

# discoDSP Discovery Pro

Users Manual

Virtual Analog + Wave + PADSynth Synthesizer

<https://www.discodsp.com/>

## Description

Discovery Pro is a virtual analog synthesizer emulation for AAX, Audio Units, VSt2, VST3 hosts and standalone app, featuring multi-layering, parameter morphing, high-quality sound, WAV and SF2 support, PADSynth re-synthesis and straightforward interface.



## Installation

- **Apple OS X**

Run the installer and follow the instructions.

- **Microsoft Windows**

Run the installer and follow the instructions.

- **Linux**

Run install.sh with Terminal or

Place **discoDSP** folder at **/home/username/Documents/**

Place DiscoveryPro64.so at your VST folder, usually **/home/username/.vst/**

Place DiscoveryPro64.vst3 at your VST3 folder, usually **/home/username/.vst3/**

**Demo version** will be unable to store any current synth state or save banks. Automation and some Edit functions are disabled and there is a small noise burst every minute.

## Features

---

Discovery boasts the following powerful feature set:

- 128 Patch Memories per bank.
- Parameter Morphing using Modulation Wheel or MIDI velocity.
- 2x oversampling / 2x oversampled distortions.
- Bank browser (by clicking arrows in display led and bank name).
- More than 5.000 presets in 100 banks (including a percussion one).
- Nord Lead 2 and 2X patch import and export.
- 4 Layers per Patch, each with:
  - 2 Oscillators (Sine, Saw, Triangle, PWM, Square, Parabolic, White and Pink Noise) with Ring modulation, Sync, Frequency Modulation and Phase Reset Trigger.
  - 1 Wave Oscillator. Can load WAV and SoundFont 2 (SF2) files using high quality interpolation with PAD re-synthesis generation. User banks are easily added using **EDIT > File**.
  - Resonant Filters (LowPass, HighPass, BandPass, BandReject, Formant, 8 taps phaser, X 12/24 dB and Y 12/24 dB are Moog modeled).
  - ADSR for Amp & Filter. Amplitude envelope can switch between linear and exponential curves.
  - 2 LFOs.
  - Modulation Envelope.
  - Graphical Modulation Envelope.
  - Arpeggiator.
  - Built-in Unison, Chorus, Phaser, Panning Delay and Gate effects.
  - Symmetric, Asymmetric and Asymmetric 2 Distortions.
  - Limiter.
  - Poly/Mono/Legato modes.
- MIDI CC control.

## Basic Concepts

---

### Channel Limiting and Oversampling

You may now determine the number of channels used in the instrument by left-clicking the "voices" LED or at **EDIT > Config**.

A dialog box will appear with the number of voices you wish to enable. Select the desired voice number.



You can also select the oversampling mode. 2X will make Discovery work internally at 88 Khz when your host is set to 44.1 Khz. 2X oversampling is highly recommended, however it will require double the CPU processing power. It will affect all active Discovery instances.

HQ Distortion will duplicate distortion's internal frequency rate, depending of the oversampling mode mode and resulting into 4X in case a global 2X has been configured.

### Quick program select

Left-click program LCD panel to see a list of available patches.

### Bank browser




You are able to browse all the FXB banks by clicking the arrows in the status LCD or clicking the bank name to display a drop-down menu. All banks are located at **Documents > discoDSP > Discovery Pro > Bank** folder. You can add your own banks using **EDIT > File > Import Bank** function.

For easier preset and banks management, **EDIT > File > Open** functions will bring a Finder or Explorer window.

There is a subfolder called **User.dwb** where WAV files can be copied and recognized instantly after each menu drop-down click, providing better workflow. There is a quick access for this folder using **EDIT > File > Open Data Folder**. WAV files can also be imported using **EDIT > File > Import Wave** function.

Also, there is a **Disk Mode** that reads .FXP programs from the subfolders located at **Documents > discoDSP > Discovery Pro > Presets > Programs** folder. Click 'Bnk' to switch to Dsk.

## Morphing state knob editing

In normal mode, holding **Ctrl** /  while moving the knob will modify **morph sensibility**. Behavior will be backwards when Morph mode is on.

## MIDI Aftertouch knob editing


MIDI Aftertouch can be assigned to any knob. Useful to control LFO speed, filter cutoff, resulting in more expressive sounds. In R5.4, aftertouch can be switched to Foot (CC# 4), Expression (CC# 11) and Breathe (CC# 2) using **EDIT > Switch > Aftertouch To** function.

To access Aftertouch mode simply hold  key while pressing **A, B, C or D** button. Layer led will start blinking. To go back to normal editing, press again the **Layer button**.



There is a secondary access located at **EDIT > Switch > Aftertouch mode**.

## Fine tune knob editing

To have more detailed parameter adjustments, hold  key while moving the knob to edit both states. Shift and Ctrl keys can be used at once too.

## LFO Sync to host tempo

Discovery's LFO1, LFO2 / Arpeggiator, Delay and Panning LFO can be synced your host tempo. To enable it, just click the led located next to the LFO knob or Delay amount.



## Edit operations

There are a set of editing operations, clicking EDIT button on your Discovery GUI offers the following options:

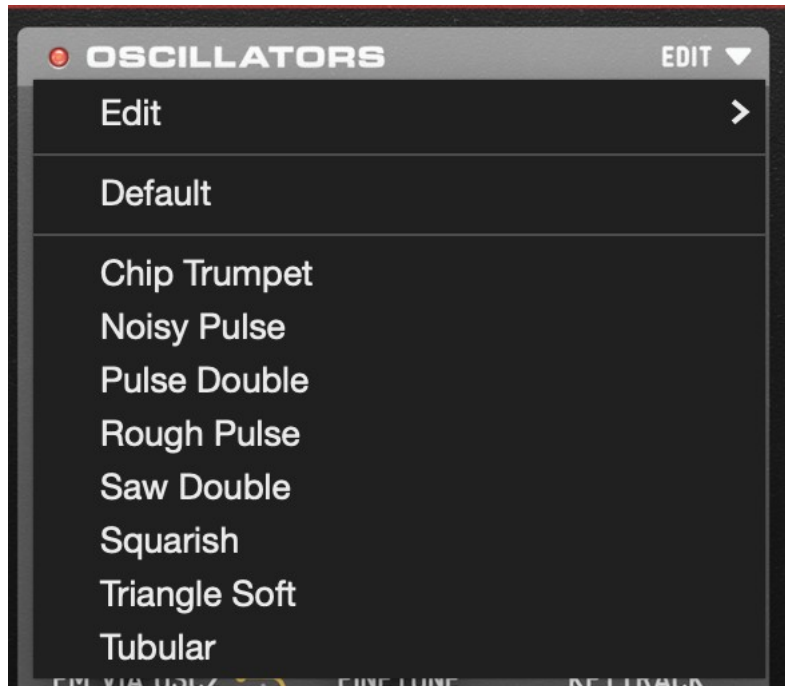
File	>
Copy	>
Paste	>
Randomize	>
Reset	>
Unison	>
Rename	>
Key Split	>
Programs	>
Quick Stack	>
Swap	>
Tempo Sync	>
FX Bypass	>
Appearance	>
Config	>
MIDI	>
Help	>

- **File:** Imports or exports Clavia's Nord Lead patches, FXB preset bank to exchange between several projects or users. Open folders for quick bank, SF2 and PAD SFZ cache files.  
  
Also opens **Data**, **Presets folder** and **Unison** configuration for quick access.
- **Copy, Paste, Randomize, Reset:** Allows to do simple editing operations over the current layer, preset, or even selected sections from the current preset, like LFO1, LFO2, ADSR and other ones.
- **Unison:** Applies values from text file unison.txt located at **Documents > discoDSP > Discovery Pro > Config** from first layer to the other ones. For details refer to Unison edit at the end of this manual.
- **Rename:** Renames current program name.

- **Key Split:**
  - **Off:** Set layers to be played all at once.
  - **AB/CD:** Plays layers A/B from C0 to B3 and C/D from C4 to B9.
  - **Custom:** Plays a custom note range from from C0 to B9 for each layer.
- **Programs:** This function displays the presets located in the following folder path: **Documents > discoDSP > Discovery Pro > Presets > Programs**. These presets can be conveniently saved to disk by using the "File" option and selecting "Save Preset To Disk".
- **Quick Stack:** Allows the active layer to navigate through other presets and banks without leaving the current program, loading the first layer from others. To exit this mode, click any layer button. A flashing LED indicates that Quick Stack is active.
- **Swap:** Enable or disables MIDI Velocity to Program Morphing, FX section or use the classic chorus. Enters Aftertouch MIDI editing mode and assignment. Swap between Bank and Disco modes. Switches between classic Discovery filter and new R6 Nord Lead modeled Zero Delay Feedback filters or from Chorus to Unison for the full bank and switches Oscillator Phase Reset mode.
- **Tempo Sync:** Quickly sync to host tempo LFO1, LFO2, Panning, Delay sections or all of them at once.
- **FX Bypass:** Disables individual or all effects even after changing presets.
- **Config:** Selects global plugin polyphony, oversampling or high-quality distortion. More polyphony, higher oversampling can result in a CPU hit. It's recommended to use higher choices when a project is going to be bounced. MIDI CC button mode allows to use alternate MIDI CC map found at EDIT > Help.
- **MIDI:** Selects MIDI Learn, MIDI CC button mode and MIDI out on/off as well as select several MIDI CC hardware boards templates.
- **Appearance:** Selects skin located from Documents > discoDSP > Discovery Pro > Skins and switches window and all their elements between 3 sizes: 1x (400p), 1.5x (600p) and 2x (800p).
- **Help:** Opens tutorials, manual and MIDI CC default table. Also displays Release number and checks if there is a new version available.

## Zone presets

Zone presets has been introduced with Release 4. It allows each section to have their own presets based on the current state, so they can be stored for later use, allowing quicker preset design and getting better overall workflow.



They are stored at **Documents > discoDSP > Discovery Pro > Presets** folder using a standard XML format. Such files can be shared without the need of importing or exporting, just copying them to their current folder.



## Layers

---

Discovery Pro can hold 128 patches at any one time. Each patch may contain up to 4 layers. Combining layers can be used to create complex sounds that simple subtractive synthesis cannot achieve.



Discovery Pro supports up to 128 polyphonic voices. If all 4 layers are enabled, a single note will count as 4 individual voices, reducing the actual polyphony to 8 in these instances. Fortunately, these are 8 extremely powerful sounds.

To select a layer, simply left-click the A, B, C, D buttons below the Program and Voice number LEDs.

A is the default layer. When a layer is active the BUTTON directly above it turns **highlighted**. Select any layer (B, C, D) to activate it.

When a program includes 2 or more layers, the selected layer button turns **highlighted** and other active layers turn **blue**. If you wish to disable a layer simply left-click it twice, or left-click the **blue** LED directly.

Discovery Pro allows you to copy and paste between layers or programs by using EDIT menu.

The following documentation applies to a **single layer** unless otherwise noted. This means feature (LFO's, Envelopes, Oscillators) are potentially quadrupled for each Discovery patch.

## Parameter Morphing

---

Each layer contains two internal states: morph **source** and morph **sensibility**. Each state contains a unique set of all values. **Morphing** allows you to easily glide between these values.

Morph sensibility state is seen using alpha blend, and can be modified by using **Ctrl** key while adjusting the knob. A 32-bit video mode is required to display this transparency.


You can easily toggle between both morph states by left-clicking the ASSIGN button, located in the top left of Discovery Pro under the "Morph" label. When the ASSIGN led is active, all parameter modifications are being made to the MORPH state.

Once both states have been defined, you can easily morph between them by assigning the Wheel MOD to MORPH mode. Once set, moving your mode wheel will morph between both states.



**EDIT > Reset > Layer Morphing** sets all layer MORPH sensibility state to zero.

### TIPS

- MIDI velocity to Morph can be disabled by clicking the led above modulation wheel or using **EDIT > Swap > MIDI Velocity To Morph**.
- Knobs from four layers at once can be moved using **Alt** /  + drag on Windows / Mac or **Right Click** + drag on Linux.

## Global Layer Options

---



- **Oct Shift:** Shifts pitch in octaves of the layer.
- **Pitch Bend:** Pitch bender allows you to drastically change the pitch of the current patch in real-time. You can modify the pitch bend range from 1 to 48 semitones by clicking the LCD arrows or clicking numbers for a drop-down menu.
- **Modulation Wheel:** Can be assigned to modulate the following parameters:
  - **FLTR:** Filter cutoff frequency.
  - **FM:** OSC2 to OSC1 frequency modulation amount.
  - **OSC2:** OSC2 pitch.
  - **LFO1:** LFO1 amount.
  - **MORPH:** Morph between source and destination morphing states.
- **CHR:** Left-click the **CHR** button to enable Chorus, Phaser or both modes at once.
- **UNI:** Enables Unison. 2 voices are used on **POLY** mode and 4 on **LEGA/MONO**.
- **Play Modes:**
  - **MONO:** Only 1 voice of the synthesizer is used for the layer. In this mode any note played will discontinue the previous note.
  - **LEGATO:** A monophonic mode in which envelopes are not restarted when new keys are played.
  - **POLY:** Polyphonic mode allows multiple notes to be played at once.
- **Portamento:** Portamento glides the pitch between the current note and a newly played note. The higher the value, the slower the transition progresses.
  - **Auto:** When enabled, glide/portamento will be only applied if overlapping notes are played (legato).

## Oscillator Section

---

Oscillators are the basis of sound generation in subtractive synthesis. Discovery Pro includes two primary oscillators, each with various modes and waveform types.



**Waveforms** available in Discovery Pro are:

Wave Type	Useful for creating...
Sine	FM, Leads, Percussion, Organs.
Triangle	FM, Smooth Sounds, Bass, Flutes.
Square	Smooth Basses, Leads, Synced Waves.
Parabolic	Smooth Sounds, Pads.
Noise	Ambient FX, Percussion.
Saw	Rough Bass, Edgy Leads.
Pulse	Vintage Synths, Pads.

## Oscillator 1 (OSC1)

OSC1 is the primary sound source in Discovery. This oscillator uses the pitch of the incoming note and plays it in the specified waveform type. OSC1 can be one any of the following waveform types (shown from the top down):

- Sine.
- Triangle.
- Saw tooth.
- Parabolic (Saw tooth with **red** led).
- PWM (Pulse Width Mod).
- Square.



You can quickly switch between any waveform by simply left-clicking the button below the waveform list. A **blue** or **RED** LED indicates the currently enabled waveform.

**Frequency Modulation:** Discovery features a true frequency modulation (FM) engine, allowing the OSC1 carrier wave to be modulated by frequency of the OSC2 output.

**FM Amount:** Sets the amount of FM used to modulate OSC1 frequency.

## Oscillator 2 (OSC2)

Discovery offers a second oscillator, which adds additional sound design capabilities to your patches.



The second oscillator may be used in various ways such as mixing with, or modulating the frequency of OSC1.

OSC2 can be set to any of the following waveforms:

- Triangle.
- Saw.
- Parabolic (when Saw led is **red**).
- PWM (Pulse).
- White Noise.
- Pink Noise (Noise with **red** led).
- Square.

Controls for oscillator 2 are:

- **Semitones:** This knob allows you to shift the pitch of OSC2 from -60 to +60 semitones. The following features apply:
  - When in use, a **blue** LED will activate at full scale values:  
-60, -48, -36, -24, -12, 0, 12, 24, 36, 48, 60
  - When OSC SYNC mode is active OSC2 will reset each time OSC1 finishes a cycle. (Explained below).
  - When noise wave is selected, this control is used to determine the frequency range of the noise (from low frequency to high frequency noise).

If noise wave is selected and OSC SYNC mode is active, the semitones control is a digital noise wave selector, from a table of 8 different random sound shapes.

- **Fine Tune:** Fine-tuning of OSC2 from a range of -0.5 to +0.5 semitones.
- **KBD Track switch:** When on, the OSC2 will track pitch of incoming note.

## Oscillator Modes

- **Pulse Width:** Determines the de-phasing amount between the two saw tooth waves that build up the Pulse wave. This results in the pulse width of BOTH oscillator pulse wave shapes (only works for PWM).

Lesser values (turned left) result in a square formed PWM. Higher values result in a train of small pulses.

- **OSC SYNC:** OSC2 phase will reset each time OSC1 completes a cycle, giving harsh and fuzzy effects on the OSC2 sound. In this mode the OSC2 semitone control will not determine the pitch shift, but rather the harmonic content of the wave that will modify the pitch of the OSC1.
- **RING MOD:** OSC1 output will multiply the OSC2 output. When this mode is turned on, the FM control in the OSC1 will work as pitch tune (in the range of 0 to +12 semitones) for the OSC1. This mode can be used for special effects and ambience sound shapes.
- **OSC MIX:** Used to mix both oscillators output. Knob values follow:
  - **Left:** 100% OSC1 Signal.
  - **Middle:** 50% OSC1 Signal, 50% OSC2 Signal.
  - **Right:** 100% OSC2 Signal.

## Wave Oscillator (WAVE)

Discovery Pro offers a third oscillator, which adds dramatic sound design capabilities to your patches.



Wave oscillator can be edited by clicking the LED located at the right of WAVE label. Sound banks and waves can be selected by clicking < and > controls or clicking at the LED area to display a drop-down menu.

To add your own sound banks just zip a set of WAV files and use .dwb extension, or select a SoundFont 2 (SF2) file. Then place it on **Documents > discoDSP > Discovery Pro > Waves** folder and they will appear next time Bank LCD is clicked.

Controls for Wave oscillator are:

- **PAD Button:** For any active wave, Discovery Pro will render a new waveform set using PAD synthesis. It will generate a perfectly looped and beautiful set of sounds, no matter what the source is.

Since it's a very complex method, it will generate a cache file in SFZ + 20 WAV files (or 1 WAV when ECO mode, displaying a ECO or green button) per sound at **Discovery Pro > Cache > PADCache** or **Discovery Pro > Cache > PADCacheEco** folder.

Next time PAD is active, it will read the file from cache, resulting in fast loading time.

- **Semitones:** This knob allows you to shift the pitch of Waveforms from a wide range of semitones. The following features apply:
  - When in use, a **blue** LED will activate at full scale values:  
-60 / -48 / -36 / -24 / -12 / 0 / 12 / 24 / 36 / 48 / 60
  - When **Keytrack** is selected, pitch changes will be applied across the keyboard.
- **Fine Tune:** Fine-tuning of loaded Waveforms from a range of semitones.



**FM mode in the Wave Oscillator using the FM LED:** In this mode, Oscillator 1 serves as the carrier, while the modulation amount is derived from the Wave file through Oscillator 2's FM knob.

## TIPS

- To alternate between VA OSC On/Off for both OSC1 and OSC2, you can click on the LED.

Clicking on the **OSCILLATORS** label allows you to switch between Phase Retrig and Free Run Phase for both oscillators.



This adjustment method simplifies the process of controlling the oscillators' functionality, facilitating easy toggling of their operational states—either deactivating them when only the WAVE oscillator is needed or managing their phase settings.

- Full **octave switching** can be easily performed by clicking + and – labels.



## Filter Section

---

Once oscillators are mixed, sound is next routed through the Discovery filter section. This section will transform the frequency response of the signal.



A filter is a unit that changes the magnitude of a range of frequencies of the sound, boosting or cutting these frequency values.

### Basic Filter controls

The two most common filter parameters are the Frequency and Resonance controls.

- **Frequency:** or 'cutoff' point. This value sets the frequency point affected by the filter response.
- **Resonance:** This value determines the amount of amplification of the range of frequencies surrounding the frequency (cutoff) point.

## Filter Types

Discovery Pro has 12 filter types. You may toggle through these types using the buttons below the LCD Filter Type section or by clicking filter name LED to make a drop down menu appear. The active filter is also showed in the display.

Available filter types follow:

- **LowPass 12db:** This 2 pole Lowpass filter will cut all spectrum range above the Cutoff frequency, with a rolloff of -12dB per octave.
- **BndRjct 24:** The Notch filter will cut the frequency range surrounding the Cutoff point, and will be processed thru the 24dB Lowpass filter explained above, but using a slightly shifted Cutoff frequency. Using this with high Resonance amounts will result in interesting vocal formants effects.
- **LowPass 24db:** A 4 pole Lowpass Filter with -24dB per octave rolloff. This functions similar to the LP 12db, but with a steeper frequency curve response.
- **BndPass 24:** A Bandpass Filter, which allows only the frequency range surrounding cutoff point to pass through. Resonance controls the size of this bandwidth.
- **HghPass 24:** The opposite of the Lowpass filters, the Highpass will pass frequencies above the cutoff point and will cut all range below. This filter type has a rolloff of -24dB per octave.
- **HghPass 12:** Will pass frequencies above the cutoff point and will cut all range below. This filter type has a rolloff of -12dB per octave.
- **Formant:** 2 bandpass parallel filters tuned in vocal formant frequency range. Resonance modifies both filters resonance.
- **X 12:** A Moog modeled 2 pole Lowpass Filter with -12dB per octave rolloff.
- **X 24:** A Moog modeled 4 pole Lowpass Filter with -24 dB per octave rolloff. It functions similar to X 12db, but with a steeper frequency curve response..
- **Y 12:** Another Moog modeled 2 pole Lowpass Filter with -12dB per octave rolloff.
- **Y 24:** Another Moog modeled 4 pole Lowpass Filter with -24 dB per octave rolloff. It functions similar to Y 12db, but with a steeper frequency curve response.

## Filter Envelope

The Filter Envelope allows easy ADSR (**A**ttack, **D**ecay, **S**ustain, **R**elease) envelope based modulation of the filter Cutoff control.

- **Attack:** Controls for the time in which the filter envelope moves from 0 (note play) to full filter (based on the Envelope Amount, below).
- **Decay:** Controls the time length between the end of attack and the sustain level.
- **Sustain:** Sets the filter point at which envelope stays while note is continually pressed, once attack and decay have completed.
- **Release:** Begins once the note is released, controlling the time the gain will fall from current envelope point (Sustain) until complete.
- **Env Amount:** The Envelope Amount option controls the amount of the Filter envelope applied to the Cutoff frequency.
- **Vel:** When enabled, the Envelope Amount will be scaled with the incoming note based on velocity. This results in more dramatic envelopes for harder hit notes.

## Additional Filter Options

- **Keytrack:** When active, Keyboard Tracking will increase the filter cutoff frequency based on incoming note pitch. Higher notes will add higher frequencies to the current filter cutoff point.

Tracking can be 1/2 (minor), 2/3, or Full (very drastic).

- **DIST:** Distortion effect with dual modes. Starting with Release 8.2, distortion will always be oversampled at 2X.
  - **Asymmetric Distortion:** This will apply saturation to the negative field of the signal. This will generate side harmonics, useful for tube distortion effects.
  - **Symmetric Distortion:** Saturation will be applied symmetrically, resulting in odd harmonics, useful for grunge or distortion effects.
  - **Asymmetric Distortion 2:** A variation of first asymmetric distortion.

## Modulation Section

---

### Low Frequency Oscillator 1 (LFO1)

Discovery Pro includes two LFO's (**L**ow **F**requency **O**scillators), a Modulation Envelope (with 2 stages and state variable amount control) and a Graphic Envelope Generator. LFO oscillators operate much like the basic Discovery oscillators, only at much slower speeds



**Rate:** This control sets the speed (frequency) of LFO1. Smaller values result in slower oscillations, larger values in faster oscillations.

LFO1 can use various waveforms (from top to bottom):

- **Lowpass Random:** Like random waveform, but the value is a smooth curve.
- **Square:** If LFO1 phase is above the half of the period length, the LFO will take the highest value, otherwise the lowest.
- **Triangle:** Also a ramp, but moves down to up, then back to down in a single cycle. Primarily used for sweep effects.
- **Saw Tooth:** Ramp shape; will move up to down, then instantaneously up when cycle is completed.
- **Random:** Each time LFO1 completes a cycle, it will select a new random value.

**Re-triggered LFOs:** By cycling through LFO waveform options a second time you can enable Re-triggered LFO's. This means LFO will be restarted each time a note is played. Re-triggered LFO's are indicated by **red** LEDs.

**Destination:** To the left to the waveform selector is the LFO1 Destination selector. This feature allows you to choose which control(s) this LFO will modulate. The following LFO1 modulation destinations are available:

- **FM:** OSC2 to OSC1 FM (Frequency Modulation) amount.
- **FILTER:** Filter cutoff frequency.
- **OSC2:** OSC2 pitch.
- **OSC1+2:** Both OSC1 and OSC2 pitch.
- **PW:** Width of the pulse of PWM waveforms.

**Amount:** LFO1 Amount control determines the amount of LFO output to use on the destination control(s). Higher values will result in a more dramatic modulation.

## Low Frequency Oscillator 2 (LFO2) and Arpeggiator (ARP)



Second LFO operates much like the first, yet without a selectable waveform. LFO2 is always a pure **sine** wave. In addition LFO2 has a powerful Arpeggiator (explained below).

**Rate:** Controls the speed (frequency) of LFO2.

**Destination:** The following destinations are available to LFO2:

- **OSC1+2:** Both OSC1 and OSC2 pitch.
- **AMP:** Amplitude (Creates a Tremolo effect).
- **FILTER:** Filter cutoff frequency.

**Amount:** LFO2 Amount control determines the amount of LFO output to use on the destination control(s). Higher values will result in a more dramatic modulation.

## LFO2 Arpeggiator

**ARP:** You can enable Discovery's Arpeggiator by left-clicking the **ARP** button in the LFO2 section. When active, LFO2 operates in ARP (Arpeggiator) mode.

An Arpeggiator is basically a simple sequencer which continually plays notes automatically as a note or notes are held. The notes played depend of the keys currently pressed and the arpeggiator range.

**Rate:** When in ARP mode, the Rate control sets the arpeggiator tempo. Faster values may be achieved with greater values (turning the knob to the right).

**Destination:** In Arp mode, direction in which the Arpeggiator will play notes. They can be:

- **DWN:** Plays notes from highest to lowest, then restarts.
- **U&D:** Repeats playing highest lowest, then back from lowest to highest.
- **UP:** Plays lowest to highest, restarts.
- **RND:** Plays any random note from the arpeggiator range.
- **RND2:** Play to the next or the prior note in the arpeggiator range randomly.

**Arp Rng:** Sets range in octaves for the arpeggiator, from 1 to 5 octaves.

## Modulation Envelope

Modulation envelope is a simple envelope which includes 2 stages, attack and decay.



**Attack:** Changes the value of the destination (based on the **Amount**) from the time a key is pressed until its highest point.

**Decay:** Changes the value of a destination (based on the **Amount**) from the highest point until the sustain level is reached.

**Destination:** The following destinations are available to the Mod Envelope:

- **FM:** Frequency Modulation Amount.

- **PW:** Pulse Waveform Width.
- **OSC2:** OSC2 Pitch.
- **O2+W:** OSC2 and WAVE pitch.

**Amount:** Sets modulation. This modulation can be positive, negative, or anything in between. Three basic settings include:

- **Negative:** All the way to the left, reduces the destination.
- **No Amount:** Center, disabled.
- **Positive:** All the way to the right, increases the destination.

## Graphic Envelope Modulation



Graphic Envelope modulation is located between GATE and WAVE sections. Just left-click the **blue** LED close to MOD label for easy panel access.

Configuration is done in the same fashion as Gate, left-clicking the bars with your mouse in order, with the only difference of being able to set individual amounts for each one. Clicking and holding your mouse button will allow to easily draw custom modulations and the drop down menu allows to select tempo sync speed to 0.5x, 1x or 2x (linked to Gate).

**Destination:** This feature allows you to choose which control(s) this envelope will modulate. The following graphic envelope modulation destinations are available:

- **OSC2:** OSC2 pitch.
- **FM:** OSC2 → OSC1 FM (Frequency Modulation) amount.
- **PW:** Width of the pulse of PWM waveforms.
- **FILTER:** Filter cutoff frequency.



## Amplifier

Discovery's amplifier applies an envelope to the output gain of the current layer of sound. This is the final stage of synthesis. The following controls apply:



- **Attack:** Controls for the time that envelope moves from note press (0) to full volume. (Does not apply to legato mode).
- **Decay:** This knob controls the time length between envelope gain goes from upper point (end of Attack) to Sustain level.
- **Sustain:** Sets the point at which the envelope stays while note is held. This state is held until the note is release.
- **Release:** Once the note is released, this knob will control the time in which the gain will fall from current envelope point (Sustain) into complete silence, finishing the voice use.

Longer releases can result in many simultaneous voices, resulting in high CPU usage.

- **Gain:** Adjusts the overall volume for the current layer. Use morphing to add dynamics.
- **Limitter:** Applies a compressor with  $-\infty:1$  ratio for the current layer.



Discovery Pro can also switch from default **linear envelope** behavior to **exponential**, which is usually better for pads, by clicking the LED next to each knob.

Once LED is enabled, that particular envelope stage will use exponential values instead linear.

## Panning, Delay/Echo and Gate

---

Discovery has built in stereo delay, panning and gate effect units.

### Panning



This effect can be used to widen a sound or give it interesting panning effects per layer. You can sync Mod Rate to host tempo by clicking the led located next to Mod Rate knob.

- **Position:** Position in the stereo field.
- **Modulation Rate:** Controls the rate of the stereo modulation.
- **Modulation Amount:** Controls the depth of the stereo modulation.

## Delay/Echo

This effect can be used to add spacey echo effect, or widen a sound. You can sync Left/Right Delay to host tempo by clicking the led located between Left and Right knobs.



- **Level:** Controls the amount of the delay effect. No Level value (knob turned completely to the left) will disable the delay effect. This control is morphable as well.
- **Left / Right Delay:** Controls the delay time of the unit for each channel.
- **Left / Right Feedback:** Controls the time of the delay tail. Moving this knob to the right will increase the tail.
- **Cross switch:** Adds a cross-feed to the feedback output. This will result in a stereo bouncing delay, useful for 3d-alike effects.

## Gate



To activate the Gate page effect, click the small blue LED next to GATE.

- **Level:** This controls the intensity of the gate floor effect. Setting the Level to its maximum (by turning the knob completely to the right) will turn off the gapper effect. This feature is morphable and operates independently across layers, making it ideal for creating complex sound textures.
- **Gate pattern:** This controls the triggering of the gate. The **EDIT** dropdown menu provides options to select the tempo sync speed at 0.5x, 1x, or 2x, which is linked to the Mod setting.
- **Copy:** This function allows you to copy the current gate pattern into memory.
- **Paste:** This function pastes the gate pattern from memory onto the current gate.

**NOTE:** It is possible to enable or disable multiple gate steps by clicking and dragging the mouse across the pattern.

**TIP:** By holding Shift while clicking and dragging the mouse, the value of the last cell will be applied.

**TIP:** In Windows, using a left click, or Ctrl + Click in macOS, over the current cell will open a dialog window for entering a numeric value.

## Importing and Exporting SysEx

---

Discovery can import or export SysEx patch dumps from software able to record MIDI SysEx data dumps.

On Discovery GUI, press **EDIT > File > Import / Export Nord Lead 2 SysEx**

Keep in mind **full bank** patch imports will be placed into current selected layer. Also, imported Nord Lead 2 sounds may sound slightly different. Performance and Percussion Kits dumps are not supported.

## Unison Edit

---

Unison is a pretty simple editing command, able to be customized. It takes the values from the first layer (A) and applies it over all of them (A, B, C and/or D) depending of the preset.

If we open unison.txt located at **Documents > discoDSP > Discovery Pro > Config** using **Edit > File > Open Unison** we can see a list of default presets and the way how new ones can be made. Let's take a look at the first one: Double, which is the name displayed.

Double    **1 1 0 0**    **0.5 0.5 0 0**    **0.2 0.8 0 0**    **0 0 0 0**    **0.3 0.7 0 0**

- **First four values** mean that only Layers A and B will be affected 1 1 0 0 where A (1) B (1) C (0) D (0).
- **Second values** are gain. 0.5 in a 1 to 0 range means Layers A and B will have 50% gain each.
- **Third values are panning**. Layer A will be panned about 25% Left and Layer B 25% right.
- **Fourth values are osc2 octave pitch shift**. Since values are 0 they will all remain in the same octave.
- **Fifth values are the osc2 fine-tune**. As we can see Layer A and B will be detuned about 25% up and down respectively.

Adding and removing presets is as simple as removing or copy/paste a line and saving.

Edited Unison presets will take effect next time Discovery is instanced.

## MIDI

---

MIDI menu has been introduced on Release 7.1 and expands the original MIDI CC features.

### **MIDI Learn**

This function will replace the default MIDI CC mapping file Default.xml located at Documents > Discovery Pro > MIDI folder. Values can be seen at Help > MIDI CC too.

Learn a MIDI CC

Select MIDI Learn.

Select a knob or button with the mouse

Send MIDI CC data with the hardware

Custom.xml file from Documents > Discovery Pro > MIDI folder will be updated.

### **MIDI CC Buttons**

This is an extension for Discovery Pro buttons. Once switched, Discovery Pro will apply MIDI CC buttons table. You can find them using Help > MIDI CC or opening any XML file located at Documents > Discovery Pro > MIDI folder.

### **MIDI Out**

If enabled Discovery Pro MIDI will be sent.

### **MIDI CC Hardware Board Templates**

Discovery Pro includes several hardware board templates.

You can create your own by creating a copy of any XML file and renaming it to your board name and editing the CC with a text editor or using MIDI Learn and then creating a copy with the hardware board name.

**Note:** Nord Lead 2 and 4 templates will automatically switch to a MIDI CC oscillator that syncs the selected waveform oscillators with the hardware.

## Version History

---

### Release 8.4.4

- New Markov Chain Arpeggiator mode: This mode enhances random arpeggiation by using machine learning techniques. It creates evolving musical patterns through a dynamic probability matrix that learns from its own note selections, generating sequences that are both unpredictable and musically coherent. Each note influences future choices, resulting in unique and captivating arpeggios.
- Enhanced VA Oscillator Label and LED Click logic: The LED Click and Label Shift+Click now toggle the oscillator On/Off and remember the last On state. When the label is clicked, if the oscillator is Off, it turns On to the last state. If the oscillator is already On, clicking the label toggles between Free Run and Retrigger Phase modes. The last On state is always updated after changes, ensuring a seamless user experience.
- Fixed WAVE engine loop clicks: The WAVE engine has been refactored with up-to-date and improved DSP techniques, eliminating unwanted loop clicks and enhancing overall audio quality.
- PI values on the DSP have been updated as long doubles: To further improve audio quality and precision, the PI values used in the DSP calculations have been updated to long doubles, ensuring more accurate mathematical operations and smoother sound generation.
- Updated XML save functions: The XML save functions have been updated to ensure compatibility, reliability, and efficient data management when saving and loading presets and settings.
- Refactored rounding integer functions: We have refactored some rounding integer functions to improve efficiency, resulting in faster processing and smoother overall performance.

### Release 8.4.3

- We have enhanced the envelope handling to ensure filter and amp envelopes continue smoothly from the previous note's envelope point, resolving issues with incorrect retriggering. Additionally, portamento (glide) functionality in mono mode has been improved, particularly with the auto feature enabled. Now, portamento is correctly applied during legato play, ensuring seamless transitions between notes.

### Release 8.4.2

- Resolved 2x oversampling sound issues and enhanced performance through unrolled loop optimization.

## Release 8.4.1

- Improved plugin GUI load times by optimizing the GUI initialization.
- Fixed an issue with the oversampler initialization.

## Release 8.4

- Oscillator Optimizations: Optimized the filter and oscillator code for enhanced performance on x86 processors, with substantial performance improvements on Apple ARM processors.
- Wave Oscillator optimization: Around 30% faster processing by moving from scalar to SIMD processing. This includes new NEON code for ARM processors and optimized SSE4.1 instructions for faster, more efficient performance.
- Filter Improvements: Introduced a more optimized tangent plot using scalar optimizations, effectively reducing CPU load and improving efficiency.
- 4x Oversampling: Implemented 4x oversampling to significantly enhance audio fidelity, ensuring superior sound quality for the end user.
- New Bounce Oversampling Configuration: Added a Bounce.xml file for configuring oversampling during offline rendering. The default is set to 4x oversampling for optimal sound quality, but it can be adjusted to lower settings if necessary. This file is located in the Documents > discoDSP > Discovery Pro > Config folder.
- New Default Settings: Configured to 16 voices and 2x oversampling. Users can change this through the Edit Menu or by clicking the Voices LCD.
- Updated LCD status sections: Display the current waveform and destination for LFO1, Arp Mode, and destination for LFO2/Arp, and the waveform for both Oscillator 1 and 2 when buttons or LEDs are pressed.
- 2x Undersampling improvements: Fixed gain compensation issue.

## Release 8.3

- New Modulation Gate Randomizer: We have introduced a new modulation gate randomizer function that incorporates waveform-based oscillations. This enhancement allows for more dynamic and varied rhythmic patterns by applying different waveforms (sine, square, triangle, sawtooth) to the modulation gates. The waveform type and phase are randomly selected, generating oscillating values that fluctuate between 0 and 1, resulting in a richer and more intricate rhythmic experience.
- New House Matrix Gate Randomization: In addition to the existing Jazz and Techno patterns, we have added a new House matrix gate randomization type. This pattern is specifically tailored to create more dynamic and interesting transitions, which are essential for house music. The House matrix features higher probabilities for staying in the same state or transitioning to adjacent states, promoting a smoother and more continuous rhythmic flow typical of house music, enhancing the overall musicality and feel of the generated patterns.
- The panning LCD display has been updated to show musical note values based on tick values. Now, when you adjust the panning, the display will show musical notes like 1/8, Dotted 1/8, 1/4, and so on. For longer durations, it will show bars (e.g., 3.0 Bars).



## Release 8.2

- PADSynth clicks during rendering have been eliminated by implementing a 4-sample fade-in and fade-out, ensuring smoother looping.
- The rendering time for PADSynth has been extended from 6 to 24 seconds, allowing for longer and more complex sounds.
- PADSynth files now include "loop enabled" and "loop point" tags in the SFZ format, improving compatibility with a wider range of third-party samplers, such as the Bliss sampler. This update aims at broadening PADSynth's usability across different digital audio workstations and sampler platforms.
- To ensure a fresh cache and optimal performance, the installation process now removes specific folders related to PADSynth's cache.
- MIDI Out functionality has been disabled when using ProTools to avoid conflicts with the new MIDI FX plugin type, enhancing stability and compatibility.
- The default number of voices has been increased to 64, allowing for richer and more complex soundscapes.
- The Popup Menu has been revamped, featuring a new, sleek black translucent background with rounded corners for a more modern and aesthetically pleasing user interface.
- Cursor behavior has been enhanced to change dynamically to a pointer in less obvious interactive areas, improving user interaction and navigation clarity.
- More robust online activation which handles some rare issues in Windows systems.
- Minor internal fixes and enhancements.

## Release 8.1

- Added Discovery Pro Sound Expansion to the registered version. This expansion enriches your sound library with 330 high-quality commercial presets, offering a wide range of sonic possibilities. Details of the included banks are as follows:
  - Essentials Sound Bank: A versatile collection featuring 5 Sequences, 13 Basses, 26 Leads, 18 Pads, and 2 Percussion Kits.
  - Leading Sound Bank: A comprehensive set of 128 presets, including gated sounds, leads, pads, basses, keys, and effects.
  - Pad Love Sound Bank: A specialized selection of 80 presets, dedicated entirely to pad sounds.
  - Reaching The Stars Bank: An exclusive bank with 58 top presets for Discovery Pro, meticulously crafted by Mario Fest.
- Linux build.
- Relocated new VA Oscillator's HD Waves resources, resulting in a much smaller installer.

## Release 8.0

### **DSP Improvements:**

- Refined Oscillators: Experience enhanced detail in oscillators, with 2X improvement in both low and high frequencies.
- Advanced Distortion Modes: Enjoy 4X more precise distortion modes for added depth and character in sounds.
- Analog-Sounding Filters: Moog XY filters updated to provide 2X more analog-like warmth and texture.

### **Enhanced Preset Management with Disk Mode:**

- New Disk Mode for easier browsing of presets and folders located in Documents > discoDSP > Discovery Pro > Presets > Programs.
- Switch between Bank and Disk Mode by clicking the BNK letter on the LCD.
- New file preset export functions available in the Edit menu.
- Expanded Preset Library offering a wide range of new presets to inspire and enhance musical creativity.

### **Other Improvements:**

- Tick to Grid Value Conversion: Synced Tick values are now also displayed as grid values for a more traditional musical display, such as pentagram note bars.
- Framework update.
- Streamlined EDIT menu.
- Discovery Pro 8 is fully compatible with version 7. Projects and presets from previous versions will load seamlessly without any issues.

## Release 7.9

- Refined the Rhythmic Pattern Transition Probabilities and amalgamated them into a singular function. This function randomly selects patterns for standard, jazz, and techno matrixes.
- Introduced the feature under Edit > Randomize > Layer/Program from Disk. This feature loads a random layer or program from the available banks.
- Optimized zone presets and editing menus.
- Incorporated the edit Gate and Mod Repeat functions for 4, 8, and 16 cells.
- The Mod zone cell values can be modified numerically through a right-click (or ctrl-click on macOS).
- The editing menu can be accessed from any location on the GUI in macOS using ctrl+click.
- Rename preset option now automatically focuses on the text input box.
- Resolved a tuning issue with the WAVE oscillator when the plugin is initiated on blank tracks.
- The WAVE import dialogue has been made more efficient.
- Revamped the popup menu to address display anomalies.
- Ensured that popup menus consistently display in a downward direction.
- Resolved a standalone MIDI Bluetooth malfunction occurring post-click.
- Updated the underlying framework.
- Integrated the most recent versions of VST3 and AAX SDKs.
- Addressed rendering complications pertaining to macOS Metal.

## Release 7.8.3

- The VST3 build now utilizes a continuous parameter index for optimal graphical user interface (GUI) responsiveness.

## Release 7.8.2

- Activation window issue, where it was opening in the background, has been fixed.
- A fix has been implemented to address a VST3 parameter issue.
- Default skin assets have received minor updates.
- The issue of noise running with license activation in some DAW hosts has been resolved.
- The message dialog for 'legacy banks not found' has been removed.
- Certain menus have been sorted for improved navigation.

## Release 7.8

- New Silver Haze skin by Ilkka Rosma.
- Updated default Nordic Dawn skin.
- New Shadow Wave skin.
- Updated and new skins now include 30x and 40x assets for high-resolution 1.5x and 2x GUI size display.
- Fixed standalone program change function.
- Fixed Quick Stack behavior. Now, current layer blinks if it's active.
- Added octave submenus to Custom Key Split dropdown.

- Clicking Key Split dropdown / led now rotates between Off, Dual, Custom, Custom (edit) states.
- Other minor fixes and enhancements.

## Release 7.7.3

- Resolved an issue where the Standalone build was unresponsive to knobs on all OS systems.
- Rectified the problem of the WAVE octave LED not responding to clicks.
- New icon in the style of macOS Big Sur for the macOS standalone version
- Implemented improvements to enhance overall stability.

## Release 7.7.2

- Fixed Popup menu behavior.
- Fixed Wave octave + - buttons and knob for accurate behavior.

## Release 7.7.1

- Fixed a minor issue where multi-channel bus configuration was unavailable in the VST, VST3, and AU versions.

## Release 7.7

- The ProTools AAX plugin has been compiled as a universal binary, with native support for Apple Silicon architecture.
- The license activation system has been integrated into the plug-in, eliminating the need to input the serial number during each installation.
- The Percussion banks [64] Percussion 1 and [65] Percussion 2 have been updated with oscillator phase reset enabled.
- New menu option 'Program' which lists the saved presets in Documents > discoDSP > Discovery Pro > Presets > Programs, providing quicker access to favourite presets.
- The Wave + and - Octave Shift buttons are now functioning correctly.
- Added the behaviour of the Shift + left click function on the oscillator label or LED to toggle only between its current On state and the Off state.

## Release 7.6

- Oscillator phase reset feature, which can be accessed by clicking the oscillator label or selecting it from the menu under the "swap" option.
- Major update to the framework has been implemented.
- Optimized PADSynth rendering based on system specifications and number of CPU cores available.
- Fixed PADSynth issue where WAVE oscillator was muted after disabling PAD mode.
- Added AI-based pattern randomization with standard, jazz, and techno models for Gate and Mod Gates.
- Minor graphical user interface enhancements made.

- New macOS icon has been added.
- "Save Program to Disk" function will allow the user to save the current program directly to the "Documents > discoDSP > Discovery Pro > Presets > Programs" folder.

## Release 7.5

- Framework update with enhanced stability and reliability.
- AAX SDK update.
- Most GUI labels are now clickable.

## Release 7.4.2

- Fixed filter attack MIDI learn and parameter issue.
- Fixed macOS GUI window always on focus issue.
- Fixed Nord Lead 2 SysEx preset and bank export issue.

## Release 7.4.1

- Fixed macOS sound init issue.
- Fixed macOS parameter issue.

## Release 7.4

- Framework update with enhanced stability and reliability.
- Universal 2 Binary ProTools AAX for future proofing.
- AAX plugin now compiled with the latest 2.4 SDK.
- Bypass FX now persistent across bank changes.
- Enabled 2X GUI size for HiDPI displays.
- Fixed Skins folders not working in Linux.
- Fixed MIDI XML templates not working in Linux.
- Fixed MIDI learn not working in Linux.
- Nord Lead 2/4 MIDI templates now mirrors sync oscillator type with the board.

## Release 7.3.3

- Fixed SysEx import/export issue.

## Release 7.3.2

- Active WAVE oscillator now displays correctly at popup menu.
- Fixed crash after clicking < or > on WAVE LCD.
- Fixed first bank preset WAVE not sounding after loading.
- Fixed issues with WAVE oscillator and AAX plugin.

## Release 7.3.1

- Fixed AAX crashing ProTools after loading.

## Release 7.3

- New default Nordic Dawn skin by Ilkka Rosma.
- New edit menu skins selector.
- New Gate and Mod 0.5x / 1.0x / 2x speed switch under Edit drop down.
- Added Gate and Mod cell position highlight.
- Gate and Mod GUI fixes after reopening window.
- Fixed Shift + left click behavior in Gate and Mod cell editing.

## Release 7.2

- Updated framework fixing VST3 parameter issues and greater stability.
- ProTools AAX support for Windows and macOS.
- Fixed AAX init patch bug.
- Linux VST3 build.
- Removed Linux curl dependency for greater compatibility.
- macOS Universal 2 Binary compiled with XCode 12.4 and new build system.

## Release 7.1

- Universal 2 Binary for Apple M1 Silicon chips.
- Enhanced MIDI CC with board XML based presets and MIDI learn.
- Fixed drop down filter menu disappearing after click.
- Right click to morph support for all platforms.
- Mouse wheel support for knobs.
- Major framework update.
- Updated VST 3 SDK.
- GUI fixes.
- Critical Linux bug crash.

## Release 7.0

- Active voices are now muted on program change.
- ASIO support in Windows Standalone app.
- EDIT menu redesign and enhancements.
- Enhanced preset interaction with AU and VST3 hosts.
- Fixed automation parameter display in Cubase VST3.
- Framework update for increased stability and compatibility.
- Full bank preset categorization. Now 100 banks available.
- macOS Standalone native menus and look & feel.
- Parameter refactor with enhanced automation and proper learn, touch and latch modes support.
- Preset list enhancements for VST3 and AU.
- Removed Linux Webkit component for increased compatibility.

## Release 6.9

- Code signed files ready for macOS Catalina.

- Rewritten multichannel bus configuration.
- Windows and Linux standalone.
- Linux standalone JACK support.
- New 128 presets bank by Thomas Hook.
- Major framework upgrade for enhanced compatibility and stability.
- Compiled with XCode 10.3, VS 2019 and Ubuntu 18.

## Release 6.8.1

- Fixed ADR LCD values in Windows build.

## Release 6.8

- Drag and drop support for FXP / FXB / SYSEX / WAV / SF2 / DWB files.
- Gate and Modulation mouseover displays values.
- Modulation envelopes scroll wheel support.
- Removed OSC2 / WAVE semitone decimals from LCD display.
- Dynamic display for ADSR time values.
- Aftertouch displays amount in % and + - correctly.
- Fixed pitch bend issue importing Discovery banks.
- Fixed Quick Stack Master volume issues.
- Fixed MIDI to Velocity swap tick.

## Release 6.7.1

- Fixed Phaser Filter issues.

## Release 6.7

- Layer solo: Use Alt + click on slot / button to solo / unsolo layer.
- EDIT > File > Save Program to Active Bank.
- EDIT > Paste > Morph to all layers.
- EDIT > Paste > Pitch to all layers.
- Bank change controller 0 support.
- Fixed macOS bank change controller crash.
- Fixed Aftertouch mode not refreshing correctly.
- Fixed WAVE font size LCD.
- Fixed Empty WAVE Program/Bank display.
- Removed License.dat check.

## Release 6.6

- Mac (x32/x64) / Windows (x32/x64) VST3 support.
- Multi-channel support.
- Mac standalone.
- Added 1.5x GUI size for Retina displays.
- GUI fixes and speed up by disabling image caching.

## Release 6.5.1

- Fixed Cubase issues.
- Updated framework for better stability and performance.
- OS X: Compiled with Xcode 7.3. OS X 10.6 or higher is required.

## Release 6.5.0

- Added Retina GUI support for Hi-DPI displays including minor enhancements.
- Added 15 new banks and thousands of new waveforms. 10 banks reworked.
- Added **License.dat** copy protection. This file is provided at discoDSP Members Area or new purchases. It has to be placed at **Documents > discoDSP > Discovery Pro** folder to make the plug-in run.
- Added EDIT > Config > MIDI Out option.
- Added flat popup active option color.
- Fixed hanging notes issue.
- Fixed Linux file menu issues.
- Fixed Linux bank import.
- Increased performance and stability.
- Data folder location changed to **Documents > discoDSP > Discovery Pro**.
- OS X: Compiled with Xcode 6.4. OS X 10.6 or higher is required.

## Release 6.4.6

- Fixed portamento behavior where only first unison voice was affected.
- Fixed delay copy/paste function.

## Release 6.4.5

- OS X: Compiled with Xcode 5.1.1.
- Added shared memory to copy/paste layers/programs between Discovery Pro instances.
- Fixed inverse program change bug.
- Fixed OSC 2 noise to LFO1/2/MOD ENVELOPE - OSC 2 / OSC 1+2 rates behavior.

## Release 6.4.4

- Fixed BandReject filter behavior.

## Release 6.4.3

- Enhanced unison tuning.
- Fixed swapping programs voice channel management.

## Release 6.4.2



- Auto-loop for single cycle waveforms with less than 2048 samples.
- Auto-tune for unlooped waveforms.
- Enhanced voice stealing algorithm.
- Wave oscillator .wav fine-tune support.

## Release 6.4.1

- Double clicking a knob resets to original position.
- Mod amount now reflects mouse values and OCT range correctly.
- Drop down menu from KeySplit hides after switching presets if it's displayed.
- Enhanced LCD fonts.
- Filter Attack MIDI CC changed to 38 (like NL2) on all platforms. 89 remains for FL Studio due compatibility issues.

## Release 6.4

- New Nord Lead 2 modeled Unison.
- SysEx import now supports MIDI files.
- Enhanced SysEx Import.
- Edit > Swap > Bank > Chorus to Unison.
- Edit > File > Export Nord Lead 2 SysEx Bank.
- 1.5x / 2.0x GUI graphic fixes.
- Unison CC 16 / Phaser Chorus CC 50.
- Updated Help > MIDI CC.
- Banks 11 to 45 Chorus effect switched to Unison for better sound quality.

## Release 6.3.1

- Fixed Graphic Modulation Envelope erratic behavior.
- Fixed PAD ECO button graphics.
- Fixed LCD Bank cell display graphics.

## Release 6.3

- EDIT > GUI Size (1 / 1.5 / 2x) up to 1780x800 size.
- Full GUI code re-write. Faster, smoother, remarkable CPU usage reduction.
- Major internal structure re-write and clean up.
- Linux VST support.
- Revised manual.

## Release 6.2

- New 128 voices polyphony option.
- Export program enabled in demo.
- SysEx export Nord Lead compatible.
- Reorganized and streamlined EDIT, preset menus and dialog windows.

- Morphing values shown if different from zero only.
- Broader bank/program LCD text.
- Midi CC # / Disabled added to EDIT > Swap > Aftertouch To.
- PADsynth button displays green if ECO mode is enabled.
- Fixed missing Wave.dat dialog hang.
- Fixed GUI background gradient misplacement.
- Fixed Quick Stack using Keysplit behavior.
- Fixed OSC 2 octave display LED bug.

## Release 6.1

- EDIT > Quick Stack. Navigate thru any banks and presets without leaving current program.
- DWB 2.0 supporting embedded SF2 and Corona Wave Expansion DWB files.
- Multi-out per layer (VST only).
- EDIT > Paste > Layer to copies values from active layer instead memory.
- EDIT > Key Split > Custom. Configures A/B/C/D at any key range independently.
- Key Split GUI graphics display on current mode (off / dual / custom).
- Key Split Custom drop down menu switch / hide button (x).
- Revised manual.
- Bug fixes.

## Release 6.0

- New Nord Lead 2 modeled filters using Zero Delay Feedback technology.
- Data folder now placed at **Documents > discoDSP > Discovery Pro 6**.
- EDIT > Reset > Bank / Program / Layer will get values from **Documents > discoDSP > Discovery Pro 6 > Presets > Default.fxp** file.
- EDIT > Paste > Layer to > All / A / B / C / D / A+B / C+D.
- EDIT > Switch > PadSynth Eco Mode. Re-synthesizes a single octave instead.
- EDIT > Key Split. Play Layers A/B from C0 to B3 and C/D from C4 to B9.
- Revised and tweaked 45 banks also updated to ZDF filters.
- Revised manual.

## Release 5.6

- OS X 64-bit VST.
- Data folder moved to **Documents > discoDSP > Discovery Pro** with categorized folders.
- EDIT > Reset > Program and Layer read the settings from Documents > discoDSP > Discovery Pro > Presets > Default.fxp file now.
- EDIT > File > Import WAVE automatically places WAV files at discoDSP > Discovery Pro > Waves > User.dwb
- EDIT > Reset > Program Undo will revert back to the original preset located on the current bank.
- EDIT menu restyled to white text over black background.
- Added Paste to All, A, B, C, D at Zone Preset drop down menu.
- Enhanced Morph values. Tick values are show when synced to tempo.

- Bug fixes.
- Manual revision.

## Release 5.5

- Better FXP preset export compatibility.
- Renaming a preset shows the original name instead blank.
- Overwrite warning when a bank file already exist.
- File dialog boxes now remember last opened locations.
- Banks located at Data folder refresh autocratically.
- Small EDIT menu fine-tune.
- Manual revision.

## Release 5.4

- 64 Bit Audio Units for Mac.
- 64 Bit VST for Windows.
- PAD resynthesized waves now render correctly under x64 OSes.
- Pitch and Mod Wheel events now recordable from GUI.
- MOD value mouse range behaves correctly now.
- Corrected arpeggio with MIDI Sustain behavior.
- EDIT > Reset > Layer Aftertouch.
- EDIT > Reset > Program Aftertouch.
- EDIT > Reset > Program Morphing
- EDIT > Bank import. Places FXB+DWB files at Discovery Pro Data folder.
- EDIT > Help > Release number added.
- EDIT > Switch > Aftertouch to > Aftertouch, Foot (CC# 4), Expression (CC# 11) and Breathe (CC# 2).
- Bug fixes.

## Release 5.3

- Aftertouch support. EDIT > Switch > Aftertouch mode or Shift + Click ABCD button.
- Faster Sine Wave VA oscillator.
- MIDI CC Switch to edit Layers A-D using #63.
- EDIT > Help > Open HTML Manual.
- EDIT > File > Open Presets Folder.
- Drop down preset zone menus are alphabetically sorted now.
- Drop down presets available for WAVE zone.
- Wave OSC tabs order changed to WAVE DELAY GATE MOD.
- Bigger click area for Wave tabs.
- Optimized Program and Bank LCD display names.
- Small GUI restyling.
- Revised Manual.
- Bug fixes.

## Release 5.2

- WAVE LCD display now shows waveform numbers.
- Fixed clicks with Factory and Classics wave banks.

## Release 5.1

- VST panel displays correctly in Cubase OS X.
- Better preset name handling in Zone Presets.
- Better behavior using Reaper.

## Release 5

- WAVE PAD Synthesis Button. Re-synthesis of any active Wave using PAD algorithm, generating a SFZ file (Data Folder/PAD Cache).
- New Classic.dwb WAVE bank, including over 250 popular synthesizer waveforms.
- New voice stealing algorithm.
- 24-bit wave files support for User Bank (Data Folder/User.dwb).
- Help > Tutorials screen shots, MIDI CCs and Manual access.
- Edit > Smart Randomization.
- File > Nord Lead 2 SysEx Export.
- File > Open Data Folder.
- File > Open Unison Configuration.
- Edit > Config > MIDI CC Buttons switch.
- WAVE Active file is now marked in the drop down menu.

## Release 4

- Zone presets. Each section can save individual presets based on the current state. It's available by clicking the white small drop down menu icon located at the top left corner.
- Gate values are now displayed at the LCD when mouse is over.
- Engine fixes.
- Host compatibility fixes.
- Manual revision.
- Mac DMG image now includes alias to Audio Units, VST, RTAS and Plug-Ins folders for an easier installation.
- Apple GarageBand 09 and Logic 9 compatibility.
- RTAS version.

## Copyright

---

Discovery Pro is © [discoDSP](http://discoDSP.com). All rights reserved.