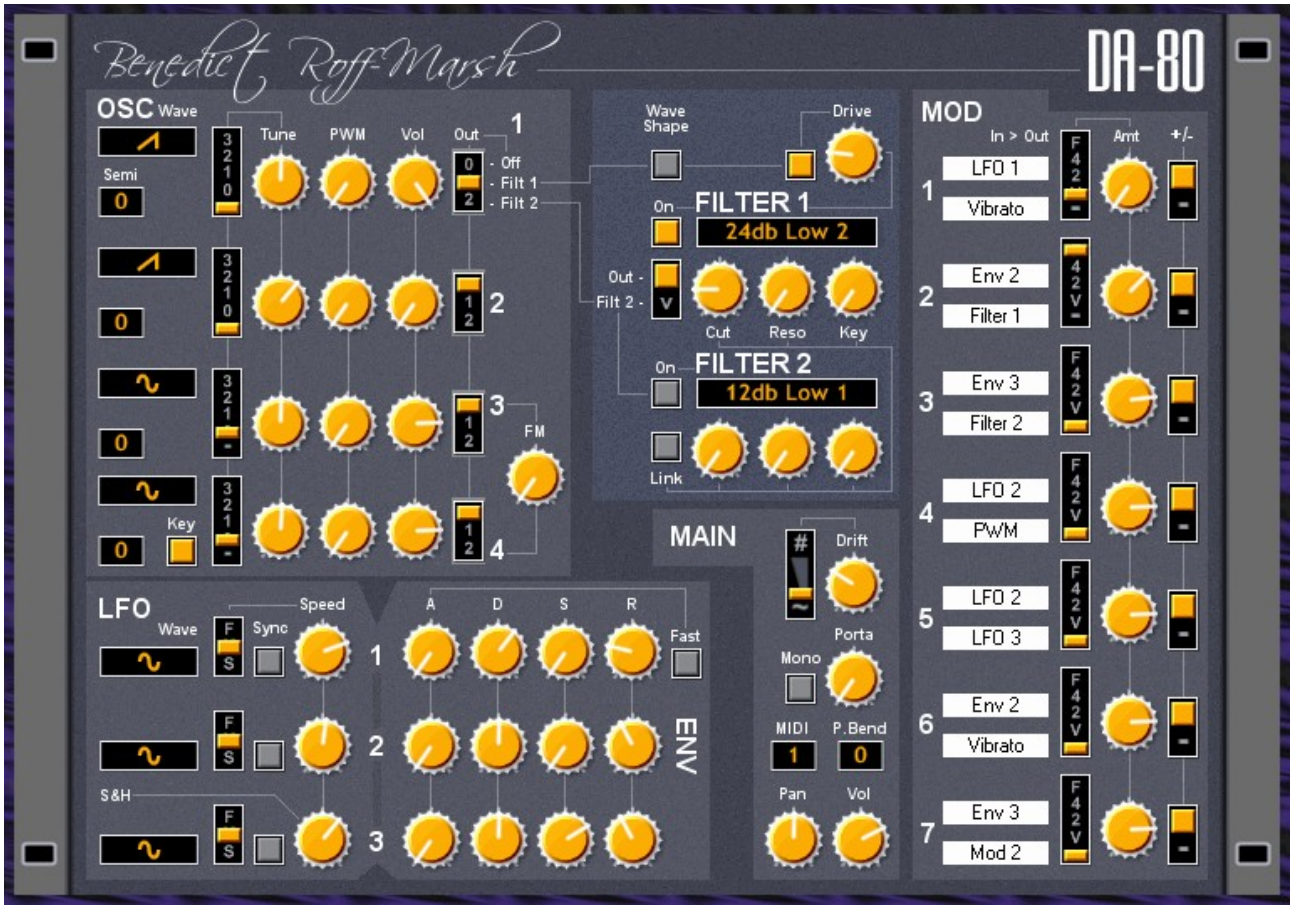

DA-80

4 Osc Dirty Analog with Matrix

Overview

DA-80 is a 4 Oscillator, 8 Voice analog emulation. The DA stands for Dirty Analog. So many synths have very clean oscillators and filters. I don't really like that. I have always yearned for a synth that sounds organic right from the first raw oscillator. The DA concept was to add noise to the oscillators right at the start. Let the noise vary from a random undulation to straight pink noise. Compress the wave shape just a little then pass it through a selection of Filters that vary from polite to unruly. Offer lots of modulation sources and destinations and DA-80 is born. Sonically DA-80 can produce analog style sounds similar to Oberheim and Sequential Circuits classics.

Credits:

David Haupt for code - http://www.dehaupt.com/SynthEdit/semodules.htm
Scoofster for code - http://scp.web.elte.hu/synthedit/modules.html

Dirty Analog

The concept of noisy oscillators may seem unusual at first as most people are striving for perfectly clean sound generation. Try this for yourself: set the Drift Shape to #2 and the Drift Amt to 0. Play only 1 Osc and open the Filter (no Drive). Play some notes and then slowly add in some Drift. You will notice that the sound gains movement and a 'sparkle' as the Osc jumps around.

The other thing you may notice is that the Drift source is per-Osc & per-Voice so if you play a chord with a 4 Osc patch then you have 12 oscillators all randomly detuned and wandering. This is part of the essence of the original analog charm. It is also much of the reason many synth sounds were layered in 80's recordings – for detuning chorusing. By that time Osc were digitally controlled (DCO) which stopped them from wandering (which was in many ways good) but it also removed the 'real instrument' vibe present in real Voltage Controlled Oscillators (VCO) wandering – just as a violinist never frets in exactly the same spot. And a violin section has every player slightly out of tune.

Combine DA-80 with effects included in the SSP-IV pack and you will be impressed with the tones and feel you get.

OSC 1-3

- **Shape** – choose from Sine, Saw Up, Saw Down, Triangle, Pulse wave and White or Pink Noise
- **Semi** – semitone detune 0-+12 semitones
- **Octave** – set Osc tuning from -1 to +3 octaves
- **Tune** – fine detune the Osc +/-
- **PWM** – adjust the width of the Pulse wave from Square to infinite (pin-thin)
- **Vol**– set the OSC Volume sent to the Drive/Filter
- **Out** – choose Osc output to Off, Filter 1 (through Drive) or Filter 2

Osc 4 – as for Osc 1-3 but with

- **Key** – Osc responds to MIDI keyboard
- **FM** – Osc 4 modulates pitch of Osc 3

Filter

Filters only use CPU resources when turned on. Different Filter Types will use different amounts of CPU.

- **Wave Shape** – applies a slight drive to all 4 Osc waves regardless of output routing
- **Drive** – applies overdrive to sound routed to Filter 1 (pre-filter)
- **Filter 1 Out** – send Filter 1 signal straight to Amp or to Filter 2
- **Filter 2 Link** – slaves the Cut, Reso and Key to the Filter 1 values. Generally you will want to set Filter 2 knobs to 0 when in Link mode. It is possible to *add* to the acquired values by raising the Filter 2 knobs.

Filter 1 & 2

- **On** – toggle the filter to active or bypassed
- **Type** – choose from:
  1) 12db Low 1
  2) 12bd Low 2
  3) 12db Low 3
  4) 24db Low 1
  5) 24db Low 2
  6) 48db Low
  7) Band 1
  8) Band 2
  9) Band 3
  10) Band 4
  11) High 1
  12) High 2
  13) High 3
  14) Notch 1
  15) Notch 2
  16) Notch 3
- **Cut** – sets the cut-off point for the filter
- **Reso** – emphasise the Filter cut-off point. Be careful as this can get pretty LOUD!
- **Key** – sets the Cutoff to track the MIDI keyboard so the filter opens more for higher keys. Will require lowering the main Cutoff knob.

LFO 1-3

All 3 LFOs operate the same and are assigned by the Mod Matrix. LFO 3 controls the wave and speed for Sample & Hold modulation.

- **Shape** – choose from Sine, Saw Up, Saw Down, Triangle, Pulse wave and White or Pink Noise
- **Speed Range** – choose from Slow, Medium and Fast
- **Sync** – reset the LFO Wave on Note On
- **Speed** – LFO modulation speed

Env 1-3

All 3 Envelopes operate the same. Env 1 is set to Amplifier or Volume. It is possible to assign Env 1 in the Mod matrix but be aware that this may not work to your taste because the MIDI Velocity is hardwired to this Env.

- **A** – sets Attack time for the envelope
- **D** – sets Decay time (to Sustain level) for the envelope
- **S** – sets Sustain level for the envelope
- **R** – sets Release time for the envelope
- **Fast** – *Env 1 only* sets the Attack time to very short. Useful for when you want the DC click on the beginning of notes or very precise control over short attack times.

Mod Matrix 1-7

All 7 Mod slots operate the same. Slots 6 & 7 offer the ability to modulate earlier Slots. Use this to create effects like an enveloped LFO.

- **Source** (high)– choose the Mod Source for this Slot from:
  1) Velocity – MIDI key velocity
  2) Env 1 – Amp Envelope (with Velocity)
  3) Env 2
  4) Env 3
  5) LFO 1
  6) LFO 2
  7) LFO 3
  8) S&H – Sample & Hold wave & speed set by LFO 3
- **Destination** (low) – choose the Destination for this Slot from:
  1) Vibrato – main Pitch
  2) Tremolo – main Volume – may require lowering main Volume knob
  3) PWM – Pulse Width for all Oscillators
  4) Filter 1 - cutoff
  5) Reso 1
  6) Filter 2 – cutoff
  7) Reso 2
  8) Pitch 1 – Osc 1
  9) Pitch 2 – Osc 2
  10) Pitch 3 – Osc 3
  11) Pitch 4 – Osc 4
  12) Oct 3 – Osc 3 in Octaves
  13) Oct 4 – Osc 4 in Octaves
  14) PWM 1
  15) PWM 2
  16) PWM 3
  17) PWM 4
  18) Vol 1
  19) Vol 2
  20) Vol 3
  21) Vol 4
  22) FM – Osc 4 to Osc 3
  23) Drive – Filter 1 in
  24) Pan
  25) LFO 1 - speed
  26) LFO 2
  1) LFO 3
  2) Mod 1-5 – *Slot 6&7 only* modulate other slot amounts
  27) Mod 6 – *Slot 7 only*

- **Amount Range** – choose from:
  1) - : Off
  2) V : fine for Vibrato
  3) 2 : +/- 1 octave
  4) 4 : +/- 2 octaves
  5) F : full range – use for Filter Cutoff Mod
- **Amt** – sets the amount of Modulation sent from the Mod Slot. *Slot 1 only* - Amt knob is controlled by MIDI Mod Wheel CC 01
- **+/-** – sets the polarity of the output – up becomes down and down becomes up

Master

- **Drift Shape** – choose between: Slow Drift *low* and Pink Noise *high*
- **Drift** – sets the amount of organic 'analog' Drift – the heart of the DA sound
- **Mono** – put the synth on Monophonic Mode
- **Porta** – sets the glide time when notes are played Legato (overlapped)
- **MIDI** – choose the MIDI Channel the instrument responds to
- **P.Bend** – set the Pitch Bend response amount from 0-12 semitones
- **Pan** – sets the synth sound in the stereo field
- **Volume** – master Volume for the whole synth (may need to be lowered when assigning LFO to AMP).

Known Issue: there is a minor issue with “ghost” notes that will appear in monitoring meters when a live Oscillator is turned Off before all Envelopes have fully finished their Release times. You won't hear any sound but meters will register as though sound is present. To resolve this issue (if it occurs to you) before recording or mixdown sessions assign all Oscillators to Filter 1 and wait for a few seconds after all Envelopes have cleared. This will let the ghosts out of the machine.

Have Fun

:-)