ian Fritz's double pulse waveshaper, although the circuits are completely different. Anyway the pan-pulse is a very rich signal and choc-ful of harmonic content. Best thing to do is attach it to your scope and twiddle the knobs to see what happens.

YELLOW – The processed saw is based on a circuit in a 70s electronics magazine and is intended to give sounds akin to acoustic, particularly woodwind instruments. The CV input can be fed anything you like, see what happens. If using CV signals from 0-10V you probably want the manual pot turned low, but up to you. Again, plug in a scope and have a look at what it is doing.

TRIMPOTS & TUNING - There are three trimpots on the PCB. The two blue rectangular ones sitting together are for tuning. The third, further down the PCB, is for setting up the tri wave. I set it before shipping, but if it needs redoing, use a scope to view the signal as you turn it. If no scope just gently adjust the trimpot until the signal sounds "clean"…no extra buzzing sounds…

For tuning, set the Fine and Coarse pots to their centre positions, adjust the trimpot labelled 'Inifreq' to the base frequency you would like. Then put 1 V on a CV input and adjust the trimpot 'V/O' so the output frequency changes 1 octave. Try for 2V, 3V, etc . It is hard to get right and you will have to do it a few times until satisfied.