

A SIMPLE BEGINNER'S TUTORIAL

...is a simple melody/bass line generator with a chord and rhythmic section. It is based on analog ramp divider, similar to those used for the Multicassa which are inspired to Oskar Sala's Mixturaonium, an early electronic musical instrument. Each divider generates a voltage ramp starting from a master clock (internal or external) a potentiometer is used to set the number of steps and thus the division ratio with a minimum of 1, there are ten of such divider in the rhythmic section (trigger pulses 1 and 2) - 2 for the rhythmic section (trigger pulses 1 and 2) - 2 for the scale generator, these have a ramp output that forms the melody line - 6 for the audio dividers, the 2 prescalers are chained with 4 note dividers, one for bass and 3 for chords. A further divider comes into play if external clock is selected, in this case the BPM control acts as a clock divider making possible the synchronization with other instruments (at maximum speed divider=1).

-Connect power (12 V.) and an amplifier or headphones.
 -Select internal clock (EXT-INT switch) and BPM to your favorite rate (RED flashes).
 -Start with all the controls to mid position.
 -Move TRIG1 and TRIG2 to the left position (counterclockwise) : GREEN and YELLOW will flash at the same rate as RED.
 -Select TRIG1 and TRIG2 on ENVELOPE SELECTOR switches (down position), you'll hear two distinct sound (left and right if you are stereo) at the time GREEN and YELLOW flash.
 -Slowly raise TRIG1 or TRIG2: the sound and flashes will slow down always in sync with RED flashes.

LET'S WORK ON SOUND:
 Adjust BASS ENV, BASS LEV, CUTOFF and RESONANCE for nice bass, the chord section may need to adjust CH1 CH2 CH3 (start with all at left position) these control along with PRESCALER allow to choose the notes the chord is made of.
 the MANUAL PLAY buttons allow to listen the separate notes, you can stop the clock (EXT position) and try different combination of prescaler and note divider, adjust VCO PITCH to transpose your chords.

Arpopone AKA HARP O'PHONE



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CLOCK GENERATOR

-BPM: Set the speed of master clock or the external clock divider (RED led).
-EXT-INT: select internal clock (set by BPM) or external clock (via the EXT CLOCK IN).

-EXT CLOCK OUT: pulses are synchronous with the RED led flashes.

TRIGGER GENERATOR

-TRIG1 TRIG2: set how many clock pulses are needed to flash the GREEN and YELLOW led.

-DIVIDERS: the two trigger output are the rhythmical section of the instrument and are used for playing notes and advance notes of the scale generators the division ratio is 1 to around 40.

-TRIG MIX: selects a single trigger (1 or 2) or both (1+2) to advance the scales the output of TRIG MIX is also fed to the TRIGGER OUT.

-SCALE #STEP: Sets the number of steps for the two scale generators that, added together by the

-SCALE MIXER: will play the melody on the VCO.

SCALE GENERATOR

The pulses selected with TRIG MIX are sent to two scale generators each scale generator outputs a voltage that increases in step, the brightness of the two led's (WHITE

and BLUE) are proportional to the output voltage giving an indication of the current position in the scale. The number of steps is set by the two #STEP controls from a minimum of 1 to around 40.

SCALE MIXER

In the mixer section the two scale are summed together to obtain a more complex pattern, the amount of each scale can be set by two controls and can be positive (ascending scale), or negative (descending scale), in the center position the amount is 0 (steady note), an OFFSET control set the minimum voltage and hence the lowest note that can be played. Be aware that these are NOT tempered scales, all microintervals are possible, fine tuning of the melody being played is done with these three scale mixer controls.

VCO

The notes are played by the vco, the VCO PITCH transposes the melody maintaining the same interval between notes, as set through the SCALE MIXER.

DIVIDER SECTION

The note generated by the VCO is fed to a chain of dividers to obtain 4 subharmonics of the original note, one of these is the bass section

with its own filter and envelope, the other three form the chord section with their envelope.

Each divider is similar to the trigger dividers with the difference that it acts on notes and not on rhythms generating a subharmonic sequence: for example if the note produced by the VCO is C4 the output will be:

(rotating from left to right) C4, C3, F2, C2, Ab1, F1, D1 (not really), C1, Bb0...

Two prescalers are used, each of them is chained with two dividers that further divide the note the same way, many types of chords can be generated by setting the proper dividers, each single divider can be played separately by means of the four buttons in the MANUAL PLAY section one for the bass the other three for each note that form the chord (CH1,CH2,CH3).

ENVELOPE SECTION

The two envelope section are identical, both have a selector for different trigger sources:

-TRIG1 & TRIG2 the envelope starts at the flash of the GREEN LED (bass) or YELLOW LED (chord).

-SB1 & SB2 the envelope starts at the first step of SCALE1 (bass) or SCALE2 (chord).

-WHITE & BLUE the envelope follows the intensity of the WHITE LED (bass) or the BLUE LED (chord), except for this latter the envelope length is set by the two controls BASS ENV and CHORD ENV, an EXT CV input allows to provide an external envelope.

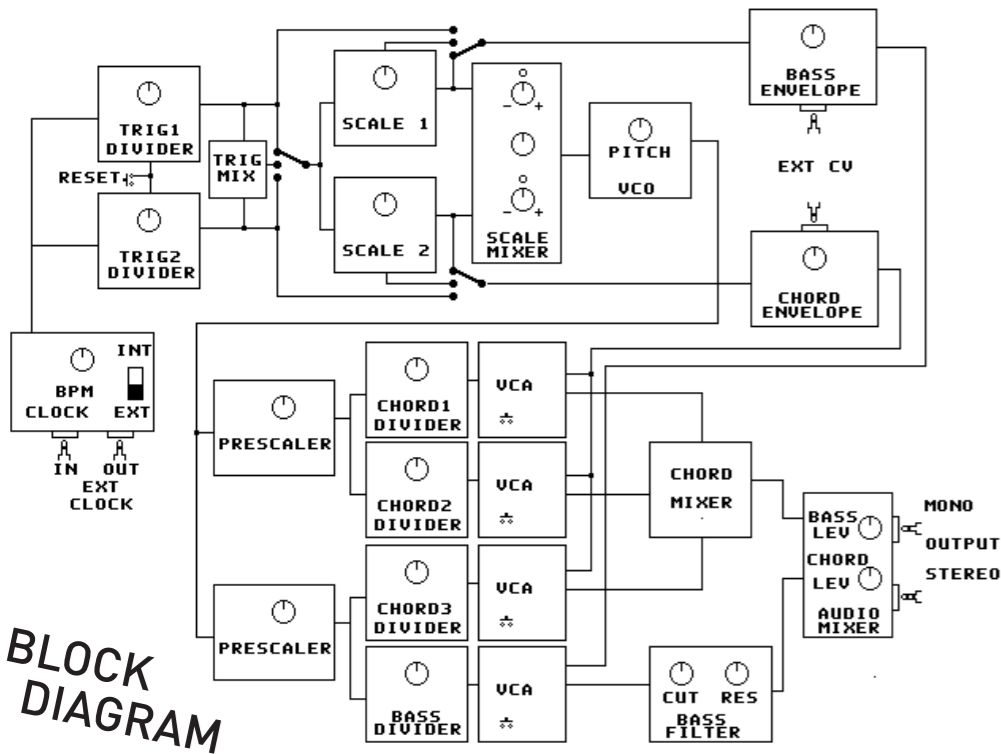
BASS FILTER

The bass channel is passed through a resonant low pass filter with CUTOFF and RESONANCE control.

OUT MIXER

Finally the two channels BASS and CHORD are mixed together, the output level is set by the BASS LEV and CHORD LEV controls.

Two outputs jacks are present: the mono OUT jack on the backpanel and the STEREO on the frontpanel useful for listening with phones.



BLOCK DIAGRAM

