

Welcome to ANALOGyX2

Thank you for your interest in ANALOGyX2, an AU and VST3 instrument plugin for macOS.

What is ANALOGyX2?

ANALOGyX2 is a virtual analog synthesiser with a variable shape oscillator, including sub and noise generators with independent envelopes, a variable mode ladder filter with dedicated envelope and LFO, a pre-wired mod matrix including PWM, vibrato, tremolo and auto-pan, and last but not least, a selection of built-in effects comprising distortion, chorus, delay, grain pitch shifter and reverb.

Times two. Or as we like to say here at Waverley Instruments - “X2”.

ANALOGyX2 isn't just a dual oscillator, or even a “dual voice” affair, it's two totally independent instruments. Unlike most “A+B” or “layered” designs, the only parameters common to both instruments in ANALOGyX2 are the master volume control and pitch bend range. Everything else, including the effects, are totally independent.

On the one hand, this means the ANALOGyX2 sound designer has twice as much to think about. On the other hand, we think this also means there's twice as much fun to be had, and exponentially more sonic possibilities!

How do you pronounce ANALOGyX2?

Some people pronounce it “anna-loggy-ex-two”. Other people pronounce it “analogy times two”. To be honest, we don't mind how you pronounce it. We're just delighted that you're talking about ANALOGyX2!

UI Overview

The UI may look a little busy at first glance but let's not forget, there's two of everything! The main aim of the UI design was to avoid excessive tabs, pages and menus. In fact there aren't any at all. There is a preset browser which can be revealed and hidden with the drop-down button in the preset name display window. Everything else you need is displayed in a single view making it easier to focus on sound design, instead of hunting through pages and tabs for the parameter you want to tweak.

With the exception of master volume and pitch bend range, all parameter controls take the form of dual concentric knobs. The inner knob corresponds to instrument 1, and the outer to instrument 2. At the top of the UI you can select which instrument is active for editing by clicking the knobs corresponding to the same design "look and feel" or by clicking the larger square buttons. So on the left, we have instrument 1 (inner knob with solid black design) and on the right, instrument 2 (outer knob with a chrome trim design). You can also solo each instrument to make it easier to focus on the finer details during your sound design journey.

To the left of the instrument selection controls we have a preset window. To the right, there is a preset "mutation" button (details below) along with some gratuitous branding and version information. If you click on the gratuitous branding or website text, a web browser will open and take you to the ANALOGyX2 user guide page.

Moving down the UI we have the various modules that make up the instrument's sound engine and finally controls for expression and a virtual keyboard at the bottom.

Parameter controls that are associated in some way are linked with horizontal lines.

Option+click or Ctrl+click (depending on your OS) will reset a parameter control to its default value.

Presets

Before you start designing your own sounds, you might want to have a listen and play with the presets that are included with ANALOGyX2.

The current preset name is displayed in a "LCD" type window. You can navigate through presets using the next / previous buttons to the left, or display a dedicated preset browser window by clicking the drop down button to the right. Clicking the drop down button again will hide the preset browser.

The factory presets are organised into folders and can be expanded / collapsed by double-clicking the folder name. Clicking on a preset name, will load that preset.

You can also initialise all parameters by clicking the INIT button and save your own presets in a dedicated "User Presets" folder from the SAVE button. Once you create your first preset, your User Presets folder will appear in the browser.

Please note that ANALOGyX2 does not support creating sub-folders, but you can navigate to any folder accessible on your computer via the LOAD and SAVE buttons.

ANALOGyX2 stores presets in files with a .anx2 file extension.

We recommend that preset housekeeping, deletion, re-naming and so on, is performed using the file system "Finder" or "Explorer" utilities included with your computer operating system as ANALOGyX2 currently does not support deletion or renaming of individual preset files.

Preset Expressions

The ANALOGyX2 Expressions folder contains presets designed specifically for use with your MIDI mod and expression controllers denoted with the MOD and EXP prefix respectively. If you don't have a dedicated expression controller, don't worry - the EXP patches also have the MOD controller mapped as an additional expression controller by default - simply switch this option off if you do have a dedicated expression controller. Please refer to the EXP and MOD controller sections in this guide for more detailed information on how to set this up.

Preset Mutation

The preset mutation button is represented by the "X2" DNA graphic in the top right of the view. Preset mutation is a way of randomly generating new presets from existing ones. Unlike most preset randomisation, ANALOGyX2 doesn't simply randomise every parameter. Instead, it looks at your existing presets and randomly selects related parameters from each section for both instruments.

The idea is that because the parameters are being selected from presets that have already been designed to sound "good", any new preset created from this "DNA" has a better chance of sounding "good".

If you've ever tried other plugin parameter randomisations and reacted with "What the ****?!", then you probably get the idea. Here's how it works in more detail:

When you click the preset mutation button, ANALOGyX2 will look at all of the presets currently displayed in the preset browser. If you want some control over this, you can open or close folders to restrict or expand the preset "gene pool". You must have at least one folder open for the mutation function to do its thing. For each of the sections below for instrument 1, ANALOGyX2 will randomly pick presets and apply some of the related parameters from that section, then select another random preset for the next set of related parameters and so on. By "related parameters" we mean a set of parameters that logically belong together in that section. For example, for the filter section, the mutation process could select filter envelope parameters from one randomly selected preset, and filter LFO parameters from another. This sequence is then repeated for instrument 2 so that DNA is distributed randomly over both instruments. The following sections are used:

OSC, FILTER, AMP (excl. Pan & Master Vol), SUB / NOISE, EFFECTS, MOD and KEYBOARD (Spread only).

All other parameters are set to their default value.

The potential combinations can result in a huge number of usable presets being generated even from quite a small "gene pool". This can also be a great starting point for building up additional sounds from your own User Presets folder.

The "ANALOGyX2 Mutations" preset folder contains "mutants" made entirely from the "ANALOGyX2" factory presets.

TIP! Imagine you're working on a soundtrack project to a tight deadline and you have 5 ANALOGyX2 presets designed that you think fit the vibe of the project. For example, maybe you've decided to only use triangle wave type sounds. You could then use preset mutation to quickly create additional sounds to expand your sonic palette that should compliment the ones you already have.

Drift

You may notice that many parameter sections have an associated drift control. This applies to all LFOs and also oscillator tuning. Under the hood there is a dedicated drift LFO running with a random pattern best described as “drifting” hence its name! Increasing the amount of drift on the UI will increase the effect of the drift LFO applied to the corresponding parameter. For example, if you want the tuning to vary slightly like an old hardware synth, try increasing the drift control in the tuning section. You could also increase the drift control associated with the filter LFO so that the time taken to reach the minimum and maximum values is never quite the same. In summary the drift controls are a great way to add “life” and an unpredictable evolving character to your sounds.

OSC

The OSC section contains parameters for the virtual analog oscillators in ANALOGyX2 and is the foundation for your sound.

Shape is a variable waveform control which goes from saw, through triangle to pulse. As you move the control the proportion of each waveform will be displayed below. Around the half way point is 100% triangle, with 100% saw or pulse at minimum and maximum values respectively.

Pulse Width varies the proportion of positive and negative part of the pulse waveform. At the lowest setting this is 50% which results in the fullest sound. The sound of the pulse waveform will sound “thinner” as you increase this value. Note that pulse width can also be modulated in this section as detailed in the PWM parameters.

Phase controls the start phase for each note. Possible values are reset (to zero), free and random. Reset mode is good for percussive and bass sounds.

Voices controls the polyphony of the instrument from 1 voice to 32. When the voice limit is hit for one of the instruments “voice stealing” will occur to keep the number of notes sounding within that limit. For higher voice values, a gentle fade out will be applied to old notes whereas the fade is more aggressive for lower voice values.

Transpose adjusts the pitch of the instrument in semitones in the range of two octaves up or down.

Tune is a finer pitch adjustment in cents with a semitone range up or down.

Drift varies the effect of the drift LFO (see Drift section above) on tuning. Set to minimum for rock-steady tuning. The default value adds a subtle amount of drift as we think that sounds more “ANALOGy”.

Glide, also known as portamento introduces a pitch glide effect from one note to the next. As you increase the control, the time taken to reach the target note increases.

PWM varies the amount (LFO depth) of pulse width modulation to the pulse waveform. You will only hear the effect of this control if there is some pulse wave included in the shape control, i.e., when the shape control is past half-way.

Please note that the next three parameter controls also apply to PWM as they are linked with blue lines.

Rate controls the speed of the PWM LFO.

Fade allows the depth of the PWM control to fade-in gradually.

Drift applies drift variation to the PWM LFO rate.

FILTER

The **FILTER** section contains parameters to change the filter type, as well as a dedicated envelope and LFO.

Filter Type adjusts the base character of the filter from high pass, band pass and low pass with 6, 12, 18 and 24 dB cutoff.

Cutoff adjusts the cutoff frequency of the filter.

Resonance adjusts the strength of the resonant peak at the cutoff frequency.

Vel Cutoff varies the amount of frequency cutoff modulation via velocity. Positive values will increase the cutoff frequency with higher velocity levels, and negative values will reduce it.

Envelope adjusts the amount of cutoff variation applied by the filter envelope. Positive values will result in the cutoff frequency being increased, negative values will decrease the cutoff frequency resulting in the effect of the filter envelope being inverted.

Attack adjusts the attack time of the filter envelope.

Sustain adjusts the sustain level of the filter envelope.

Rel/Decay adjusts the release and decay time of the filter envelope.

LFO Depth varies the amount of modulation applied to the cutoff frequency by the filter LFO.

Rate adjusts the rate of the filter LFO.

Fade adjusts the time taken for the filter LFO to reach the value set by the LFO depth.

Drift applies drift variation to the filter LFO.

AMP

The **AMP** section contains parameters for overall output as well as mix controls and amplitude envelopes for each oscillator.

Osc Vol sets the output mix volume for the oscillator. When this parameter is increased past the half-way point, wave-shaping is applied to emulate an analog synthesiser resulting in a “fatter” more saturated sound with additional harmonics.

Pan sets the stereo position of the voice from left to right.

Vel Sens adjusts the amount of velocity sensitivity and its effect on overall volume. At the minimum setting velocity will have no effect on volume and the output of the voice will be at its maximum - useful for emulating older vintage synths.

TIP! Having different velocity sensitivity settings for each voice can introduce interesting timbre variations as you play harder or softer as each voice is responding differently to your playing dynamics.

Master Vol controls the overall master volume of both voices and it's one of the few parameters that is shared. Please note that setting the Master Vol past the default half-way point will increase the perceived effect of a built-in limiter - more details below.

Attack adjusts the attack time of the amplitude envelope.

Decay adjusts the decay time of the amplitude envelope.

Sustain adjusts the sustain level of the amplitude envelope.

Release adjusts the release time of the amplitude envelope.

Master Limiter

At the very end of the ANALOGyX2 signal chain is a low-CPU safety limiter to keep output levels in check. With the Master Vol at the default setting of -6dB you typically won't hear the effect of the limiter, but in some cases, the combination of high distortion, filter resonance and lots of sustained notes, the "pumping" effect of the limiter might be noticeable. In this case, we recommend you back off the Master Vol in ANALOGyX2 and increase the channel gain in your DAW.

TIP! In some cases the soft-knee character of the limiter can be used to "thicken-up" your sounds. Try increasing the Master Vol parameter gradually - this will drive the limiter harder and can be used as an additional creative effect.

MOD

The MOD section contains a "pre-wired" modulation matrix comprising three LFO based modulation effects.

TIP! Adding subtle amounts of modulation and increasing the drift parameters can result in three-dimensional and evolving type sounds.

Vibrato varies the amount of pitch-based modulation.

Tremolo varies the amount of amplitude modulation.

Auto Pan varies the amount of stereo pan modulation.

Rate adjusts the frequency of the modulation LFO.

Fade adjusts the time taken for the LFO amount to reach its maximum value.

Drift applies drift variation to the modulation LFO.

SUB / NOISE

The ANALOGyX2 main oscillator is supplemented with separate sub (pulse and octave below) and noise generators. Each component has its own 3 stage envelope.

TIP! Interesting and evolving sounds can be created by having different envelopes for both the main, sub and / or noise components. There are many examples of this in the factory presets.

Sub / Noise controls the level of the sub or noise component.

Attack varies the attack time of the envelope applied to the sub or noise component.

Sustain varies the sustain level of the sub or noise component.

Rel/Decay varies both the release and decay time of the sub or noise component.

EFFECTS

The EFFECTS section contains a selection of finely tuned signal processors designed to compliment and enhance the ANALOGyX2 oscillator sounds.

When any effect is set to the minimum value, it is bypassed, saving CPU.

Delay varies the mix level of the stereo ping-pong delay effect up to 100% wet.

Time adjusts the delay time up to a maximum of 4 seconds. Modulation increases as you reduce the delay time for basic chorus and flange type effects.

Please note that there is no tempo sync option and we encourage you to try delay times that are not in sync with your track's tempo! This is inspired by older vintage delays with a manual adjustment where you wouldn't adjust the delay time for every song. Also, the delay has been voiced so that it usually blends in smoothly behind your dry signal.

Feedback varies the delay feedback from a single repeat to almost infinite repeats.

Grains introduces varying amounts granular pitch shifting before the delayed signal. The time and feedback parameters also control the grains pitch shifting.

Distortion applies a tube emulated soft clipping distortion effect that can be used to add a little "grit" or create heavy saturated sounds.

Chorus adds a rich unison effect modelled on the chorus effect found on a classic synth. It can be set to add a single voice, or 2, 3 or 4 voices for a wide stereo effect.

Reverb adjusts the mix of a stereo reverb up to 100% wet.

Size varies the size of the space emulated by the reverb based on decay time. As the size is increased, additional pre-delay and modulation is applied.

PITCH BEND

The PITCH BEND section contains parameters to adjust the range of the MIDI pitch bend controller up to two octaves up or down. These parameters are shared across both voices. This section also contains a virtual pitch bend wheel that will also respond to incoming MIDI controller messages.

Up adjusts the amount of pitch bend range up.

Down adjusts the amount of pitch bend range down.

KEYBOARD

The KEYBOARD section contains parameters relating to MIDI keyboard control and a parameter to "spread" notes in the stereo field. It also contains a virtual keyboard for previewing sounds and displaying incoming MIDI notes.

Sustain reflects the current status of the sustain pedal. This button can also be used to manually turn sustain on and off.

Spread is a control that can be used to automatically pan individual notes according to pitch, velocity or a random value.

TIP! Selecting different spread settings for each voice can result in an interesting and dynamic stereo image.

EXP CONTROLLER

The EXP CONTROLLER section contains parameters for assigning some useful parameters to incoming MIDI CC 11 expression messages. The section also contains a virtual expression “wheel” that will update when incoming expression messages are received.

Mod allows the mod controller to be mapped as an expression control. This is useful for testing your patches if you don’t have a dedicated expression controller and also adding an additional dimension of control to your mod controller.

AT allows you to map aftertouch as an additional expression controller. Incoming aftertouch messages will be treated as expression controller data.

Volume allows the volume to be varied by the expression controller, either fading in or out as the expression controller amount is increased.

TIP! Setting one voice to fade in, and the other to fade out allows you to cross-fade between the two voices using your expression controller.

Distortion varies the amount of additional distortion applied by the expression controller.

Filter Cutoff varies the amount of adjustment to the filter cutoff frequency by the expression controller. Positive values increase the cutoff value, negative values reduce it.

MOD CONTROLLER

The MOD CONTROLLER section allows the mapping of mod wheel / controller messages to various parameters. The section also includes a virtual mod wheel for testing that will also update to reflect incoming mod controller messages.

Filter Cutoff varies the amount that the mod controller increases or reduces the filter cutoff frequency.

Filter LFO varies the amount the filter LFO depth is increased or reduced by the mod controller.

PWM varies the amount the PWM LFO depth is increased or reduced by the mod controller.

Vibrato varies the amount the vibrato LFO depth is increased or reduced by the mod controller.

Tremolo varies the amount the tremolo LFO depth is increased or reduced by the mod controller.

Auto Pan varies the amount the auto pan LFO depth is increased or reduced by the mod controller.