

TIME DOMAIN

HYDi



INTRODUCTION:

Thank you for downloading HYDi, we hope you enjoy playing with her as much as we do. HYDi was originally developed for the KVR DC'12, but has since then evolved into a nearly completely different project, we simply call this VER1.3. HYDi was created as an experimental Industrial/FSU synthesizer, various synthesis techniques are employed, and therefore will probably not run on your grandmother's PC. Based at the core as a simple subtractive synthesizer, she is deeply programmable, as well as limited in other aspects, and above all else – exceptionally quirky. We also tried to intertwine the synthesis engine and effects engine as much as possible, to aid in a more natural flow of sound design. The latter is an ongoing design philosophy of TIME DOMAIN.

This version is also not patch compatible with the old version, but they have different unique IDs – so they can run side by side. Most controls are curved internally for ease of use, if you need finer control just keep in the CTRL key. The interface also now has a second advanced page, small LED lights in each pane will indicate if an advanced parameter is active underneath.

32Bit VSTi. Made with SynthEdit.

Design and Custom c++ modules: Andrew Ainslie.

Extra Modules: Chris Kerry, Daz Disley.

Default Bank: Halma @watchthemkraut + Andrew Ainslie.

Original Graphics: Phuturetone.

Additional Graphics: Halma.

Manual: Andrew Ainslie.

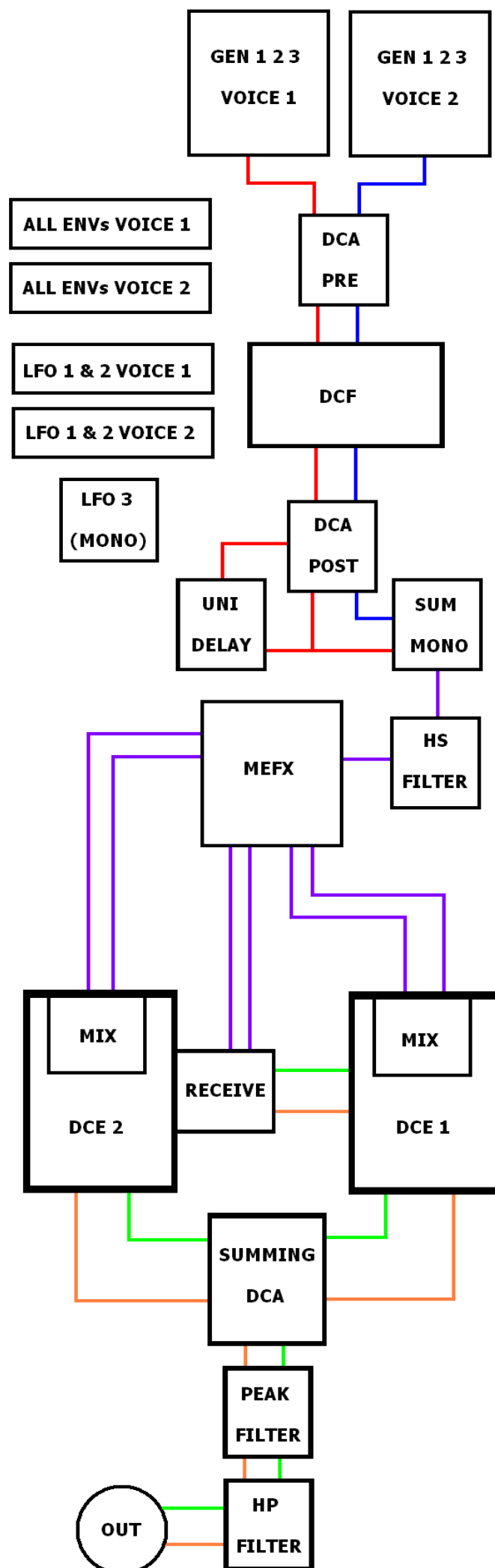
Special Thanks:

@kvr – mystran, robin(rs-met), idfpower, Halma, Tonius.

@syntheditSDK – Jeff McClintock, gl.

TERMS AND CONDITIONS OF USE:

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List Of Useful Abbreviations:

- ◆ VEL – Keyboard Velocity.
- ◆ AT – Keyboard Aftertouch.
- ◆ KBD – Keyboard.
- ◆ KBDN – Keyboard note(Octave).
- ◆ MDW – Modwheel.
- ◆ SEQ – Sequencer.
- ◆ TRND – Triggered Random value at note start.
- ◆ LFOs 1,2,3 – Low Frequency Oscillators.
- ◆ Mix 3/1 – Mix of LFO1 & LFO3.
- ◆ DCA – Digitally Controlled Amplitude envelope(as modulator).
- ◆ DCF – Digitally Controlled Filter envelope(as modulator).
- ◆ ADSR – Attack Decay Sustain Release envelope(as modulator).
- ◆ AHD – Attack Hold Decay Envelope(as modulator).
- ◆ AM – Amplitude Modulation.
- ◆ FM – Frequency Modulation.
- ◆ UNI – Unison.
- ◆ GEN – Generator.
- ◆ INV – Invert.

MAIN



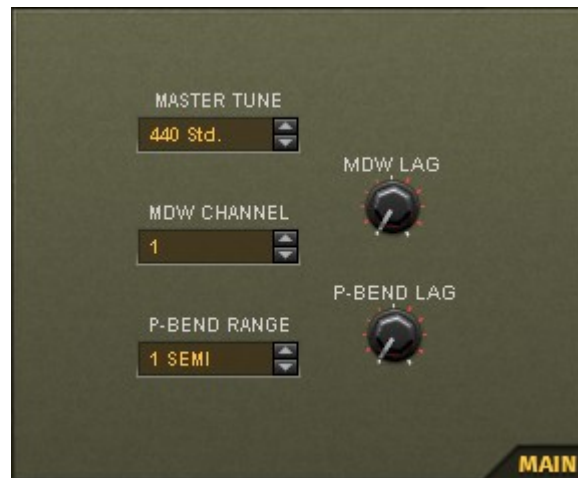
- ◆ PLAY MODE – Mono, Dual, Unison (2x Voice).
- ◆ UNI DETUNE – Amount of detune.
- ◆ UNI DELAY – Amount Unison voice is delayed, 6ms to 80ms.
- ◆ UNI LVL – Level of 2nd Unison Voice, -12dB/+0dB.
- ◆ UNI PORTA – Unison Portamento.
- ◆ D+D – Drift and Detune, for a slightly more analogue feel.
- ◆ IMAGE – Stereo image – Normal/Mono/Inverted.
- ◆ GAIN – Master output gain, -12dB/+12dB.
- ◆ ADVANCED – Pages to the Advanced panel.

EQ Section:



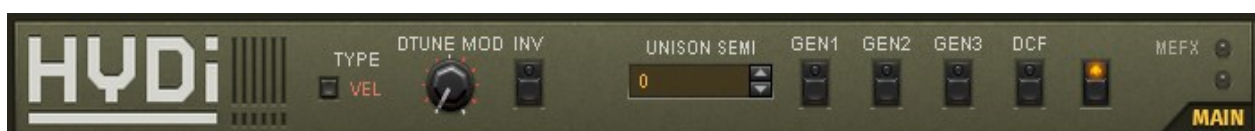
- ◆ HP – High pass filter cutoff frequency, minimum to approx. 220Hz.
- ◆ PEAK – Peak filter centre frequency, 85Hz to 7.1kHz.
- ◆ PEAK G – Peak gain, -9dB/+9dB. Bandwidth is adaptive with gain.
- ◆ HS – High shelf filter frequency, 110Hz to 11kHz.
- ◆ HS G – High shelf filter gain, approx. -12dB/+10dB.

Advanced Page:



- ◆ MASTER TUNE – 19x commonly used centre A=(?) tunings.
- ◆ MDW CHANNEL – Incoming Midi channel.
- ◆ MDW LAG – Lags/Smooths the Modwheel control, fast to slow.
- ◆ P-BEND RANGE – Pitch Bender range.
- ◆ P-BEND LAG - Lags/Smooths the Pitch Bender control, fast to slow.

Unison Parameters:



- ◆ DTUNE MOD – Amount of detune modulation.
- ◆ INV – Invert DTUNE Mod.
- ◆ TYPE – DTUNE MOD source.
- ◆ UNISON SEMI – Semitone detune.
- ◆ GEN1-3, DCF – Choose which parameters follow UNISON SEMI.

Tips & Tricks:

It is best to think of (and play) HYDi as a mono synth, even though its core isn't. Referring to the signal flow diagram, all play modes use both voices, in Mono & Dual mode the voices are allocated in a consecutive fashion i.e. note1 = voice1, note2 = voice2, note3 = voice1, note4 = voice2 etc. In Unison mode, both voices play simultaneously. Mono & Dual mode only differ in the way the DCA's Envelope's release stage is handled, in Mono mode when a new note is triggered – the previous note's release stage gets muted, in Dual mode – they are allowed to overlap. This is best heard when playing fast quarter notes with moderate to long DCA envelope release settings. UNISON SEMI is useful for building chords. DTUNE MOD is useful when stacking many HYDis in unison mode – TRND works well for those obese lead sounds. D+D's name might be slightly misleading, it not only adds drift, but adjusts several other micro hidden parameters, just think of it as loosening the suspension on a car. When de-activated – the LFOs also sync to note-on.

GENERATOR 1 & 2



CONTROLS:

- ◆ GENERATOR – 19x Normal and obscure processes to choose from.
- ◆ X-parameter – (Unnamed on the GUI). Right underneath the generator selector, 1st knob is just a simple static bipolar offset, the 2nd and 3rd knobs have different modulation sources to choose from. Not all waveforms support the x-parameter – and we are not going to list which do or don't because that will spoil all the fun!

- ◆ 1 & 2 – Generator 1 & 2 level.
- ◆ SEQ – Follow Sequencer.
- ◆ P-ENV – Pitch Envelope source.
- ◆ -/+ – Pitch Envelope amount -/+ 2 octaves.
- ◆ FINE – Fine Tune -50cents/+50cents.
- ◆ VIB – Vibrato derived form 3/1 MIX. -100%/+100%.
- ◆ AM – Activate Amplitude Modulation, various sources. 15% to 100%.
- ◆ X-MIX – (GEN1), Audio-rate cross-fading between GEN1 & GEN2, via GEN3. When GEN3 is fully positive, only GEN1 is heard, when GEN3 is fully negative, only GEN2 is heard. Soundwise it's similar to ring modulation, with a more complex harmonic structure.
- ◆ FSS – (GEN2)Frequency Shifted Sub, a specially dedicated frequency shifter tracks GEN2's exact frequency and generates a -1 octave harmonically related sub frequency from GEN2. Because of the mechanisms and physics involved, the level of the harmonics and the phase in the sub-signal might not mirror the original signal exactly.
- ◆ OCTAVE – (GEN1) -1/+1 Octave.
- ◆ SEMITONE – (GEN2) -12/+12 semitones.

Advanced:



- ◆ SEQ GLIDE – Lags the sequencer signal. Fast to slow.
- ◆ CONSTANT – Glide curve, either constant time or constant rate.
- ◆ FINE Hz – Fine tune in Hertz, for a constant beat rate between generators. 0Hz to +6Hz.
- ◆ INV – Invert Hertz amount. 0Hz to -6Hz.
- ◆ AM FOLLOW – When AM is activated, choose which signal will be modulated.
- ◆ FSS !FINE – FSS NOT Fine, When using FSS + FINE Hz, the FSS generator ignores the FINE Hz parameter, which leads to beating.

Tips & Tricks:

The x-parameter is a little bit more complicated than it looks, the maximum modulation index is -10/+10 but, let's say all three knobs are fully right, the maximum index will reach +30! Instead of simply clipping the modulation at +10, the signal will start to foldback i.e. the modulation will change direction, thus ensuring there is always maximum amount of movement. FINE Hz is useful for emulating older linear-core VCOs, which had usually some untrimmed 'linear detuning' caused by a offset voltage or current(for best results – enable D+D as well). For a more complex transients, plucks, drum membranes etc. – use AM FOLLOW, set to x-mix only) with a fast attack/decay envelope on GEN1. With SEQ GLIDE – use a little on both GENs but use different CONSTANT types for a slippery doubling feel. AM, set to use LFOs are good for those wobbly sounds, AM plus VEL is useful if you want to dynamically mix two or three waveshapes – say soft notes = triangle, hard notes = saw. Always also remember that VIB is based on the MIX 3/1 knob!

GENERATOR 3

Generator3 has 3x modes.



Common Controls:

- ◆ 3 – Generator 3 level.
- ◆ AM – Activate Amplitude Modulation, various sources. 15% to 100%.
- ◆ RM – Ring modulates GEN2 with GEN3.

AUX:

- ◆ GENERATOR – 11x processes to choose from(different from GEN1&2).
- ◆ SEMITONE – -12/+12 semitones.

- ◆ SEQ – Follow Sequencer.
- ◆ FINE – Fine Tune -50cents/+50cents.
- ◆ VIB – Vibrato derived form 3/1 MIX. -100%/+100%.

NOIZ:

- ◆ GENERATOR – This we call the seven dwarfs of noise... P.S. Pulsey and Angry follows the pitch of GEN1.
- ◆ TUNE – For Angry, controls the anger-level, for Pulsey, controls the bandwidth.
- ◆ RND COMB – When activated it adds random comb-filtering.
- ◆ AMNT – Depth of Comb-filtering.

SUB:

- ◆ GENERATOR – 5x different processes to choose from. Follows GEN1.
- ◆ FLT BYPASS – Bypasses the DCF section.
- ◆ METHOD – Under or Stay-In, Under is self explanatory, with Stay-In the Sub will stay in the selected octave – regardless of GEN1's current octave.
- ◆ OCT – Octave selector.

Advanced:



- ◆ SEQ GLIDE – (AUX) – Follow either GEN1 or GEN2's Glide parameter.
- ◆ AM FOLLOW – When AM is activated, choose which signal will be modulated.
- ◆ RM HP – Highpass Filter for RM signal. Minimum to 600Hz.

Tips & Tricks:

Firstly, GEN3 track the pitch of GEN1, when it follows the sequencer – it will too, same goes for pitch-envelopes. To easily understand the x-mix function, select any two different generator processes for GEN1 & GEN2, now select SUB on GEN3, SQUARE Shape, method → STAY-IN, OCT 1, and tweak to taste or distaste... RM can sometimes create very low sub-sonic frequencies, use RM HP to clear up the mud. FLT BYPASS is useful when using heavy filtering, and especially when using bandpass filters. RNB COMB helps with percussive sounds to make every hit sound tonally unique, a little goes a long way.

LFOs

Low Frequency Oscillators



- ◆ SHAPE 1&2 – 9x Different shapes to choose from.
- ◆ RATE 1&2 – 0.02Hz to 16Hz.
- ◆ TYPE – AM Modulation Source.
- ◆ AM 1&2 – Amplitude Modulate the LFO via TYPE.
- ◆ INV – Invert (but still unipolar) the AM TYPE source.
- ◆ SEQ – Modulate LFO Frequency with sequencer.
- ◆ RATE3 – A mono dedicated Sine-Wave Oscillator. 0.1Hz to 7Hz.
- ◆ MIX 3/1 – A user definable mixture of LFO1 & LFO3 – used for VIB.

◆ Advanced:



- ◆ RATE 1&2 x10 – Multiplies the LFO RATE by 10.
- ◆ TYPE – FM Modulation Source.
- ◆ FM 1&2 – Frequency Modulate the LFO via TYPE.
- ◆ INV – Invert (but still unipolar) the FM TYPE source.
- ◆ BPM – Overrides LFO3's RATE control to BPM values.
- ◆ LFO3 DIVISION – BPM value for LFO3.
- ◆ PHASE – Note-On phase of LFO3.

Tips & Tricks:

For classic delay vibrato – AM a LFO with any Envelope with a slow attack and full sustain. LFO3 always retriggers at note-on. For a 'Key Wobble' effect use KBDN as an FM source, and don't be shy.

DCA

Digitally Controlled Amplifier



- ◆ DCA ENVELOPE – Attack, Decay, Sustain , Release.
- ◆ SML ENVELOPE BUTTONS – Change the minimum/maximum values of the ADR sliders. When deactivated, minimum to 1second, when activated, 0.5 to 10seconds.
- ◆ SML BUTTON (Under attack) – Changes the Attack curve, linear, -exponential, exponential, exponential^2.
- ◆ RT Z – Reset To Zero, when a new note is triggered while another is still sounding, the envelope is 'shorted' and returns to zero, before the envelope rises again. This is quite unnatural for a mono synth but is useful some times. Can cause clicks!
- ◆ PUNCH – Adds a bit of punch to the envelope. Only makes sense with rather fast attack and decay times.
- ◆ CURVE – Bipolar control, shapes the whole envelope. Left = concave, Right = convex.
- ◆ A KTRK – Unipolar, Amplitude Keytrack, Higher notes will be lower in gain.
- ◆ CLICK – 11x one-shot click generator. Bypasses the DCF.
- ◆ AMNT – Amount of CLICK.

Advanced:



- ◆ DCA LOCATION – As the name says – PRE or POST Filter DCA. Changing this parameter while audio is running/processing is not recommended.
- ◆ VELO SENS – Velocity Sensitivity.
- ◆ D/R KTRK – Decay and Release times Keytracking. Bipolar.
- ◆ ON – Switches D/R KTRK on.
- ◆ CURVE MOD – Curve Modulation. Note – this modulation is based on the position of the CURVE knob on the front panel, a modulation index of 100% will equal the Curve knob position.
- ◆ MOD – Amount of CURVE MOD.
- ◆ INV – Inverts the CURVE MOD signal. A modulation index of 0% will equal the Curve knob position.

Tips & Tricks:

With attack – lin and -exp is the most common, you can use these shapes to counter-act the CURVE knob. Curve knob – left is for more unnatural enveloped and organ sounds, right is for more percussive sounds. The decay/release curve follows by default(12 o'clock curve knob) an exponential curve. A KTRK & D/R KTRK are both quite subtle effects, but helps a lot to produce more natural sounds. DCA LOCATION can change the timbre of the sound quite drastically, POST is recommended for simpler and bass sounds, PRE for softer and more complicated sounds, though it's just guidelines, experiment to get your own sound.

DCF

Digitally Controlled Filter



- ◆ FILTER TYPE – 15x Filter Types. Broadly separated into 2x categories, single and dual. Single Filters: LP12 dB A, LP12 dB B, LP 18dB, LP 24dB A, LP 24dB B, LP 6dB, BP 6dB, HP 12dB, LP 12dB C, HP 24dB. Dual Filters: LP-LP, LP-BR, BP-LP, BP / BP, BR-BR.
- ◆ KBD TRK – Keyboard Tracking.
- ◆ OCT – Main Octave (big knob), 0 to 10 octaves.
- ◆ RES – Resonance (big knob), 0% to 100%.
- ◆ OCT – Octave (small knob), 2nd filter, -4 to +4 octave above main OCT, only applicable to dual filters.
- ◆ RES – Resonance (small knob) , 2nd filter, 0% to 100%.
- ◆ SEQ – Sequencer amount. 0% to 200%.
- ◆ -/+ – Turns the Main Octave range to -9 / +9 Octaves.
- ◆ DCF ENVELOPE – Attack, Decay, Sustain , Release.
- ◆ SML ENVELOPE BUTTONS – Change the minimum/maximum values of the ADR sliders. When deactivated, minimum to 1second, when activated, 0.5 to 10seconds.
- ◆ RT Z – Reset To Zero, when a new note is triggered while another is still sounding, the envelope is 'shorted' and returns to zero, before rising again.
- ◆ LIN – Alters the Shape of the DCF Envelope from exponential to linear.
- ◆ ENV – DCF Envelope Amount. -5/+5 Octaves.
- ◆ TYPE – Additional Modulation Type.

- ◆ MOD – Additional Modulation Amount. -5/+5 Octaves.

Advanced:



D-FILTER MOD – Link or Unlink the 2nd Filter's modulation sources.

- ◆ SOURCE – 2nd filter's LFO Source. (If unlinked).
- ◆ LFO – 2nd filter's LFO Amount. -5/+5 Octaves. (If unlinked).
- ◆ SOURCE – 2nd filter's Envelope Source. (If unlinked).
- ◆ ENV – 2nd filter's Envelope Amount. (If unlinked).
- ◆ SEQ – 2nd filter's Sequencer Amount. 0% to 200%. (If unlinked).
- ◆ RES MOD – Resonance Modulation. Note – this modulation is based on the position of the RES knob(s) on the front panel, a modulation index of 100% will equal the RES knob(s) position. No resonance = no modulation. RES MOD is applicable to both filters when in a dual filter mode.
- ◆ MOD TYPE – Resonance Modulation Type.
- ◆ INV – Invert Resonance Modulation. A modulation index of 0% will equal the RES knob(s) position.
- ◆ SEQ GLIDE – Sequencer Glide, follow either the glide information of GEN1, GEN2 or neither. SEQ GLIDE is applicable to both filters when in a dual filter mode.

Tips & Tricks:

The Filter Type list isn't sensibly organised (it's a long and boring story). That being said, the filter modes are based on zero-delay-feedback or Topology Preserving Transform technology – depending with who you talk to – nerds can get very upset about terminology... All the modes were made to sound/behave differently. The '-' sign means serially connected, '/' means a parallel connection. RES MOD, at first glance might not seem too useful, but try this: Play any 4 note sequence, turn small SEQ knob to 12 o'clock – then set RES MOD to SEQ as well and crank it up – and experiment with INV as well. RT Z really comes in handy here for easily repeatable filter sweeps and effects. When the Unlink feature is not in use – remember to turn it off by selecting Linked, every bit a CPU counts. Using 2x different Envelopes (1x fast, 1x slow) can generate some pretty funky modulation.

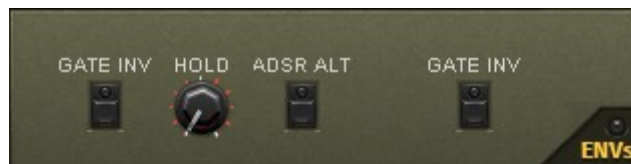
ENVs

Envelopes



- ◆ ADSR ENVELOPE – Attack, Decay, Sustain , Release.
- ◆ SML ENVELOPE BUTTONS – Change the minimum/maximum values of the ADR sliders. When deactivated, minimum to 1second, when activated, 0.5 to 10seconds.
- ◆ AHD ENVELOPE – Attack, Hold, Decay.
- ◆ SML ENVELOPE BUTTONS – Change the minimum/maximum values of the ADR sliders. When deactivated, minimum to 1second, when activated, 0.5 to 10seconds.
- ◆ ALT – Alters the AHD Attack and Decay Curves, default is linear, ALT is -exp for Attack and exp for Decay.
- ◆ FOLD – Boosts the AHD envelope into a foldback function, useful for percussion or drunken sailor sounds.
- ◆ RTZ – Reset To Zero, applicable to both the ADSR and AHD envelope.

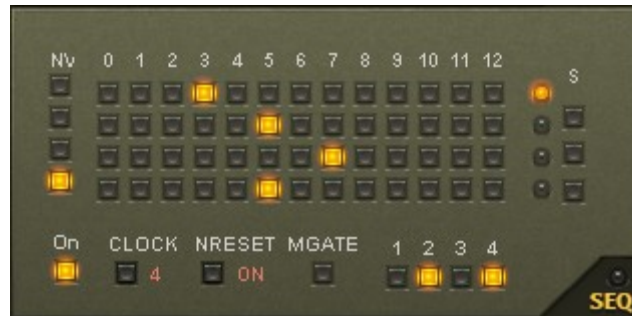
Advanced:



- ◆ GATE INV – Inverts the ADSR's Gate signal. So it triggers on note-off.
- ◆ HOLD – Holds the ADSR signal at zero before triggering the attack, so effectively it becomes a HADSR envelope. 0sec to 5sec.
- ◆ ADSR ALT – Alternative ADR Shape.
- ◆ GATE INV – Inverts the AHD's Gate signal. So it triggers on note-off.

SEQ

4x(x4) Sequencer



- ◆ GRID DISPLAY – 0 to 12 semitones.
- ◆ INV – Inverts the semitone number.
- ◆ S – Stops, mutes the gate signal for that note.
- ◆ ON – Turns the sequencer on.
- ◆ CLOCK – Clock divisions.
- ◆ NRESET – Resets the sequencer on note-on or not.
- ◆ MGATE – When active and note-off occurs, the sequencer gets bypassed and the original keyboard note sounds, when deactivated the sequencer keeps on playing after note off. Obviously this is only useful with long release times in the DCA.
- ◆ RETRIGGER – Retrigger notes 1 to 4.

Advanced:



- ◆ CYCLES ON – Turns cycles on, turning the Sequencer into a 4x4 pattern variation.

- ◆ CYCLE – Cycle 1 to 4. 21x variation options: Norm = follow original, Pos = +1 octave, Neg = -1 octave, Av.Pos = positive average of notes, Av.Inv = add invert of average of notes, Av.Neg = negative average of notes. All Q variations = quantize to closest semitone number or zero. Pos17 = +17 semitones, Pos19 = +19 semitones, Off = disable seq.
- ◆ NLOCK – Note Lock 1 to 4. Ignores the Cycles.

Tips & Tricks:

The cycle parameter was really only made to muck around, don't think too much about it – just select random stuff and have fun!

DCE 1 & 2

Digitally Controlled Effects



- ◆ MIX – Left = Dry (or MEFX when activated), Right = Wet.
- ◆ OUT – Unity gain amplifier. Balance between DCE1 & DCE2.
- ◆ RECEIVE – Left = Dry signal (or MEFX when activated), Right = DCE1. By using this, you can have either a semi-serial or parallel effects structure, or anything in between. When in doubt – look at the Flow diagram – page 3.

Where Applicable:



- ◆ DYN – Activate dynamics.
- ◆ MOD – Modulation source.
- ◆ INV – Activated = ducking, de-activated = gating.
- ◆ AMNT – Modulation amount.
- ◆ GAIN – Always active.

ALFA CHORUS

Random Chorus



- ◆ BASE-D – Base Delay.
- ◆ RATE – Modulation Rate.
- ◆ DEPTH – Modulation Depth.
- ◆ FDBK – Feedback. -70% to 70%.

Tips & Tricks:

Because HYDi is mono, Alfa Chorus was developed to be more like a mono stereo converter, i.e. it is quite subtle. It uses smooth allpass delay interpolation, 5x semi-randomly modulated delay lines and an arrangement of 12x filters. If you want a more obvious doubling effect, and have some time, automate the BASE-D knob – it's specifically smoothed to do this, draw rather extreme square shaped modulations in your DAW. Also the Alfa Chorus on DCE2 has a bit more top-end.

DUAL BPM DELAY

Flexible Classic



- ◆ DIVISION – Beats Per Minute divisions. Maximum 5seconds.
- ◆ DOT – Dotted note.
- ◆ LP – 6dB Lowpass filter on input.
- ◆ OFFSET – -10/+10 millisecond offset.
- ◆ FDBK – Feedback -80% to +80%.
- ◆ GAIN – -8dB to +4dB.
- ◆ PAN – Left to Right.

Tips & Tricks:

For a stereo effect, use a combination of positive & negative feedback or a slight bit of offset on 1 delay. For a pseudo ping-pong, set one delay to a dotted note, compensate with slightly less feedback on the dotted delay line, to preserve the stereo decay image. The OFFSET controls might also come in handy in a mix situation, an old mix-engineer's trick: with little to no feedback, turn fully right for a for a looser/down-beat feel, turn fully left for more up-tempo feel, this way the delay will hit just before or just after the beat. Ducking comes in handy for fast and/or complex synth runs. Also never forget the humble mono output delay – check out the patch called PC_Syncopated.

DUAL SHIFTER

2x Micro Pitch Shifters



- ◆ SHIFT – Bipolar Pitch Shift Amount.
- ◆ DELAY – 2 milliseconds to 100 milliseconds.
- ◆ LVL – Pitch Shifter Level. -4dB to +4dB.
- ◆ PAN – Left to Right.
- ◆ LFO3 – LFO3 PAN modulation.

Tips & Tricks:

Used for chorus/doubling. Use DELAY when using both SHIFTS in the same direction.

DIGITAL HELL

Welcome to Nasty



- ◆ BIT – Activate Bit Reduction.
- ◆ STATIC – Quantize signal from none to 4BIT.
- ◆ MIX – Mix with dry signal.
- ◆ SR – Activate Pitch Tracking Samplerate Reduction.
- ◆ ABOVE – Samplerate frequency above tracking.
- ◆ LFO3 – Modulates the frequency.
- ◆ OR – Activate OR bitwise logical comparison.
- ◆ COMPARE – comparison level.
- ◆ ALT – Alters the compare, makes it a bit more squarish.
- ◆ J1 – Activate Bessel Function of the First Kind.
- ◆ DRIVE – Add some crunch.
- ◆ MIX – Mix with dry signal.
- ◆ HP – 6dB/Oct Hi Pass Filter. 15Hz to 600Hz.
- ◆ LP – 12dB/Oct Low Pass Filter. 18KHz to 1.7kHz.

Tips & Tricks:

J1 is sound-wise somewhere between $\sin(x)$ & $\tanh(x)$. Use J1 as a simple waveshaper. BIT and OR is good with sounds that have relatively constant amplitudes. Using a bit of LFO3 with SR can be fun – play with slow LFO3 rates and its phase parameter, for semi vocal sounds. HP & LP is always active.

THETA FLANGER

Something Old and Something New



- ◆ LFO(list) – Stereo LFO shape.
- ◆ RATE – 0.1Hz to 1.5Hz.
- ◆ L/R DIFFERENCE – L/R Phase difference of LFO. 0 to 180 degrees.
- ◆ FDBK – Feedback depth. -95% to +95%.
- ◆ DC – DC Constant. Minimum to 5 milliseconds.
- ◆ LFO(knob) – LFO depth. 0% to 100%.
- ◆ MOD(selector) – Extra modulation source.
- ◆ MOD(knob) – Modulation depth. -100% to +100%.

Tips & Tricks:

Theta Flanger is an old term for a combination of delays and allpass filters, this leads to slightly different notch spacings, and therefore a *slightly* less metallic sound. Allpass interpolation provides smooth delay changes. Using the MOD parameters(with little to no LFO), can result in some dramatic sweep effects.

POLAR PHASER

14-Pole Stereo Phaser



- ◆ RATE – Stereo LFO rate. 0.1Hz to 2.5Hz.
- ◆ SEPERATE - L/R phase difference of LFO. 0 to 180 degrees.
- ◆ RANGE – Allpass modulation range/depth.
- ◆ FDBK – Feedback depth. 0% to 85%.
- ◆ DARK – Adds the inverse of the phaser, leading to less treble.
- ◆ MOD – Extra modulation source.
- ◆ M-MIX – Modulation mix. Left = LFO, Right = MOD.

Tips & Tricks:

7-poles per side. Makes things swishy.

SINGLE SIDEBAND FREQUENCY SHIFTER

Pure Metal



- ◆ AMNT – Shift frequency amount.
- ◆ RANGE – Amount range multiplier.
- ◆ SHIFT – Shift direction.
- ◆ L/R FLIP – Flips the shift direction in one channel.
- ◆ KTRK – Unipolar keytrack. Acts on MOD-A.
- ◆ MOD-A – Modulation amount.
- ◆ RANGE – Modulation range Multiplier.
- ◆ MOD – Modulation source.

Tips & Tricks:

Not to be confused with a pitch shifter. A little modulation and L/R FLIP gives a nice stereo effect. Add lots of modulation for clanky madness.

EARLY REFLECTIONS

Stereo 40-Tap



- ◆ MODEL – 11x Early reflections patterns.
- ◆ SIZE – Size of model.
- ◆ LP – 6dB Low Pass filter. \approx 16kHz to 0.8kHz.
- ◆ HP – 6dB Hi Pass filter. \approx 10Hz to 150Hz.
- ◆ GAIN – Gain, -6dB/+6dB.

Tips & Tricks:

Space without the muddiness.

MODULATED REVERB

Hall Verb



- ◆ PRE-D – Pre-Delay, 0 to 50 milliseconds.
- ◆ DECAY – Decay time, approximately 1 to 10 seconds.
- ◆ DAMP – High frequency damping, 16kHz to 0.8kHz.
- ◆ SIZE – Hall Size.
- ◆ MOD – Modulation depth/rate.

Tips & Tricks:

For the technically inclined, this is a modified FDN reverberation structure, where the matrix coefficients are replaced by delays and allpass elements, with parallel filtering for softer damping slopes. In anyway, ducking with the DCA envelope is useful for adding clarity to transients; gating is useful for more mellow/dub type sounds. But feel free to experiment; fade in with an ADSR with long attack and little or no decay/sustain/release. Tremolo verb with LFO3 – check out the KB_Dreamer patch. Use VEL to drown soft notes in verb, and pierce through on hard notes. Because this is a Hall algorithm, echo density does take some time to build up, if you need a denser start – use either ZM REVERB or run EARLY REFLECTIONS in parallel.

TRANSGATE

(DCE1 only)



- ◆ GRID DISPLAY – 2x 1-8 buttons. Top row = left, bottom row = right.
- ◆ RATE – Clock rate.
- ◆ SMOOTH – Smooths gate signal.
- ◆ LP – Switch between normal amplitude gate or low pass filter gate.
- ◆ MIN – Minimum/lowest low pass frequency. 27.5Hz to 220Hz.

Tips & Tricks:

Low pass can be quite hard and clicky, normal amplitude mode is softer. Use TRANSGATE in conjunction with SEQ for some fun combinations. DYN is useful to fade in/out the effect.

Zero Modulation Reverb

Room/Chamber Verb (DCE2 only)



- ◆ PRE-D – Pre-delay, 0 to 60 milliseconds.
- ◆ DECAY – Decay time, approximately 0.3 to 6 seconds.
- ◆ DAMP – High frequency damping, 17kHz to 1.6kHz.
- ◆ SIZE – Room/Chamber Size.
- ◆ HP – 6dB/Oct Hi pass filter in the mono/mid side only. 25Hz to 200Hz.
- ◆ LP – 6dB/Oct Low pass filter. 16KHz to 3kHz.

Tips & Tricks:

This verb has a higher initial echo density than MOD REVERB, with makes it ideal for short/percussive sounds. Also try it with ALFA CHORUS on DCE1 with receive set to 100%.

MEFX

5x Micro Effects

PanDa

Pan Dual Automation



- ◆ LFO – 5x LFO shapes.
- ◆ RATE – LFO rate, 0.05Hz to 6Hz.
- ◆ RESET – Reset LFO on note-on.
- ◆ LVL – LFO modulation level.
- ◆ P1-4 – Stepped pan amounts steps 1 to 4. Left to right. (driven by SEQ clock).
- ◆ LVL - Stepped pan amounts.
- ◆ FROM – Dynamic source.
- ◆ INV – Invert dynamic source.
- ◆ DYNA – Controls the LVL controls dynamically.

Tips & Tricks:

Referring back to the flow diagram – DCE1 is a mono to stereo, so for best effect use mostly with DCE2.

COMPRESSOR F1

Feed-Forward Compressor



- ◆ ATT – Attack time, 1 to 40 milliseconds.
- ◆ REL – Release time, 50 to 600 milliseconds.
- ◆ THRD – Threshold, -32dB to 0dB.
- ◆ RAT – Ratio, 1:1 to 1:8.
- ◆ GAIN – Make-up gain, 0dB to +14dB.
- ◆ PARA – Parallel mix, 0% to 50%.

Tips & Tricks:

Use maximum ATT, minimum REL, highish RAT and PARA to add extra snap to percussive sounds. Medium ATT & RAT are good to keep basslines in check.

FSU2

Lord Of Destruction



- ◆ PROCESS – 9x nasty FSU processes.
- ◆ DRIVE – Process amount. When available.
- ◆ HS F – High shelf filter frequency, 400Hz to 5.1kHz.
- ◆ HS G – High shelf filter gain, -12/+12dB.
- ◆ PEAK – Peak filter centre frequency, 85Hz to 4.7kHz. Bandwidth is adaptive to gain.
- ◆ PEAK G – Peak filter gain, -10/+10dB.
- ◆ MIX – Mix amount.

Tips & Tricks:

Simpler or already inharmonic sounds work best with these processes. Use the filters to pick out the best parts, and mix to taste. Also, using the MAIN EQ section's High shelf filter to cut out the highs will help to cure some of the fuzz, before it happens.

GREMLIN

Warped Formant Filter



- ◆ FORMANT – 29x Formant like configurations.
- ◆ ACC – Accent, -3/+3dB.
- ◆ Q – Q/Resonance of filters.
- ◆ BREATH – Heavily distorts the input, to create a wider bandwidth for the filters to do their work.
- ◆ FOLLOW – Follow either RATE/BPM info or other sources.
- ◆ RATE – LFO rate 0.1Hz to 3Hz.
- ◆ BPM – Beats per minute clock divisions.
- ◆ MDW – Modwheel control of centre frequencies, irrespective of what the modulation is doing.
- ◆ MIX – Mix with dry signal.
- ◆ HOLD – Freezes the modulation signal (BPM & RATE Only).
- ◆ WARP A – 4x LFO shapes (BPM & RATE Only).
- ◆ WARP B – 13x Warp tables.
- ◆ STEP(knob) – Step amount, Left = smooth modulation, Right = stepped modulation.
- ◆ STEP(selector) – Number of steps.

Tips & Tricks:

This is simply 3x modulated bandpass filter that runs through a sequence of four. The best sounds are created by automating the MDW and HOLD parameters in your DAW. Wide and harmonically rich input signals work the best, narrow pulses are quite well suited for this, as it is roughly the shape that the human vocal folds produce. Breath can be used if the signal isn't harmonically rich enough. Only mixing in a little can add a bit of sparkle. Never forget that WARP B is always active, so play with it. Patience is a virtue...

Resonator 3

80's classic



- ◆ STRUCTURE – 5x configurations.
- ◆ BOOST – 0dB to +8dB.
- ◆ LF – Low frequency, 44Hz to 300Hz.
- ◆ MF – Mid frequency, 310Hz to 1.5kHz.
- ◆ HF – High frequency, 1.6kHz to 7.5kHz.
- ◆ LVL – Level of filter, per band.
- ◆ Q – Q/Resonance of filter, per band.
- ◆ AM(knob) – Amplitude modulation, per band.
- ◆ AM(selector) – Amplitude modulation source, per band.
- ◆ FM(knob) – Frequency modulation, per band.
- ◆ FM(selector) – Frequency modulation source, per band.