VOLTAGE CONTROLLED OSCILLATOR (VCO)

RANGE
(octave)

SYNC
(reset phase)

Pulse Width
Modulation

1 volt / Octave
Freq Inputs

FREQUENCY
(fine tuning)

Linear FM
(Frequency
Modulation)

Pulse Width
(Affects Pulse Out
Only)

Exponential
FM Amount

OUTPUTS

use Q161 Osc Mixer to combine waveforms!

VOLTAGE CONTROLLED FILTER
(transistor ladder / low pass)

Initial Cutoff Frequency

Cutoff Frequency Modulation

AUDIO INPUTS

Slope (filter response)

Resonance

Each AUDIO INPUT has level control (can act as a mixer)

AUDIO OUTPUT

VOLTAGE CONTROLLED FILTER (STATE VARIABLE)

Cutoff Frequency Modulation Inputs & Level (Depth)

Initial Cutoff Frequency

Resonance Modulation Input & Level

Initial Resonance

AUDIO INPUT

INPUT LEVEL

FILTER OUTPUTS

Voltage Controller Amplifier

response
Exponential is better for fast, percussive rise times,
Linear is smoother/slower

initial gain

Control Input 1 Attenuator

Control Input 1

Control Input 2 (no attenuator!)

Signal Inputs (summed together)

Output Signal Inverted

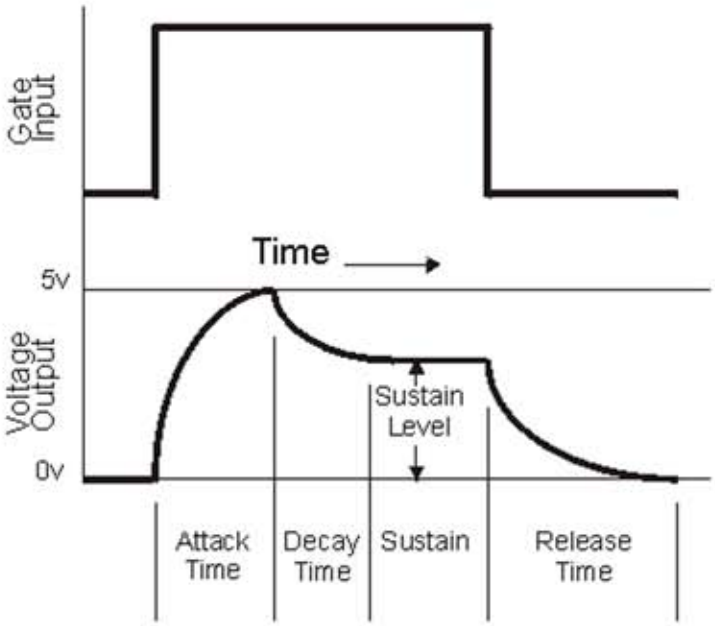
Output Signal

Works with DC and AC!

ADSR Envelope Generator

5v at gate input begins 4 stage envelope.

1. Rise to 5v over attack time
2. Fall to sustain level over decay time
3. Hold at sustain level until gate drops to 0v
4. Fall to 0v over release time



Attack, Decay and Release are times
Sustain is a level

Manual Trigger

Gate Input

Envelope Out

Slew Limiter

a.k.a.
glide,
portamento,
lag processor
glissando

Slew Time

Direction

on/off
gate input

input

output

Sequencer (Right Side)

Step Voltages

Glide Amount

Add to final voltage (transpose)

Main Out

Gate Out

End of Sequence Gate

Gate and Step Outputs
(for parallel 3x8 mode)

SEQUENCER (left side)

Voltage Range

One Shot / Loop

Mode:
1 sequence of 24 steps
or 3 parallel
sequences of 8 steps

Direction

Internal Clock Rate

External Clock

Gate Width

Press Set End to
choose the last step
of the pattern

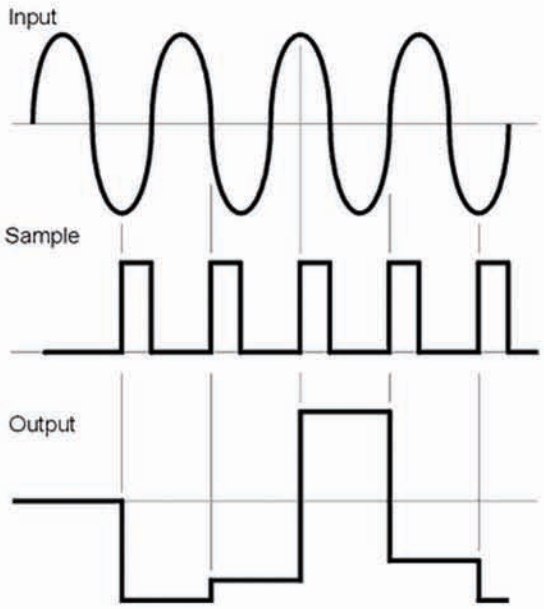
Transport Controls, with Gate Inputs for external control

Ring Modulator

Multiply X by Y

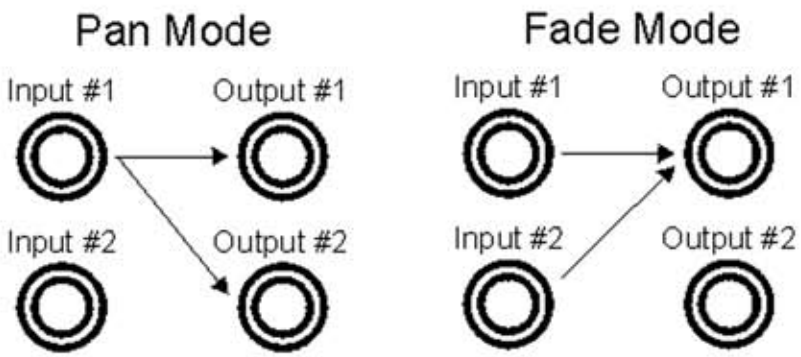
Sample and Hold

take “samples”
at every clock
tick, and
hold the voltage
until next clock



use noise source
as input
and connect
to VCO CV input
for R2D2 sounds

Pan / Fade



In Pan mode, the control input controls which output input 1 is routed to.

In Fade mode, the control input controls which input is routed to output 1.

suggested use:
Use LFO sine wave as a control source for panning or cross-fading between different sources.

Mixer

Noise Source

MIDI Interface

MIDI in

1v/octave out

tranpose in

velocity out

gate out
note-in = HIGH
note-off = LOW

mode outputs

mode 2 adds ch 2 note,velocity, & gate

mode 3 adds CC support

gate mode

note priority

Instrument Interface

(& envelope follower)

Gain

Threshold
for Gate/Trigger

In

Amplified
Signal Out

Envelope Out

Gate and Trigger Out