



Documentation

Contents

- [Deluge Community Firmware Change Log](#)
 - [Recent Changes](#)
 - [Recently merged into main 18 changes](#)
 - [c1.3.0 Derbyshire Upcoming](#)
 - [c1.2.1 Chopin Latest release](#)
 - [c1.2.0 Chopin](#)
 - [c1.1.1 Beethoven](#)
 - [c1.1.0 Beethoven](#)
 - [c1.0.1 Amadeus](#)
 - [c1.0.0 Amadeus](#)
 - [Footnotes](#)
- [Overview](#)
 - [1. Introduction](#)
 - [2. UI Changes from Official](#)
 - [3. General Improvements](#)
 - [4. New Features Added](#)
 - [4.1 - Session View Features](#)
 - [4.2 - Clip View - General Features \(Instrument and Audio Clips\)](#)
 - [4.3 - Instrument Clip View - General Features](#)
 - [4.4 - Instrument Clip View - Synth/MIDI/CV Clip Features](#)
 - [4.5 - Instrument Clip View - Synth/Kit Clip Features](#)
 - [4.6 - Instrument Clip View - Kit Clip Features](#)
 - [4.7 Instrument Clip View - Midi Clip Features](#)
 - [4.8 - Instrument Clip View - CV Clip Features](#)
 - [4.9 - Audio Clip View - Features](#)
 - [4.10 - Third Party Device Integration](#)
 - [5. Community Features Menu \(aka Runtime Settings\)](#)
 - [6. Sysex Handling](#)
 - [7. Compiletime settings](#)
- [Arpeggiator](#)
 - [Video Tutorials](#)
 - [Arpeggiator Modes \(or Presets\) c1.1 Feature](#)
 - [Arpeggiator Parameters \(submenus\)](#)
 - [Kit Arpeggiator c1.3 Feature](#)

-
- [Audio Export](#)
 - [Video Tutorials](#)
 - [Description](#)
 - [Exports Folder](#)
 - [File Names](#)
 - [Shortcuts to Start/Stop Exporting](#)
 - [Recording Parameters](#)
 - [Audio Export Menu](#)
 - [Multi-Sampling using Kit Audio Export c1.3](#)
 - [Troubleshooting](#)
 - [Videos](#)
 - [Automation View](#)
 - [Video Tutorials](#)
 - [Description](#)
 - [Summary](#)
 - [Enter/Exit Automation View](#)
 - [Automation Overview](#)
 - [Parameter Selection](#)
 - [Automation Editor](#)
 - [Default Settings](#)
 - [Fun things to try with the new Automation Clip View](#)
 - [Development Notes](#)
 - [De-scoped Items \(Future Release\)](#)
 - [Button Shortcuts/Combos](#)
 - [Automation View: Note Velocity Editor](#)
 - [Video Tutorials](#)
 - [Description](#)
 - [Quick Overview](#)
 - [Chord Keyboard and Library](#)
 - [Video Tutorials](#)
 - [Description](#)
 - [Chord Keyboard Layout](#)
 - [Chord Library Layout](#)
 - [DX7 Synth](#)
 - [Video Tutorials](#)
 - [Description](#)

-
- [Usage](#)
 - [Engine versions](#)
 - [Patch Sources](#)
 - [Missing features](#)
 - [Looping in Grid View](#)
 - [Video Tutorials](#)
 - [Description](#)
 - [Create and immediately arm a clip within an existing track for recording](#)
 - [Select an existing clip and use the Global MIDI Commands: LOOP and LAYERING LOOP](#)
 - [MIDI Device Definition Files](#)
 - [Rename a MIDI CC](#)
 - [Save MIDI CC Name\(s\)](#)
 - [Load MIDI CC Name\(s\)](#)
 - [Linking / Unlinking a MIDI Device Definition File](#)
 - [Hiding / Unhiding Unlabeled CC'S](#)
 - [Tips and Tricks](#)
 - [Midi Device Definition File Layout](#)
 - [MIDI Follow Mode with MIDI Feedback](#)
 - [Video Tutorials](#)
 - [Description](#)
 - [Usage](#)
 - [Re-cap of functionality](#)
 - [Troubleshooting](#)
 - [Appendix A - List of Deluge Parameters with Default Mapped CC's](#)
 - [Appendix B - Loopy Pro Template for Deluge MIDI Follow Mode](#)
 - [Appendix C - Touch OSC Template for Deluge MIDI Follow Mode](#)
 - [Appendix D - Electra One Template for Deluge MIDI Follow Mode](#)
 - [Appendix E - Melbourne Instruments Roto-Control Templates for Deluge MIDI Follow Mode](#)
 - [Appendix F - Neuzeit Instruments' Drop Templates for Deluge MIDI Follow Mode](#)
 - [Note / Note Row Editor](#)
 - [Enhance Note Probability, Iteration and Fill](#)
 - [Note Editor Menu](#)
 - [Note Row Editor Menu](#)
 - [Performance View](#)
 - [Video Tutorials](#)
 - [Description](#)

-
- [Usage](#)
 - [Default FX and Colour Assignments](#)
 - [Save and Load Patterns](#)
 - [Creating Pattern Files](#)
 - [Feature Benefits](#)
 - [Introduction](#)
 - [Sketching song ideas](#)
 - [Writing and arranging complete songs](#)
 - [Live looping](#)
 - [Controlling and sequencing external gear](#)
 - [Getting Oriented](#)
 - [Song Modes and Workflow](#)
 - [Clip Types](#)
 - [Concepts](#)
 - [Song](#)
 - [Track](#)
 - [Clip](#)
 - [Modes](#)
 - [Views](#)
 - [Menus](#)
 - [File Browser](#)
 - [Hardware controls](#)
 - [MIDI controls](#)
 - [Diagram](#)
 - [Community Firmware 1.1](#)
 - [Power](#)
 - [Turning on the Deluge](#)
 - [Power Sources](#)
 - [CPU and Memory](#)
 - [Processing power and CPU management](#)
 - [Sample Interpolation / Pitch](#)
 - [Sample and RAM management](#)
 - [Synth voices vs Samples](#)
 - [SD Card](#)
 - [Updating Firmware](#)
 - [File structure](#)

-
- [Slot](#)
 - [Formatting](#)
 - [Card selection](#)
 - [Display](#)
 - [7-segment](#)
 - [OLED](#)
 - [Ports](#)
 - [Audio](#)
 - [Non-audio](#)
 - [Controls](#)
 - [Knobs](#)
 - [Buttons](#)
 - [Pads](#)
 - [MPE](#)
 - [MPE overview](#)
 - [Configuration](#)
 - [Troubleshooting](#)
 - [User Interfaces](#)
 - [Device Files](#)
 - [Audio Files](#)
 - [Audio file tags](#)
 - [Loading into Audio clip](#)
 - [Loading into Kit clip](#)
 - [Loading into Synth clip](#)
 - [Deleting audio files](#)
 - [Sequencer](#)
 - [Playhead direction](#)
 - [Note sequence](#)
 - [Note parameters](#)
 - [Randomizer](#)
 - [Arpeggiator](#)
 - [Automation sequence](#)
 - [Automation parameters](#)
 - [Engines](#)
 - [Playback](#)
 - [Session Mode](#)

-
- [Arranger Mode](#)
 - [Recording](#)
 - [Resampling / recording the Deluge's output](#)
 - [Count-in](#)
 - [Arming to Record](#)
 - [Audio Track Input Source](#)
 - [Live recording basics](#)
 - [Live recording into Audio clip](#)
 - [Sampling audio into Kit clip](#)
 - [Live recording Notes and Automation](#)
 - [Live recording Audio / Notes / Automation into Arranger tracks](#)
 - [File Browser](#)
 - [Menu](#)
 - [View](#)
 - [Synth / Sample Engine](#)
 - [MIDI Engine](#)
 - [Controlling external gear with the Deluge](#)
 - [Controlling the Deluge with external gear](#)
 - [Controlling the Deluge with the Deluge](#)
 - [CV / Gate Engine](#)
 - [Outputs](#)
 - [CV clips](#)
 - [Pitch to voltage](#)
 - [Gate timing](#)
 - [Run signal and trigger clock](#)
 - [Gate kit rows](#)
 - [Shortcuts](#)
 - [All Views](#)
 - [Parameter Control - Rotary Push Controls - Toggle Options](#)
 - [Song View](#)
 - [Arranger View](#)
 - [Clip View](#)
 - [Sound Editor](#)
 - [Synth, Keyboard, MIDI, CV Clips](#)
 - [Kit Clips](#)
 - [Keyboard](#)

-
- [Automation & Automation Editor - Clip View](#)
 - [Menu Hierarchies](#)
 - [Settings](#)
 - [Song](#)
 - [Clip](#)
 - [Tips and Tricks](#)
 - [Links and resources](#)
 - [FX](#)
 - [VU Meter](#)
 - [Song View](#)
 - [Arranger View](#)
 - [Clip View](#)
 - [Resampling](#)
 - [Sound Design](#)
 - [Performance](#)
 - [Generative strategies](#)
 - [MIDI](#)
 - [CV / Gate](#)
 - [Trigger Clock](#)
 - [Clip sequencing study](#)
 - [Questions and Answers](#)
 - [Hardware](#)
 - [Arranger view](#)
 - [Clip view](#)

Deluge Community Firmware Change Log

↓ Jump to latest release

Note

To find a detailed list of how to use each feature, check the [Feature Overview](#)!

Tip

A new shortcuts page is available, check the [Deluge Companion](#)!

Recent Changes

Recently merged into main 18 changes

Generated from the first-parent history at [8eeef32f](#) on Oct 14, 2026. Excludes 4 detected reverted changes. Manual or partial reversals may not be detected.

The latest activity includes 4 features, 10 fixes, 3 documentation updates, and 1 other change.

Features

- [Enable interpolation again](#) #5015
- [Add Voice Usage Menu](#) #5005
- [Tempo automation editing_\(rebased\)](#) #4942
- [Update note editor - note selection pad handling and selected pad pulsing](#) #5003

Fixes

- [Refresh note editor menu for velocity changes](#) #5016
- [Bugfix - add port when sending a CC to a specific usb cable](#) #5013
- [Handle full queue](#) #5014
- [Fix silent stems in offline stem export](#) #5012
- [Remove note sequence compatibility with previous firmwares](#) #5004
- [Fix glitch at power-on with Looper/Sampler audio clip](#) #4637
- [Black detented encoders](#) #5008
- [Add delay sync type to delay cloning](#) #5006

	• Don't block on the SD card when rendering song row view waveforms #4981 • Grain fx #5007
Documentation • Update missing menu hierarchy firmware version tags #5017 • Adding body.css + fixed fonts in templates for a better offline pdf #5011 • Make deluge community docs available offline as pdf #5001	Other changes • Performance - intermediate midi queue #5009

c1.3.0 Derbyshire Upcoming

Major Workflow / UI Changes from Official or Previous Community Releases

Audio clips / Audio Clip View

- Added audio output modes, and changed audio clip monitoring to be separate from source selection. Monitoring is now on when the output is a SAMPLER or a LOOPER, chosen by turning the select knob in an audio clip.
- Added the ability to trim from the start of an audio clip without reversing it (enable in Community Features menu).
- Added Edit Name menu to Actions > menu which allows you to rename the Audio Clips Track Name and Clip Name. **Shift** + NAME **Pad** will now open the Actions > Edit Name menu.

Arranger View

- You can now record tempo automation in arranger view.
 - With playback and record enabled, **turn  Tempo** or **press & turn  Tempo** to record tempo in the arrangement.
 - You can also record / edit tempo at specific positions in the arrangement by holding a specific arrangement pad + **turn  Tempo** or **press & turn  Tempo**
 - Note: when you hold a specific position in the arrangement and turn the tempo encoder for the first time, it will display a popup with the current tempo at that position.

Session View

Creating New Clips

- Updated mechanism for creating New Clips in New Tracks in `SESSION GRID VIEW` and `SESSION ROW VIEW`.
 - The default clip type for new clips created can be configured in `SETTINGS > DEFAULTS > UI > CLIP TYPE > NEW CLIP TYPE` menu.
 - You can also configure whether the clip type for the next clip type you create should default to the last clip type you created. This helps with fast creation of multiple clips of the same type. You can enable this default setting in the `SETTINGS > DEFAULTS > UI > CLIP TYPE > USE LAST CLIP TYPE` menu.
 - NOTE for `SESSION ROW VIEW`: The default clip type / last clip type setting cannot be used with CV clips and Audio clips in Session Row View. If you set the default to CV or Audio or enable use of the last clip type (and the last clip type is a CV or Audio Clip), then it will create a Synth clip by default.

MIDI Follow

- MIDI Follow settings are no longer stored in Flash Memory. They are now saved in the `MIDIFollow.XML` file found in `SD CARD/Settings/MIDIFollow.XML`
- If you are updating to `c1.3` from an earlier firmware, please delete all existing `MIDIFollow.XML` files from your SD card so that the file can be re-generated with the new file format.

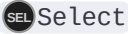
Instrument Clips / Instrument Clip View

General

- Added `Edit Name` menu to `Actions >` menu which allows you to rename the Track Name and Clip Name.
 - `Shift + NAME Pad` will now open the `Actions > Edit Name` menu.
 - Note for Kits, the `Edit Name` menu is in the `Kit FX > Actions` menu which you access by enabling `Affect Entire` and then pressing `SEL Select`.

Notes

- Note velocity is now displayed in clips using colour intensities. The note head (the bright part) now stands out from the tail in proportion to its velocity. At velocity 127 it is identical to official, at velocity 0 it would look the same as its tail (but you can't have 0 velocity).
- Enhanced existing note probability, iteration and fill function functionality by enabling you to use each type independently. This means that you can now apply probability to iteration and fill and you can also apply iteration to fill.

- To edit probability, hold a note / audition pad and turn the select encoder to the left to display current probability value / set new probability value.
- To edit iterance, hold a note / audition pad and turn the select encoder to the right to display current iterance value / set new iterance value.
- To edit fill, hold a note / audition pad and press sync scaling to view the current fill setting and cycle through fill modes.
- Added new note and note row editor menu's to edit note and note row parameters.
 - Hold a note and press the select encoder to enter the note editor menu. While in the note editor menu, the selected note will blink. You can select other notes by pressing the notes on the grid. In addition, notes which have had their probability, iterance or fill settings changed from default will be highlighted yellow to help quickly identify edited notes.
 - Hold a note row audition pad and press the select encoder to enter the note row editor menu. While in the note row editor menu, the selected note row's audition pad will blink. You can select other note row's by pressing the note row audition pad or by scrolling with the vertical encoder.
 - The iteration is now also customizable with custom iteration steps. If you scroll the iteration parameter all the way to the right, you will see the CUSTOM option. If you click the  encoder, a new menu will appear to select the DIVISOR parameter (you can select from 1 to 8), and also as many ITERATION # toggles as DIVISOR is set, to allow you to activate or deactivate each iteration step.

Layered Shortcuts

- Layered Shortcuts mechanism allows multiple shortcuts to be accessed under a single shortcut pad. Holding  and pressing the same  again cycles between shortcuts. The items available under layered shortcuts can also be accessed from menu: layered shortcut is never the only access method.
- Following shortcuts have layers:
 - ENV shortcuts: cycles between envelope 1 and 3 (ENV1 shortcuts), and envelope 2 and 4 (ENV2 shortcuts). This also applies to ENV modulator shortcuts.
 - LFO shortcuts: cycles between LFO 1 and 3 (LFO1 shortcuts), and between LFO 2 and 4 (LFO2 shortcuts). This also applies to LFO modulator shortcuts.
 - UNISON NUMBER: cycles between UNISON NUMBER and UNISON STEREO SPREAD, in addition to the previous "press select when in UNISON NUMBER access mechanism for UNISON STEREO SPREAD.
 - COMPRESSOR THRESHOLD: cycles between COMPRESSOR THRESHOLD and COMPRESSOR RATIO
 - STUTTER RATE: cycles between STUTTER RATE and STUTTER DIRECTION

Sound Engine

General

- Master transpose menu has been updated to support decimal editing of the transpose “cents” for finer tuning. UI is the same as with Oscillator and Modulate transpose menus.

Mod FX

- Added a Warbler fx to synths/kits/kit rows/song/audio clips
- Added a boss/roland style Dimension effect
- Made grain much faster and updated controls

Reverb

- Added LPF to Mutable Instruments Reverb
- Added new Digital Reverb model

LFO's

- Added Warble LFO type to synths and kit rows
- Added two more LFOs (LFO 3 -global- and LFO 4 -per voice-), accessible in menu and with layered shortcuts

Envelopes

- Added two more envelopes (Envelope 3 and Envelope 4), accessible in menu and with layered shortcuts

Mod Matrix / Patch Cables

- Patch cables can be toggled to unipolar or bipolar mode
 - press & turn  Select to change the polarity while in the patch cable menu
 - For OLED: MIDI/CV buttons can be used as an additional way to change it, with corresponding graphics on the display
 - For 7SEG: a little dot will be displayed on the right side when the polarity is unipolar

Per-clip Stutter with options: Direction and Quantize

- Now the stutter buffer can also be set to play in reverse, and ping-pong.
- A new menu has been added to the SONG menu, under FX submenu, to set the stutter configuration for the song.

- An extra menu has been added per sound source (either synths, kit rows, affect-entire kits, or audio clips) to set the stutter configuration independently of the song configuration if you wish.
- Quantized stutter is enabled by default.

User Interface

General

- Added a new settings reset workflow under SETTINGS > ACTIONS > RESET SETTINGS, with confirmation prompts for:
 - Reset Flash
 - Reset Community Features
 - Reset MIDI Follow
 - Reset MIDI Devices
 - Factory Reset

New Shortcuts

Added shortcut to return to Session / Arranger view from menu

- Press **Song** while in the Menu to exit the menu and enter Arranger / Session view

Added main grid pad shortcuts for the following parameters:

- COMPRESSOR THRESHOLD: accessed using **Shift** / **Audition** + **Pad** between **Decimation** and **Lpf Db/Oct**
- STUTTER RATE: accessed using **Shift** / **Audition** + **Pad** between **Direction** and **Saturation**
- NOTE PROBABILITY: accessed using **Shift** + **Note** in the PATCH SOURCE column between **Random** and **Sidechain**
 - Note: **Audition** + **Note** is reserved for future functionality
- RANDOMIZER LOCK: accessed using **Shift** + **Random** in the PATCH SOURCE column between **Note** and **Velocity**
 - Note: **Audition** + **Random** is reserved for future functionality
- VELOCITY PROBABILITY: accessed using **Shift** + **Velocity** in the PATCH SOURCE column between **Aftertouch** and **Random**
 - Note: **Audition** + **Velocity** is reserved for entering the Velocity Automation View

Accessibility

- Added DEFAULTS (DEFA) > UI > ACCESSIBILITY (ACCE) menu which contains accessibility changes to the Deluge UI to make the deluge more accessible to users with disabilities. These changes include:
 - Shortcuts (SHOR) to make specific shortcut combinations more accessible for users with mobility restrictions.
 -  Horizontal + Play is changed to  Cross Screen + Play
 - Menu Highlighting (HIGH) changes how menu highlighting is rendered on OLED displays by drawing a vertical bar | on the left edge of the display beside the selected menu item instead of highlighting the area of the selected menu item by inverting the text.

OLED Display Improvements

Saving/Loading Animation

- Removed the saving and loading indicator popups which blocked the view of the screen and hindered the browsing of presets. In their place a small cyclical procedural animation will appear in the upper right corner of the screen. It is an abstract representation of data moving from the SD card to the system RAM and vice versa, with the saving animation being a mirror image of the loading animation.

Horizontal Menus

- The menus for the following items have been updated on OLED, with multiple values visible and editable at the same time. This feature is on by default, and can be disabled via SETTINGS > COMMUNITY FEATURES.
 - Oscillator 1-2.
 - Oscillator mixer.
 - Sample 1-2.
 - Sample recorder.
 - Modulator 1-2.
 - Master.
 - Envelope 1-4.
 - LFO 1-4.
 - LPF and HPF.
 - EQ.
 - Distortion.
 - Reverb.
 - Reverb sidechain.
 - Sidechain.
 - Delay.

- Mod FX.
- Compressor.
- Stutter.
- Unison.
- Voice.
- Arpeggiator.
- Horizontal Menu controls.
 - turn  Select to change the value of the selected menu item
 - You can select the different menu item's on the currently visible horizontal menu page using the Synth , Kit , MIDI , CV buttons
 - When in a Horizontal Menu, the selected instruments LED corresponding to the Horizontal Menu item selected will light up
 - You can use the Scale and Cross Screen buttons to switch between pages and adjacent menus
 - Use Cross Screen button to switch to the next page
 - Use Scale button to switch to the previous page
 - Use Shift + Cross Screen button combo to switch to the next adjacent Horizontal menu
 - Use Shift + Scale button combo to switch to the previous adjacent Horizontal menu
 - You can fine-tune values (e.g., oscillator transpose) in a menu by either press & turn  Select or Shift + turn  Select

Clip Name Display & Copying

- If a clip has no named "SECTION N" is displayed in place of the clip name, indicating which section the clip is in.
- If a clip has a name, it is displayed with a number prefix, indicating its section, eg. "3: CHORUS".
- When clips are copied, the clip name is copied as well. If the target track already has a clip with the same name, an integer suffix starting from 2 is added unless the name already has an integer suffix. This integer suffix is incremented until the clip name is unique on the target track. Ie. copying a clip named "BRIDGE" to the same otherwise empty track will first create "BRIDGE2", then "BRIDGE3", etc.

Tempo

- Added Community Feature toggle (Settings > Community Features > Alternative Tap Tempo Behaviour (TAPT)) to adjust number of Tap Tempo button presses to engage TAP TEMPO to FOUR (4) to avoid mistakingly changing tempo.

Recording

Threshold Recording

- Added THRESHOLD RECORDING default setting which can be turned on in the SETTINGS > RECORDING > THRESHOLD RECORDING (THRE) > MODE submenu
 - When this is enabled, recording of external audio input (e.g. Line In / Microphone) will only begin when it detects an audio signal according the Recording Threshold mode that has been set. There are four Threshold Recording modes that can be selected from:
 - DISABLED (OFF): Standard Deluge behaviour. Recording starts right away.
 - LOW: Sets a lower threshold for lower input signals.
 - MEDIUM: Sets a medium threshold that is good for most signals (including the internal microphone with gain off).
 - HIGH: Sets a high threshold that is good for noisy signals / microphones with gain
 - You can also view and temporarily change the current threshold recording setting as follows:
 - Record + turn  Select
 - Enter the Song menu while in Song or Arranger View by pressing  Se lect and entering the SONG > THRESHOLD RECORDING (THRE) > MODE submenu
 - Note: THRESHOLD RECORDING only applies to audio recorded to kit rows and to the first “tempoless” audio clip
 - For the first “tempoless” audio clip, the tempo will be set from the time the recorded audio first exceeds the threshold to the time the recording is ended.

Loop Recording

- Easier loop recording in Session View (similar to Kit Row sampling working). Added ability to trigger a loop recording for a specific clip in Session View by holding a CLIP and pressing RECORD. By default this will trigger the Global MIDI Command LAYERING LOOP, however this can be changed in the SETTINGS > RECORDING > LOOP COMMAND (LOOP) submenu.
 - Note: to end a recording, you will send to send the Global MIDI Command again, which can be done by holding a clip and pressing record again.

Audio Export

- Added EXPORT MIXDOWN configuration option which provides the ability to export all unmuted tracks in Arranger View as a single stereo file. This is disabled by default but can be enabled in the export configuration menu located at: SONG\EXPORT AUDIO\CONFIGURE EXPORT\EXPORT MIXDOWN
- Added AUDIO EXPORT for KIT DRUMS, an automated process for exporting DRUM's while in KIT INSTRUMENT CLIP VIEW. Press Save + Record to start exporting.
- Added Tempo, Root Note and Scale Information to file names

Save/Load Patterns

- Added ability to save / load Pattern-Files to Files. A Pattern represents all Notes of the actual Deluge Screen including Velocity, Probability, Lift, Iterance and Fill. The Patterns can be either of Type Melodic Instrument (Synth, Midi, CV) or Rhythmic Instrument (Kit, Drum). It's also possible to convert Midi-Files to patterns, which can then be used on the Deluge. See documentation at [Save / Load Patterns feature](#) for more info.

Favourites

A Favourites feature has been added to the browser for most file types. The Favourites are displayed above the QWERTY Keyboard and are only visible when that keyboard is shown. Favourites can be configured to either offer 16 favourites (default), 16 banks with 16 favourites each or be completely disabled via SETTINGS > DEFAULTS -> UT -> KEYBOARD -> FAVOURITES. Now also when pressing the  Keyboard button, you can pin the QWERTY keyboard so it is not hidden every time you select a sample.

Arranger View

- Added ability to start / restart arrangement playback from the clip pad you're holding in arranger.
 - Note: you need to select a pad of any clip in arranger in order for this to work (it cannot be an empty pad)
- Restored original behaviour which enabled you to insert / delete time for all automated parameters using  Shift +  Horizontal

Session View

- Doubled the number of Session View sections from 12 to 24.

Clip/Section Launching

- A new option, 'Launch Exclusively', isolates a clip section from all other launch activity. This option is found to the left of option 'Launch non-exclusively' when selecting the section's number of repetitions. As a complement to non-exclusive sections that arm and turn off when another section is launched, exclusive sections remain independant.

Session Grid View

General

- Fixed UI bug which would cause the Grid View UI to remain dim after creating a new clip in a new track in blue mode.

Entering Clips

- Added ability to enter clips in Session Grid View Green Mode by Pressing a Clip Pad + Pressing the Clip button if you have Select in Green Mode enabled in the SETTINGS > DEFAULTS > UI > SONG > GRID menu.

Selected Clip Pulsing

- The selected clip in Session Grid View (which is the last clip you interacted with), now shows a pulsing / breathing animation whereby the clip pad will fade in and out between the clip's normal colour and a blurred colour.
- This will help you keep track of what clip midi follow is currently controlling and what clip is selected for loop recording.

Performance View

- Performance view layouts are now persisted to and loaded from your song file.
- Each song can now have a different performance view layout with different held pad settings.

Instrument Clip View

Scale Mode

- If scale mode is active, you can now check the current root note and scale by long pressing the scale button. On 7SEG it will display the root note on press and scale on release.
- Long pressing the scale button will not result in entering or exiting scale mode so you can safely check the current root note and scale without accidentally exiting scale mode.

Screen Transpose

-  Horizontal + turn  Vertical to transpose the notes on the current screen only.  Horizontal + press & turn  Vertical locks the notes into their original octave so you get pseudo voice leading

Randomizer submenu

- Added a new submenu to the Sound menu called Randomizer. This menu gives you access to the following parameters (which affect both sequenced and arpeggiated notes):
 - Lock: This parameter allows you to freeze the current set of randomized values so the sequence has a repeatable pattern.
 - Velocity Spread: This parameters lets you apply some random variation to the notes.

- **Note probability:** This parameter determines the likelihood of a note being played or not (this is in addition to the Note/Row probability).
- **Reverse Probability:** This parameter determines the likelihood of a note's sample of being reversed.

Recording

- Enabled seamless linear recording of drone notes using audition pads or external midi.
 - When linear recording to a clip, you can seamlessly record a drone note using the audition pads or from external midi by continuing to audition / send a note until the linear recording stops. After linear recording stops, you can stop auditioning / send a note off and the drone note will persist without any breaks or re-triggering. (The Deluge manual refers to linear recording as *auto extend mode*, see p. 42.)

Synth/Kit Clips

- Added Auto-Load feature to sample browser, so you can load the sounds to the instrument as you preview them. Auto-Load can be engaged while in sample browser, if you press the Load button.
- Sounds have now the ability to send MIDI notes at the same time as they play a sample. This will allow your synths and drums to trigger external devices. A new menu MIDI has been added at the bottom of the SOUND menu to set the MIDI channel and the note (in case of drum sounds).

Kit

- Midi and Gate kit rows now are arpeggiator-enabled, and they have each a menu to set it up.
- Extended the ability to batch change all drum sounds, by holding **Affect Entire** while editing a parameter (indicated by flashing the **Affect Entire** button), from the initially available handful of sample-related parameters, to ALL sound parameters (except for Oscillator Type and patch cable strengths).
- Updated shortcuts for randomizing drum samples:
 - When no audition pads are pressed, randomize just the selected drum by pressing **Load** + **Random**
 - To randomize more than one selected drum at a time, press **Load** + **Audition** + **Random**
 - To randomize all active drums (not muted and have notes playing), press **Load** + **Affect Entire** + **Random**

CV Clips

- Added the ability to set a CV instrument to use both 1 and 2 channels, which makes the cv2 source selectable between mod wheel, velocity, and aftertouch
 - turn **SEL Select** to choose 1 AND 2 (BOTH) CV / Gate channel.
 - Press **SEL Select** to enter the CV Instrument Menu
 - Enter the CV 2 Source (CV2) submenu
 - Select from OFF, Y, Aftertouch, Velocity

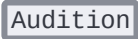
- CV clips can now be named like other clips.

MIDI Clips

- Added ability to rename MIDI CC's in MIDI clips. Changes are saved by Instrument (e.g. per MIDI channel). Changes can be saved to a MIDI preset, with the Song, or to a MIDI device definition file. See documentation on [MIDI Device Definition Files](#) for more info.
- Added MIDI CC numbers and labels to  encoder popups.
- Updated MIDI Program menu to show values 0-127.
 - Values for program, bank and sub-bank were previously shown as 1-128, but now reflect the actual transmitted MIDI values.

Velocity View

General

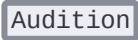
- Fixed Quantize/Humanize bug which would freeze the velocity view UI
- Updated shortcut for Note Velocity View. You can now only enter Note Velocity View by holding  + pressing the Velocity .

Automation View

Defaults

- The Settings/Defaults/Automation/Shift toggle now only applies to Clip View. In Arranger View if you use  +  to insert / delete time at a specific point in the arrangement, all parameter automation is shifted.

Automation Overview and Shortcuts

- Removed the Note Velocity View shortcut from the Automation Overview. The Velocity  on the Automation Overview now represents the Automatable parameter Velocity Spread
- Updated shortcut for Note Velocity View. You can now only enter Note Velocity View by holding  + pressing the Velocity .

Parameters

- Added Vibrato and Sidechain patch cables to Automation View Overview and Grid Shortcuts
- Added ability to automate all Monophonic (Channel) Expression parameters (X - Pitch Bend, Y - Mod Wheel, Z - Channel Pressure / Aftertouch) in Synth / Kit Row (with Affect Entire Off) / MIDI / CV
- Fixed interpolation for MIDI CC's in MIDI clips

Copy/Paste

- Added same shortcut that is used for copy / pasting notes in Instrument Clip View to Automation View to copy / paste automation. While in the Automation Editor, Copy with **Learn + ⬅️Horizontal** . Paste with **Shift + Learn + ➡️Horizontal** .

Keyboard View

Kits

- Added ability to change the pad size in the KIT VELOCITY KEYBOARD VIEW using the Zoom In/Out shortcut by **press & turn ⬅️Horizontal**
- KIT VELOCITY KEYBOARD VIEW Changes:
 - Additional shortcut of **press & turn ➡️Horizontal** to change the pad size using the Zoom In/Out.
 - Went from 8 zoom levels to 13, with mostly smaller jumps in size and number of drum pads between levels.
 - Rectangular pads of various sizes are used where needed to fully cover the screen without any partial pads. This means you can now have six or four pads, or even the entire screen as a single pad.
 - Zoom level 1 pads play the system-level default velocity (64 by default out of a maximum 127, but it is user defineable), and levels 2 and 3 have a slightly lowered max velocity of 100 to make them more useable.
 - Pad colors are calculated to avoid having adjacent pads of the same color as much as possible.
 - Default pad brightness is set to match the default brightness value, so they will be more visible if needed. They will dim when pressed instead of getting brighter. The brightness gradient over the drum pads, going from dim on the low velocity pads to bright on the highest, is now much more apparent, due to the max brightness being higher, the lowest brightness being lower, and using a quadratic curve for the brightness ratio rather than linear. The amount that the drum pads dim when pressed depends on the pad area, so that smaller pad presses will be more visible, and larger pad presses won't be TOO visible, i.e. they won't have a potentially unpleasant strobe light flashing behavior.

Layout

- Added the classic piano keyboard layout.

Scales/Key.

- Added toggle in SETTINGS > DEFAULTS > UI > USE SHARPS(#) to allow users to choose which accidentals to display. When enabled in OLED mode, notes will be displayed as A# or D#, as they did prior to this change. When disabled, notes will be displayed as B $\flat$ or E $\flat$. In 7SEG mode, a dot is used to indicate when the note has the configured accidental.

Menu

- Added battery level display in the SETTINGS menu showing current battery voltage and percentage on OLED and percentage on 7SEG.

Sequencer

Arpeggiator

- Added NOTE PROBABILITY (PROB) parameter that will apply a probability to be played or not to notes (after rhythm has been applied).
- Added CHORD SIMULATOR (CHRD) parameter to Kit Rows, that will emulate a held chord so you can use NOTE MODE on them.
- Added SPREAD parameters (Velocity, Gate, and Octave) that will allow you to control how those parameters of each arp step are deviated from its base value. Additionally, a LOCK parameter will allow you to lock the generated values to create a repeating pattern. Velocity Spread also affect normal sequenced notes while arpeggiator is Off.
- Added BASS PROBABILITY (BASS) parameter that will allow you to control the chance of a note being replaced the bass (lowest) note of the inputted notes.
- Added SWAP PROBABILITY (SWAP) parameter that will allow you to control the chance of a note in the pattern being replaced by a random note from the pattern.
- Added GLIDE PROBABILITY (GLID) parameter that will allow you to control the chance of delaying a note's note-off event to be executed at the same time as the following arp note. If your sound has some Portamento applied, then it will produce a glide effect.
- Added STEP REPEAT (REPE) parameter (with values 1 to 8) that makes walked notes in the pattern be repeated X times before moving to the next note+octave in the pattern.
- Added CHORD PROBABILITY (CHRD) parameter that will allow you to control the chance of a note to play, at the same time, itself and other notes to form a chord (5th, 3rd and 7th).
- Added CHORD POLYPHONY (POLY) parameter that works together with the previous parameter, and this one will dictate how big is the chord, that is, how many notes will be played at the same time.
- Added REVERSE PROBABILITY (RVRS) parameter that will allow you to control the chance of a sound to invert the Reverse setting for that note. This parameter will only affect oscillators whose type is Sample (it does not affect wavetables, SCW, or standard waveforms).
- Added LOCK parameter to allow you to freeze the current set of randomized values so the sequence has a repeatable pattern.
- Added new WALK1, WALK2, WALK3 and PATTERN note modes.
- Exposed several parameters from the Randomizer also for non-arpeggiated notes: Velocity Spread, Note probability, and Reverse Probability.

- Added KIT ARPEGGIATOR for KIT clips. This arpeggiator is a new layer on top of the kit rows, which will control which rows receive note ON's and note OFF's. That means that the kit rows can have their own arpeggiators also enabled. You can access the new menu when **Affect Entire** is enabled in the Kit and you access the menu with  **Select** knob.

MIDI

Devices

- Added new Use Relative CC toggle within the configuration of each MIDI device in the Settings > MIDI > Devices menu.
 - When enabled, regular (e.g. non expression) midi CCs received from a device are processed as relative CCs, overriding the current MIDI takeover setting.
 - Note: the controller must be actually sending relative value changes (127 for down and 1 for up) in order for this to work.
- Added new MIDI Thru toggle within the configuration of each MIDI device in the Settings > MIDI > Devices menu.
 - If Devices have not already been set up, or if you Reset Device Settings, then this will inherit by default the Global MIDI Thru setting.
 - After the per Device MIDI Thru setting has been setup, the Global MIDI Thru setting will no longer be used to determine whether MIDI from a specific Device should be sent through.

Learn

- Fixed issue where MIDI CCs learned to global command's could not trigger those command's while in a menu
- Midi Learned Note Input for the Whole Kit now persists between Kit preset changes.
- Fixed unexpected behaviour for Synth and Kit clips that would cause MIDI LEARNED PARAMS to get lost when changing presets for Synth / Kits.
 - Note: for Kit clips it will migrate midi learn for Kit Affect Entire params only.
- Added new MIDI LEARN menu to the SONG menu. In Session Grid View this menu enables you to learn Clip/Section Launch. In Session Row View this menu enables you to learn the Clip/Section Launch and Instrument.
 - While in this menu, you just need to hold a clip / section and send midi to learn that clip / section. If you press the clip / section again you will unlearn it.
- Added ability to Midi Learn Instruments and Select the Audio Source for Audio Clips in Session Grid View Green Mode by moving Midi Learn Clip/Section Launch actions to the MIDI LEARN menu mentioned above.
- Added new learnable global commands:

- `LOAD NEXT SONG`, which when received while playing, it will queue to load the next song within the folder of the current song.
- `SHIFT` to toggle the deluge's `Shift` button. It can also be used to toggle sticky shift.
 - Shift down: Note On or CC Value > 0
 - Shift up: Note Off or CC Value = 0
- Fixed command for toggling Clip launch status so that it respects the Deluge's `SHIFT` status. If `SHIFT` is active, either by physically pressing it on the Deluge or by sending the `SHIFT` global midi command, then sending the Clip launch status command will toggle the Clip status immediately instead of arming it. Matching the behaviour on the Deluge and with MIDI Follow.

Follow

- Add specific track control to `MIDI FOLLOW` enabling you to have instant mixer control of the parameters of up to 16 tracks.
 - You can now configure up to 16 channels in the MIDI Follow menu.
 - CC's received on the specific track channels are directed to the active clip of the corresponding track.
 - Track 1 corresponds to bottom track in `ARRANGER VIEW` or left track in `GRID VIEW`.
 - You can also now configure the Channel `TRACK` for MIDI Follow Feedback. If a specific track is selected and has been configured for MIDI Follow control, the Deluge will send feedback of the CC values for that specific track.
 - MIDI Follow Feedback can now be sent to both the selected track channel and a regular follow channel by selecting `TRACK + A`, `TRACK + B`, or `TRACK + C`.
 - Combined feedback modes send to the configured track channel first, then to the configured regular channel.
 - If both targets resolve to the same MIDI channel, feedback is sent only once.
- Added new default CC 89 to toggle the mute of the active clip in a specific track.
 - Toggle mute: CC Value > 0 (Send a CC value greater than 0 to toggle mute for the active clip in a specific track)
 - If used together with `SHIFT`, it will trigger instant mute.
- Added new default CC 90 to toggle solo of the active clip in a specific track.
 - Toggle solo: CC Value > 0 (Send a CC Value greater than 0 to toggle mute for the active clip in a specific track)
- You can now use relative CCs together with non-relative CCs for different devices on the same MIDI follow channel.
 - See the `Devices` section above for information on the per MIDI device `Use Relative CC` configuration.

SD CARD

SETTINGS folder

- A new folder has been created in the root of the SD card titled SETTINGS
- The following files which were previously saved in the root of the SD card have been moved to the SETTINGS folder: MIDIDevices.XML, MIDIFollow.XML, PerformanceView.XML and CommunityFeatures.XML.
 - Note: if you revert back to an earlier firmware, you will need to move these files back to the root of the SD card so that they can be loaded.

MIDI DEVICES folder

- A new folder has been created in the root of the SD card titled MIDI_DEVICES
- MIDI device definition files can be saved to / loaded from MIDI_DEVICES/DEFINITION/
- See documentation on [MIDI Device Definition Files](#) for more info.

c1.2.1 Chopin Latest release

Sound Engine

- Fixed a bug that was causing audio clicks when recording audio and when scrolling / zooming in Session Row View and the audio waveform renderer.

c1.2.0 Chopin

Sound Engine

DX7 Synth

- Added DX7 compatible synth type with support for importing patches from DX7 patch banks in syx format, as well as editing of patch parameters.

Audio Clips

- Added ability to record from a specific track's output. Set an audio clips input to TRACK, then in the audio clip menu use the TRACK menu to select the specific track to record from
 - To hear the instrument through the audio clip's FX set the input to TRACK (FX)
- Audio clips with monitoring (or TRACK FX) active in grid mode now support in place overdub using the global midi loop/layer commands

Compressors

- Added blend control to compressors

FM Synth Filters

- Added filters in FM synth mode. They're set to OFF by default, enable by changing them to any other mode using the menu or db/oct shortcut.

Reverb

- Fixed bug with Reverb HPF not saving to / loading from the Song

MIDI

Sysex

- Added Universal SysEx Identity response, including firmware version.

MPE

- Allow changing MPE y output to CC1 to support more synths
- Removed MPE zone auto learn as a huge source of midi bugs, MPE must now be configured in the menu

Loopback

- Removed MIDI LOOPBACK feature as it included a number of bugs that could not be easily fixed in the feature's current state. This feature may be re-designed and re-introduced in the future when an implementation can be found that does not introduce bugs.

Takeover

- Fixed a couple bugs with the MIDI TAKEOVER modes PICKUP and SCALE which did not work properly when recording automation and when editing automated parameters.

Follow

- Fixed a couple bugs with MIDI FOLLOW:
 - You can now edit parameters while step editing (e.g. holding a note)
 - If you enable MIDI Follow Feedback Automation the Deluge will now send feedback when step editing

User Interface

General

- The maximum zoom level for timelines has been increased. Now, the maximum zoom is the point the point where the entire timeline is represented by a single grid cell.
- Added community feature toggle `Alternative Playback Start Behaviour (STAR)` to change the behaviour of playback start shortcuts as follows:
 - With playback off, pressing `Play` will start playback from the current grid scroll position
 - With playback off, pressing `⏮ Horizontal + Play` will start playback from the start of the arrangement or clip
- Removed `High CPU Usage Indicator` feature.

Menu UI Improvements

- For toggle (ON/OFF) menus, you can now view and toggle the ON/OFF status without entering the menu by simply pressing on the `SEL Select` encoder while the menu is selected.
 - OLED renders a checkbox that shows current ON/OFF status. Selecting that menu with select encoder will toggle the checkbox as opposed to entering the menu.
 - 7SEG renders a dot at the end of the menu item to show current ON/OFF status. Selecting that menu with select encoder will toggle the dot as opposed to entering the menu.
- Submenus on OLED are rendered with a ">" at the end to indicate that it is a submenu.
- Updated Fonts and Character Spacing on OLED to provide a more refined and polished user experience.
- The note range selection menu (aka "BOTTOM-TO-TOP") is skipped when there is only one range to select.

OLED Display Improvements

- Updated OLED display for `Session View` and `ARRANGER VIEW` to display the Song Name, Current Tempo and Current Root Note and Scale Name.
- Updated OLED display to stop scrolling text while playback is running.

Audio Export

- Added `AUDIO EXPORT`, an automated process for exporting `CLIP`'s while in `Session View` and `TRACK`'s while in `ARRANGER VIEW` to individual files. Press `Save + Record` to start exporting clips/tracks. Press `Back` to cancel exporting and stop recording and playback.
 - You can also start audio export via a new `EXPORT AUDIO` menu found in the `SONG` menu accessible in `Song` and `Arranger Views`. Start the export by entering the `SONG\EXPORT AUDIO\` menu and pressing `SEL Select` on the menu item titled `START EXPORT`. It will exit out of the menu and display the export progress on the display.

Recording

- Enabled toggling of METRONOME during RECORD COUNT-IN.
- Fixed a bug where instruments and kits wouldn't respect record arming state. They no longer record when not armed

Clip/Section Launching

- A white playhead is now rendered in Song Grid and Performance Views that let's you know when a clip or section launch event is scheduled to occur. The playhead only renders the last 16 notes before a launch event.
 - Note: this playhead can be turned off in the Community Features submenu titled: Enable Launch Event Playhead (PLAY)
- The display now shows the number of Bars (or Quarter Notes for the last bar) remaining until a clip or section launch event in all Session Views (Grid, Row, Performance).

Audio Clips

General

- Added ability to select audio source from within an Audio Clip by opening the Audio Clip Sound Menu (Press  Select) and Selecting the AUDIO SOURCE menu
- Added new ACTIONS menu in the Audio Clip Sound Menu (Press  Select).

Timestretching

- Added a new shortcut to set the length of an audio clip to the same length as its sample at the current tempo. This functionally removes timestretching until the Audio Clip length or Song tempo is changed.
 - Press  Vertical +  Horizontal to set the Audio Clip length equal to the length of the audio sample.
 - This action is also available in the Audio Clip Sound Menu (Press  Select) by Selecting the ACTIONS menu and Pressing  Select on the Set Clip Length to Sample Length action.
 - Press Shift + press & turn  Horizontal to adjust the audio clip's length independent of timestretching.

Instrument Clips

General

- Added ability to sync LFO2. Where LFO1 syncs relative to the grid, LFO2 syncs relative to individual notes.
- Added ability to set CLIP NAMES. MIDI, SYNTH and KIT clips can now be named. When in a the clip view, press  +  and enter the name of the clip. For KIT, its important to activate  to name the

KIT clip. When on ARRANGER view with an OLED display, you are now able to scroll through the clip names when holding a clip pad and turning  encoder.

- Fixed a bug where pressing **Undo** in a KIT could cause the **SELECTED DRUM** to change but not update the  knobs so that they now control that updated kit row.
- Fixed a bug where you could not turn recording off while auditioning a note in an instrument clip. With this fix you can now record drone notes when using linear recording. (The Deluge manual refers to linear recording as *auto extend mode*, see p. 42.)

Velocity View

- **(Shortcut changed in 1.3)** Added **VELOCITY VIEW**, accessible from **AUTOMATION VIEW OVERVIEW** by pressing the **VELOCITY** shortcut, from **AUTOMATION VIEW EDITOR** by pressing **Shift** or **Audition** + **VELOCITY Pad** or from **INSTRUMENT CLIP VIEW** by pressing **Audition** + **VELOCITY Pad**.
 - Velocity View enables you to edit the velocities and other parameters of notes in a single note row using a similar interface to **AUTOMATION VIEW**.

Scales

- Added learning a user specified scale.
 - Hold **Learn** and press **Scale** while in clip view. Notes from current clip & all scale mode clips are learned as the “USER” scale. This scale is part of the normal scale rotation, accessible with **Shift** + **Scale**, and saved as part of the song. If another user scale is learned, the previous one is overwritten: currently each song can only have one user scale.
 - If you enter scale mode from a chromatic clip, and the implied scale cannot be represented by any of the existing preset scales, it will be learned as a user scale, overwriting the previous USER scale.
- Added **ACTIVE SCALES** menu.
 - **SONG > ACTIVE SCALES** toggles scales on and off from the **Shift** + **Scale** rotation for the current song. Active scales are saved as part of the song. On 7-segment display dot indicates that the named scale is active, lack of dot indicates it has been disabled.
 - **DEFAULTS > SCALE > ACTIVE SCALES** sets the active scales for new songs. When **RANDOM** is set as **DEFAULTS > SCALE > INIT SCALE**, the random scale is selected from default active scales.

Session View

Song Macros

- Added ability to create song macros to quickly switch playing clips from inside clip view without needing to go into Session View.
- From Session View, open the **SONG MENU** and enter the **CONFIGURE MACROS** menu to edit macros

Clip Settings Menu

- Holding a clip in `Session Grid View` or the status pad for a clip in `Session Row View` and pressing  `Select` brings up a `CLIP SETTINGS` menu.
- If you open the menu with with an `INSTRUMENT CLIP` selected, then the menu will give you three options:
 1. `Convert to Audio`: Press select on this option to convert the selected instrument clip into an audio clip. The menu will exit after converting the clip.
 - Note: for `Session Row View`, you can still convert an empty instrument clip to an audio clip the regular way by holding a pad for that clip in the main grid and pressing select.
 2. `Clip Mode`: Press select on this option to enter the `Clip Mode` menu so you can change the Clip Mode between `INFINITE`, `FILL` and `ONCE`.
 3. `Clip Name`: Press select on this option to enter the `Clip Name` UI to set the name for the clip.
- If you open the menu with an `AUDIO CLIP` selected, then the menu will give two options: `Clip Mode` and `Clip Name`.

Session Grid View

Creating New Clips

- Added new mechanism for creating New Clips in New Tracks in `Session Grid View`.
 - When you press a pad in a new track, a menu will appear asking you to confirm the type of clip you wish to create. The clip type selected to be created is shown on the display and is also indicated by the clip type button that is blinking.
 - The default clip type for new clips created can be configured in `SETTINGS > DEFAULTS > UI > CLIP TYPE > NEW CLIP TYPE` menu.
 - You can also configure whether the clip type for the next clip type you create should default to the last clip type you created. This helps with fast creation of multiple clips of the same type. You can enable this default setting in the `SETTINGS > DEFAULTS > UI > CLIP TYPE > USE LAST CLIP TYPE` menu.
 - If you just a tap a pad quickly to create a new clip, it will create that new clip using either the default clip type or the last clip type you created (if you enable this).
 - If you press and hold a pad, you can choose a different type to create in a number of ways:
 - by turning the select encoder to switch between the various clip types. You can create that clip type by pressing on the select encoder or letting go of the pad.
 - by pressing one of the clip type buttons (e.g. `Synth`, `Kit`, `MIDI`, `CV`).
 - If you let go of the pad without selecting a different type, it will create the clip using the last create type (or the last selected type if you changed selection using select encoder).
 - If you press `:back` before releasing a pad or selecting a clip type, it will cancel the clip creation.

- These changes only apply to Session Grid View and NOT Session Row View

Converting Empty Instrument Clips to Audio Clips

- To convert an empty Instrument Clip to an Audio Clip, you will now use the CLIP SETTINGS menu described above.

Loop and Layering Loop Pads

- Added community feature toggle Grid View Loop Pads (LOOP) to illuminate two pads (Red and Magenta) in the GRID VIEW sidebar for triggering the LOOP (Red) and LAYERING LOOP (Magenta) global MIDI commands to make it easier for you to loop in GRID VIEW without a MIDI controller.

Entering Performance View

- Changed the shortcut to enter Performance View in Session Grid View from the PINK GRID MODE to the  Keyboard button for consistency with Session Row View and ARRANGER VIEW.
- Removed PINK GRID MODE

Performance View

- Updated PERFORMANCE VIEW UI for exiting out of EDITING MODE. While in EDITING MODE, you can now press BACK to exit out to the previous screen.

Arranger View

General

- Added ability to AUTOMATE TEMPO in ARRANGER VIEW by turning  Turn  Tempo while recording. To delete the automated tempo, press  Shift +  Tempo .
- Added ability to rename MIDI TRACKS in ARRANGER VIEW.

Playback Start

- Changed the behaviour of the  Play button while in ARRANGER VIEW with CROSS SCREEN AUTO SCROLL MODE active. Pressing  Play while playback is off will now start playback from the current scroll position.

Clip Pad Rendering

- Updated ARRANGER VIEW Clip pad rendering. Clip's are now rendered more simply which should also increase Arranger View performance, especially when using cross screen mode. Clip's are now rendered as follows:

- The clip head (the first pad where the clip is placed in the arrangement) is rendered the clip colour brightly.
- The clip loop points (the pad's where the clip, if extended past it's length will loop) are rendered the clip colour but dimly.
- The clip tails (the pad's between the clip head and clip loop points) are rendered the clip's colour but dimly and blurred.

Keyboard View

General

- Added ability to scroll KEYBOARD VIEW horizontally using  Horizontal while editing Param values in the menu.

Chord Layouts

- New CHORDS keyboard layout. The CHORD keyboard provides easy building and playing of in-scale chords. The CHORD keyboard provides two modes, a ROW mode, inspired by the Launchpad Pro, and a COLUMN mode, inspired by some of the features in the OXI one and others.
- New CHORD LIBRARY keyboard layout. CHORD LIBRARY keyboard is a library of chords split up into columns, where each column belongs to a specific root note. Going up and down the columns will play different chords of the same root note. Voicings can also be changed with pressing a pad and pressing the  Horizontal encoder and turning it.
- As the UI and implementation is still experimental, a community setting has to be activated to access the CHORD and CHORD LIBRARY keyboards.

Kits

- Added ability to load a sample to a drum in the KIT VELOCITY KEYBOARD VIEW by holding a drum pad and pressing Load or Kit.
- Pressing drum pads in the KIT VELOCITY KEYBOARD VIEW will now update the drum selection so that you can edit the parameters of each drum with gold knobs directly from the kit velocity keyboard view when Affect Entire is disabled.
 - Note: if you use the MIDI FOLLOW FEEDBACK feature, no MIDI Feedback data will be sent when you change drum selections in this view because it will send too much MIDI data and affect the Deluge's performance.
- Fixed a bug where you wouldn't enter drum creator to select a drum sample when creating a new kit in the KIT VELOCITY KEYBOARD VIEW.

c1.1.1 Beethoven

User Interface

- Added BASS FREQUENCY and TREBLE FREQUENCY parameters to the list of assignable parameters in PERFORMANCE VIEW.
- Fixed PERFORMANCE VIEW bug where stutter pad could get stuck in active state which should not be possible.
- Fixed a couple bugs around VU METER rendering.
- Fixed a MIDI FOLLOW bug where the Deluge could crash if sending a note while loading a new song.
- Fixed KIT CLIP bug where having a note row without a drum blocked creating a drum in that row
- Fixed Session Grid View bug where SECTIONS would playback in the order of Session Row View
- Fixed an ARRANGER VIEW bug where you could not move a WHITE clip to Session Grid View without the Deluge freezing.

c1.1.0 Beethoven

Sound Engine

General

- The default Mod-FX type for songs is now DISABLED rather than FLANGER.
- Fixed Stereo Unison Spread + Ringmod Synth Mode + Noise causing excessively loud output.
- Fixed some bugs around the Waveform Loop Lock feature which allowed setting invalid loop points.
- Fixed a bug in triangle LFO that could cause audible artefacts with some modulation targets, particularly when synced.

Reverb

- Added an adapted version of the reverb found in Émilie Gillet's Mutable Instruments Rings module. Switch between reverb types within the new MODEL sub-menu under SOUND > FX > REVERB.
 - This MUTABLE reverb model has been set as the default reverb model for new songs. Old songs will respect the reverb model used with those songs.

Compressors

- Added compressors to synths, kits, audio clips, and kit rows. The compressor can be enabled and edited from their respective menus.

- Compressor behavior has been changed to reduce clipping. Songs made with community release 1.0.x may need to have their volume manually adjusted to compensate. This is done via **Affect Entire** in song/arranger mode, or by entering the SONG MENU by pressing **SEL Select** in Session View and navigating to MASTER > VOLUME

Polyphony / Voice Count

- Added new Max Voices (VCNT) menu which lets you configure the Maximum number of Voices for a Polyphonic instrument
- Updated default Max Voices for new synth's to 8 voices. Old synths for which a max number of voices has not been configured will default to 16 voices.

User Interface

General

- Added a feature which saves user-defined pad brightness level and restores it at startup.
SETTINGS>DEFAULTS>PAD BRIGHTNESS
- **(Removed in 1.2)** Added new High CPU Usage Indicator. The PLAY button will blink when deluge CPU usage is high which indicates that synth voices / sample playback may be culled.
 - To activate the feature, press **Shift + SEL Select** : MENU > DEFAULTS > HIGH CPU INDICATOR.
- Added new default menu to set the length of time to register a Hold Press for use with Sticky Shift, Performance View, and the Keyboard Sidebar Layouts.
 - Set the default Hold Press time by accessing SETTINGS > DEFAULTS > HOLD PRESS TIME
- Fixed numerous bugs, including some crash bugs, around the display of QUANTIZED STUTTER.
- Fixed a bug with **Shift + turn SEL Select** on small menus which would allow moving off the end of the menu, causing crashes.
- Fixed several bugs with pad grid rendering.

Documentation

- Created a new menu hierarchies document that documents the Deluge menu structure for OLED and 7SEG and can be used as a reference for navigating the various menu's. See: [Menu Hierarchies](#)

Menu UI Improvements

- Holding back now fully exits the menu

OLED Display Improvements

- Added parameter names (including mod matrix / patch cable mappings) to Mod (Gold) Encoder popups.
- ARRANGER VIEW and Session View now display the name of the current view on the screen.
- The 12TET note name is now displayed along with the MIDI note number.
- Added a new community setting which allows emulating the 7SEG style on the OLED display. When set to TOGGLE press **Shift** + **Learn/Input** + **Affect Entire** to switch to the emulated 7SEG display.
- Fixed several cases where popups could get stuck open.
- Fixed a number of minor rendering bugs.

Mod (Gold Encoders)

- Added Mod Button popups to display the current Mod (Gold) Encoder context (e.g. LPF/HPF Mode, Delay Mode and Type, Reverb Room Size, Compressor Mode, ModFX Type and Param).
- Mod (Gold) Encoders learned to the Mod Matrix can now access the full range of the Mod Matrix / Patch Cable parameters (Values from -50 to +50 where previously only 0 to +50 were accesible via Mod (Gold) Encoders).
- Mod (Gold) Encoder LED indicators are now bipolar for bipolar params (e.g. PAN, PITCH, Patch Cables). Positive values illuminate the top two LEDs. Negative values illuminate the bottom two LEDs. The middle value doesn't light up any LEDs.

Startup Song

- Added feature to automatically load song projects at startup.
 - To activate the feature, press **Shift** + **SEL** **Select** : MENU > DEFAULTS > STARTUP SONG.
 - Modes are NEW SONG, TEMPLATE, LAST OPENED SONG, LAST SAVED SONG.
 - Failsafe mode introduced using canary file to deactivate feature in case of crash at startup.

Performance View

- Added PERFORMANCE VIEW, accessible in Session View by pressing the Keyboard button. Allows quick control of Song Global FX.

Automation View

- Added AUTOMATION VIEW for Audio Clips and Arranger View.
- Added AUTOMATION VIEW for PATCH CABLES / MODULATION DEPTH. Simply enter the modulation menu that displays SOURCE -> DESTINATION and then press CLIP to access the AUTOMATION VIEW EDITOR for that specific Patch Cable / Modulation Depth.

- You can also use the `SELECT ENCODER` while in the `AUTOMATION VIEW EDITOR` to scroll to any patch cables that exist.
- Updated `AUTOMATION VIEW EDITOR` to allow you to edit Bipolar params according to their Bipolar nature. E.g. positive values are shown in the top four pads, negative value in the bottom four pads, and the middle value (0) is shown by not lighting up any pads.
- Updated `AUTOMATION VIEW` for MIDI Clips to load the Parameter to CC mappings from the `MIDI FOLLOW MODE` preset file `SETTINGS/MIDIFollow.XML`. These Parameter to CC mappings are used as the quick access MIDI CC shortcuts displayed in the Automation Overview and with the shortcut combos (`Shift` + `Shortcut`).
- Updated `AUTOMATION VIEW` to move the `INTERPOLATION` shortcut to the `INTERPOLATION` pad in the first column of the Deluge grid (second pad from the top). Toggle interpolation on/off using `Shift` + `Interpolation` . The Interpolation shortcut pad will blink to indicate that interpolation is enabled.
- Updated `AUTOMATION VIEW` to move the `PAD SELECTION MODE` shortcut to the `WAVEFORM` pad in the first column of the Deluge grid (very top left pad). Toggle pad selection mode on/off using `Shift` + `Waveform` . The Waveform shortcut pad will blink to indicate that pad selection mode is enabled.
- Updated `AUTOMATION VIEW` to provide access to `SETTINGS` menu (press `Shift` + `SEL Select`)
- Updated `AUTOMATION VIEW` to provide access to the `SOUND` menu (press `SEL Select`)
- Updated automatable parameter editing menus (accessed via `SOUND` menu or `SHIFT` + `PARAMETER SHORTCUT`) to provide the ability to access the `AUTOMATION VIEW EDITOR` directly from the parameter menu. While in the parameter menu press `CLIP` (if you are in a clip) or `SONG` (if you are in arranger) to open the `AUTOMATION VIEW EDITOR` for that respective parameter or patch cable.

Recording

- Added configuration of the number of `COUNT-IN BARS` from 1 to 4. Found under `SETTINGS > RECORDING > COUNT-IN BARS`.

Song Menu

- Added a menu for Song-level parameters, accessible in `Session View` and `ARRANGER VIEW` by pressing `SEL Select` .

Session Grid View

- Streamlined recording new clips in `GRID VIEW` while the Deluge is playing. Short-press empty clip pads in Grid View's `GREEN MODE` while recording is armed to automatically create a new clip and queue it to record at the start of the next bar.
- Fixed a bug preventing clip selection while `Shift` was held.

Master Transpose

- Added Master Chromatic Transpose of All Scale Mode Instrument Clips from any Session View (Session View, ARRANGER VIEW, ARRANGER AUTOMATION VIEW and PERFORMANCE VIEW). Uses the same shortcut as in a Synth/Midi/CV clip (`press & turn  Vertical` to transpose all clips by +/- 1 semitone). The number of semitones transposed is customizable (`Shift + press & turn  Vertical`). After transposing, the display shows the new Root Note (and Scale Name on OLED displays).

VU Meter

- Added a VU METER toggle that displays the VU Meter on the sidebar in SONG, ARRANGER, & PERFORMANCE VIEW. To activate it, on a Session View ensure `Affect Entire` is enabled, then select the LEVEL/PAN mod button and press it again to activate the meter.

Clip Type Conversion

- Removed ability to convert an Audio Clip to an Instrument Clip (Synth/Kit/MIDI/CV) as this conversion process is currently error/bug prone.
- Restricted changing Synth/MIDI/CV Clips to the Kit Clips and vice versa if the clip is not empty.

Waveform View

- Added indicators when WAVEFORM LOOP LOCK is enabled. 7SEG displays a rightmost . on screen and OLED displays a lock icon.
- Modified waveform marker rendering to improve clarity.

Audio Clips

- The default Mod-FX type is now DISABLED rather than FLANGER for Audio Clips (this means Mod-FX can be disabled on Audio Clips which was not previously possible).

Instrument Clips

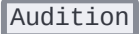
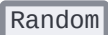
Synth/Midi/CV

- The shortcut `Shift + press & turn  Vertical` , inside a clip, has been changed to “Nudge notes vertically” without unexpectedly changing the scale and root note of the whole song.
- Added Synth/MIDI/CV clip configuration of note row play direction. Hold AUDITION while entering the PLAY DIRECTION menu to set the play direction for the selected note row. While in the note row play direction menu, you can select other note rows to quickly set the play direction for multiple note rows.

Midi

- Added ability to save and load MIDI presets. They end up in a new folder named MIDI.

Kits

- Added a KIT FX MENU to KITS which allows you to customize the AFFECT ENTIRE KIT parameters with greater control. Accessible in KIT CLIP VIEW by pressing  Select with Affect Entire enabled.
- Added the ability to save a drum kit row back to an synth preset by pressing  + Save .
- Added a new default setting that controls which playback mode new slices of a kit will receive.
- Drum randomization no longer has a limit on the number of sound files to randomize.
- Pressing Shift +  now randomizes all non-muted drum kit rows.
- The default Mod-FX type for kit Affect Entire is now DISABLED rather than FLANGER.
- Fixed several crashes related to drum randomization.

Keyboard View

- Added SIDEBAR CONTROLS in KEYBOARD VIEW for synths. By default the two sidebar columns pertain to VELOCITY (red) and MOD WHEEL (blue). Holding a pad sets it momentarily to that value, tapping a pad latches it to that value. The functionality can be changed per column by holding the top pad and turning ▼▲. Available options are VELOCITY, MOD WHEEL, CHORDS, CHORD MEMORY, and SCALES.
- Added retrigger to all keyboard views.
- A new community feature toggle has been added (Enable KB View Sidebar Menu Exit (EXIT)) which will enable you to immediately exit the menu using the top left sidebar pad if you are in the SETTINGS or SOUND menu for KEYBOARD VIEW.

Sequencer

General

- Fixed numerous crash bugs around parameter automation when entering and leaving clip view.

Presets

- When changing instrument presets in Session View or ARRANGER VIEW, all pertaining clips of that instrument switch as well. Individual clips can still have only their preset changed by doing so in CLIP VIEW.

Arpeggiator

- The arpeggiator has been completely redesigned to have advanced features for the user like independent OCTAVE MODE and NOTE MODE, RHYTHM, SEQUENCE LENGTH and RATCHETS notes. It also enables MPE keyboards to give more expression to the arpeggiated notes by updating live the velocity of the notes based on Aftertouch or MPE Y data coming from the keyboard.

Scales

- Added support for 5 and 6 note scales.
- Added 8 new built-in scales: Melodic Minor, Hungarian Minor, Marva (Indian), Arabian, Whole Tone, Blues, Pentatonic Minor, Hirajoshi.

Clip Launch Modes

- Added ONCE CLIP launch mode, which allows a clip to play just once when launched and then mute itself. Settable in Song's ROWS VIEW by holding **Mute** of a row and then pressing **SEL Select**.

Note Probability

- Added NOT FILL note probability. Similar to the FILL probability but only plays when the FILL button is *not* pressed. When the SYNC-SCALING button is held, NOT FILL notes will be highlighted in red color, as opposed to blue for FILL notes.

Note Copy/Paste

- Added support for copy/paste of single rows.
- Added support for notes to PASTE GENTLY which pastes notes without removing old ones.

MIDI

General

- Added "MPE collapse" on MIDI clips which converts MPE X/Y/Z to Pitch/Modwheel/Aftertouch CCs for use of MPE controllers with non-MPE aware synths. Configurable via the clip menu.
- Fixed reversal of upstream MIDI ports (port 1 was upstream port 2, port 2 was upstream port 1).
- Fixed a number of MPE channel matching and learning bugs.
- Fixed crash when using an external controller to control ModFX.
- Fixed CC74 on the MPE master channel behaving like an expression event.

Learn

- Added MIDI learning of SONG and KIT AFFECT ENTIRE params.
- Added MIDI learn for kits, allowing a whole kit to be learnt to the same midi channel at once. The incoming note is the first row, and increasing notes (chromatically) go to the next rows.
- Added support for learning Program Change methods for most global commands.

Sysex

- Added support for LUMI Keys SYSEX protocol. When hosting a LUMI Keys keyboard, the Deluge's current scale will automatically be set on the LUMI's keyboard.

Follow

- Added MIDI FOLLOW MODE which causes MIDI data to be directed based on context.
- Added MIDI FEEDBACK, so external MIDI controllers can be made aware of the state of the Deluge synth engine. Configurable via the new global MIDI > MIDI-FOLLOW > FEEDBACK menu.
- Added Loopy Pro and TouchOsc templates to use with MIDI follow/MIDI feedback.

Takeover

- Added New MIDI Takeover Mode: RELATIVE for use with controllers sending relative value changes

Transpose

- Added MIDI control over transpose / scale.
 - Accessed via external MIDI via a new learnable global MIDI command in SETTINGS > MIDI > CMD > TRANSPOSE. It learns the entire channel, not just a single note.
 - Accessed internally from a MIDI clip. Turn the channel to the end of the list past the MPE zones to 'Transpose'. Notes in this clip now alter the transposition of the song.
 - Clips not in scale mode are unaffected (similar to the existing transpose behaviour from the encoders).
 - Configurable in SETTINGS > MIDI > TRANSPOSE between chromatic and in-scale transposition.

Select Kit Row

- Added a new global setting, MIDI > SELECT KIT ROW, which causes MIDI notes sent to kits to select the corresponding learned row.

Internal Changes

- The Deluge Build Tool toolchain has been updated from GCC 12 to GCC 13.
- All code is now built in THUMB mode by default, except DSP code which is still ARM.
- Support for parallel toolchains has been added so re-downloading is not required while moving between branches.
- Numerous improvements to the VSCode configuration, including auto-format on save.
- Various types have been renamed and refactored to improve legibility.
- A number of on/off UI toggles have been collapsed in to the new `ToggleBool` class
- `currentSong->currentClip` and similar expressions have been refactored in to functions to improve safety and reduce code size.
- String formatting is now done with a compact `printf` implementation in many cases.
- All publicly available fixes to the official firmware are integrated (up to commit [0501b7d](#))

c1.0.1 Amadeus

- Fixed a bug where MIDI learned ModFX parameters in an audio clip with monitoring active could crash
- Fixed various crashes related to parameter automation
- Fixed crash when deleting loop points with loop lock enabled
- USB MIDI upstream ports were accidentally reversed, this is now corrected. If you only see 1 MIDI port on OSX, try unplugging the Deluge and then deleting the configuration in “MIDI Audio Setup”
- Fixed potential corruption of MIDI learned settings.

c1.0.0 Amadeus

Audio Improvements

Effects

- A MASTER COMPRESSOR has been added and is accessible in Session View.
- STEREO CHORUS has been added to MOD FX TYPES. Adjust stereo depth via MOD FX DEPTH.
- GRAIN has been added to MOD FX TYPES. Choose from 5 Grain Presets via MOD FX FEEDBACK. †
- WAVEFOLD distortion has been added and occurs pre-filter. The parameter pad shortcut is between SATURATION and LPF CUTOFF.
- UNISON STEREO SPREAD has been added and can be dialed to spread the unison parts across the stereo field. Click  Select when in UNISON AMOUNT to reveal the parameter.

Filter

- New LPF/HPF State Variable Filters: SVF NOTCH and SVF BANDPASS.
- New Filter Parameters: LPF MORPH and HPF MORPH. This morphs the SVF through Lowpass, Bandpass, and Highpass; adds drive to the low pass ladder filters, and adds filter fm to the hpf ladder.
- FILTER ROUTING is accessible via the Sound Editor menu and adjusts the filter order from HPF to LPF, LPF to HPF, or PARALLEL.

LFO & Sync

- New LFO Shapes: RANDOM WALK and SAMPLE & HOLD.
- New Sync Modes: TRIPLETS and DOTTED. (All previous sync rates now include 'TPLTS' and 'DTTED' options.)

Sequencing Improvements

AUTOMATION VIEW allows you to visually create and edit parameter automations across the main grid pads for SYNTH, KIT, and MIDI clips on a per step basis at any zoom level. (Excludes MPE automations).

Probability & Iteration

- PROBABILITY BY ROW allows you to set probability for all notes in a given row, expanding from just being able to set probability to currently pressed down notes.
- QUANTIZE and HUMANIZE notes after they've been recorded/sequenced on either a per row basis or for all notes in a given clip at once. *
- Sequenced notes can be set to FILL which will only play them when the designated FILL button is being held (either a Global MIDI Command or SYNC-SCALING†)

Keyboard View Improvements

- New DRUM KEYBOARD VIEW added. Kit rows can now be visualized and played across the main grid pads. By default the area of each sample is spread across 4x4 pads and additionally provides a range of 16 VELOCITY levels. This area can be adjusted from 1x1 to 8x8 grids.
- New IN-KEY keyboard layout. IN-KEY will only display notes that are in key of the selected scale across the keyboard layout. The original view is named ISOMORPHIC. Users can switch freely between the two and choose their Default Keyboard Layout in the DEFAULTS Menu.
- Adjust ROOT NOTE and SCALE with new shortcuts, this assists the user when using the IN-KEY keyboard layout where not every note is visible to set as a ROOT NOTE.
- Adjust the offset of KEYBOARD VIEW via ROW STEP from 1-16. The Deluge's default ROW STEP is 5.

- **HIGHLIGHT INCOMING NOTES** will light up incoming MIDI notes across the current **KEYBOARD VIEW** based on their velocity. *
- **NORNS LAYOUT** provides compatibility for the Monome Norns using the 'midigrid' script. †

MIDI Improvements

- Change handling of MPE expression when collapsed to a single MIDI channel. Previously y axis would still be sent as CC74 on single midi channels. This changes it to send CC1 instead, allowing for controllable behavior on more non-MPE synths. Future work will make a menu to set this per device.
- Added additional MIDI ports which improves usability of MPE-capable devices via USB by sending MPE to one port and non-MPE to the other port.
- Enabled learning CCs to the global midi commands (play, stop, loop, overdub, etc.). This improves compatibility with footswitches that can't send midi notes.
- **MIDI Takeover Mode** - Affects how the Deluge handles MIDI input for learned CC controls. Options include **JUMP**, **PICKUP**, **SCALE**.
- Fixed bugs in mpe handling so that mpe and MIDI channels can be separated without requiring differentiate inputs

User Interface Improvements

- **GRID VIEW** is an alternate **Session View** layout similar to Ableton's 'Session View'. It displays unique clips across pad rows and the clip variations across pad columns. Effectively allows you to view and launch 128 clips and variations without the need of scrolling to reveal more clips in comparison to **ROW VIEW**'s 8 clips at a time.
- **Manual Slicing** aka 'Lazy Chopping' is now possible by pressing the  **Horizontal** encoder when in the **Slice Menu**. Allows you to create slice points live while listening to the sample playback.
- Any synth preset can now be loaded into a **Kit** row. Hold the audition pad and press **SYNTH** to browse/load a preset.
- **Gold encoders** now display a pop-up of their current value when adjusted. The value range displayed is 0-50 for non-MIDI parameters and 0-127 for MIDI parameters.
- A **MOD MATRIX** entry has been added to the sound editor menu which shows a list of all currently active modulations of a given preset.
- You can change the launch status of a clip from **INFINITE** to **FILL**. When a **FILL** clip is launched it will schedule itself to play the fill at such a time that it *finishes* by the start of the next loop and then mutes itself.
- You can now scroll through parameter values and menus faster by +/- 5 by holding **Shift** while turning the  **Select** encoder.
- You can now shift a clip's row color from **Session View** without having to enter the given clip to do so.

- You can now set the stutter effect to be quantized to 4TH, 8TH, 16TH, 32ND, and 64TH notes before engaging it. †
- Increased the resolution of modulation between sources and their destinations by including two decimal places to the modulation amount. *
- An option to swap the behavior of the TEMPO encoder when turned versus pressed & turned. *
- STICKY SHIFT - Tapping **Shift** will lock **Shift** ON unless another button is also pressed during the short press duration. Allows for quicker parameter editing. †
- Incoming MODULATION WHEEL MIDI data from non-MPE synths now maps to Y on the Deluge.
- The metronome's volume now respects the song's volume and will increase or decrease in volume in tandem with the LEVEL-assigned gold encoder. In addition, a DEFAULTS menu entry METRONOME enables you to set a value between 1 and 5 to further adjust the volume of the Metronome.
- An alternative setting when pressing DELAY-assigned gold encoders can be enabled. The default is PINGPONG (ON/OFF) and TYPE (DIGITAL/ANALOG) for the upper and lower gold knobs respectively. The alternate mode changes it to SYNC TYPE (EVEN, TRIPLETS, DOTTED) and SYNC RATE (OFF, WHOLE, 2ND, 4TH, ETC.) respectively. †
- The default behavior of 'catching'/playing notes when instantly launching/muting clips can now be turned off. This can result in less unexpected percussive sounds triggering when instantly switching between clips. *
- Waveform Loop Lock - When a sample has loop start and loop end points set, holding down loop start and tapping loop end will lock the loop points together when adjusting their position across the waveform.
- **Shortcut changed in 1.3** Pressing **Audition** + Random **Pad** on a drum kit row will load a random sample from the same folder as the current sample. *
- You can now batch delete kit rows which do not contain any notes, freeing kits from unused sounds. *
- Audio waveforms can be shifted in an Audio clip, similar to instrument clips, with the exclusion of wrapping the audio around.
- Support for sending and receiving large SYSEX messages has been added. This allows 7SEG behavior to be emulated on OLED hardware and vice versa. Also allows for loading firmware over USB. As this could be a security risk, it must be enabled in community feature settings. †

Footnotes

* - Denotes a feature that is ENABLED by default in the COMMUNITY FEATURES menu but can be disabled.

† - Denotes a feature that is DISABLED by default in the COMMUNITY FEATURES menu but can be enabled.

Overview

1. Introduction

Every time a Pull Request improves the community firmware it shall be noted down what it accomplishes and how it is used.

Please note that this document describes the state of the very latest development work for a future Deluge version at a given time, and many of the features are not yet available in released stable versions. Documentation about released versions can be found here:

- [1.2.x \(Chopin\)](#)
- [1.1.x \(Beethoven\)](#)
- [1.0.x \(Amadeus\)](#)

For more detailed version information, see the [changelog](#).

Reference the 'Community Features Menu' section at the end of this document to understand what each entry is and their 7SEG abbreviations.

In general, we try to maintain file compatibility with the official firmware. However, **files (including songs, presets, etc.) that use community features may not ever load correctly on the official firmware again.** Make sure to back up your SD card!

2. UI Changes from Official

2.1 - Velocity Rendering c1.3

- Note velocity is now displayed in clips using colour intensities. The note head (the bright part) now stands out from the tail in proportion to its velocity. At velocity 127 it is identical to official, at velocity 0 it would look the same as its tail (but you can't have 0 velocity).

2.2 - Horizontal Menus c1.3

- The menus for the following items have been updated on OLED, with multiple values visible and editable at the same time. This feature is on by default, and can be disabled via `SETTINGS > COMMUNITY FEATURES > HORIZONTAL MENUS`.
 - Oscillator 1-2.
 - Oscillator mixer.
 - Sample 1-2.

- Sample recorder.
- Modulator 1-2.
- Master.
- Envelope 1-4.
- LFO 1-4.
- LPF and HPF.
- EQ.
- Distortion.
- Reverb.
- Reverb sidechain.
- Sidechain.
- Delay.
- Mod FX.
- Compressor.
- Stutter.
- Unison.
- Voice.
- Arpeggiator.
- Horizontal Menu controls.
 - turn  Select to change the value of the selected menu item
 - You can select the different menu item's on the currently visible horizontal menu page using the Synth , Kit , MIDI , CV buttons
 - When in a Horizontal Menu, the selected instruments LED corresponding to the Horizontal Menu item selected will light up
 - You can use the Scale and Cross Screen buttons to switch between pages and adjacent menus
 - Use Cross Screen button to switch to the next page
 - Use Scale button to switch to the previous page
 - Use Shift + Cross Screen button combo to switch to the next adjacent Horizontal menu
 - Use Shift + Scale button combo to switch to the previous adjacent Horizontal menu
 - You can fine-tune values (e.g., oscillator transpose) in a menu by either press & turn  Select or Shift + turn  Select

2.3 - Layered Shortcuts c1.3

- Layered Shortcuts mechanism allows multiple shortcuts to be accessed under a single shortcut pad. Holding shift and pressing the same shortcut again cycles between shortcuts. The items available under layered shortcuts can also be accessed from menu: layered shortcut is never the only access method.

- Following shortcuts have layers:
 - ENV shortcuts: cycles between envelope 1 and 3 (ENV1 shortcuts), and envelope 2 and 4 (ENV2 shortcuts). This also applies to ENV modulator shortcuts.
 - LFO shortcuts: cycles between LFO 1 and 3 (LFO1 shortcuts), and between LFO 2 and 4 (LFO2 shortcuts). This also applies to LFO modulator shortcuts.
 - UNISON NUMBER: cycles between UNISON NUMBER and UNISON STEREO SPREAD, in addition to the previous “press select when in UNISON NUMBER access mechanism for UNISON STEREO SPREAD.
 - COMPRESSOR THRESHOLD: cycles between COMPRESSOR THRESHOLD and COMPRESSOR RATIO
 - STUTTER RATE: cycles between STUTTER RATE and STUTTER DIRECTION

2.4 - Favourites c1.3

A Favourites-Feature has been added to the Load-UIs for most File-Types. The Favourites are displayed above the Keyboard and are only visible when the keyboard is shown. Favourites can be configured to either offer 16 Favourites (default), 16 Banks with 16 Favourites or be completely disabled via **SETTINGS > DEFAULTS -> UI -> KEYBOARD -> FAVOURITES**.

- In the **Favourites Only (16)**-Mode , 16 Favourite Slots are available at the Toprow above the Keyboard.
- In the **Favourites and Banks (256)**-Mode, the Toprow contains 16 Banks, each with 16 Favourites displayed on the second row. Usage:
 - Save a Favourite
 - Select the Bank (Only available in **Favourites and Banks (256)**-Mode)
 - Browse to the File you want to save
 - Hold **Shift** and select a empty Favourite Slot (light blue)
 - Delete a Favourite
 - Select the Bank (Only available in **Favourites and Banks (256)**-Mode)
 - Hold **Shift** and select the Favourite Slot you want to delete
 - Recall a Favourite
 - Select the Bank (Only available in **Favourites and Banks (256)**-Mode)
 - Select the Favourite
 - Change the Colour of a Favourite
 - Select the Favourite you want to modify
 - Hold **Shift** and turn  **Vertical**

Tip: If you are Browsing Songs or Samples and don't want to have the Preview to hide the Keyboard on Scrolling, just press ** Keyboard** to pin the Keyboard and the Favourites.

2.5 - 7SEG Folder Indicator c1.3

- On 7SEG the file browser now shows a dot in the lower-right corner when the currently selected item is a folder

3. General Improvements

Here is a list of general improvements that have been made, ordered from newest to oldest:

3.1 - Patch Cable Modulation Resolution

- ([#17](#)) c1.0 Increase the resolution of “patch cables” between mod sources and destinations. This adds two decimal points when modulating parameters.

3.2 - MPE

- ([#512](#)) c1.0 Change handling of MPE expression when collapsed to a single MIDI channel. Previously Y axis would still be sent as CC74 on single MIDI channels. This changes it to send CC1 instead, allowing for controllable behaviour on more non-MPE synths. Future work will make a menu to set this per device.
- ([#934](#)) c1.1 Allow converting polyphonic expression to monophonic expression. Two settings are added to midi clips under a new menu entry POLY EXPRESSION TO MONO. AFTERTOUCH converts MPE or poly aftertouch to channel aftertouch, and MPE converts poly y-axis to mod wheel and poly pitch bend to an average monophonic pitch bend. For y axis and aftertouch the highest value wins.
- ([#2343](#)) c1.2 Allow converting output Y axis to mod wheel (cc1) to support synths with a limited MPE implementation, such as the micromonsta and the dreadbox nymphes.

3.3 - MIDI

- ([#47](#)) c1.0 Extra MIDI ports on the USB interface for MPE. Port 2 shows in the MIDI device menu, and improves the usability of MPE-capable devices through the USB interface by allowing MPE zones to be sent to port 2 and non-MPE to be sent to port 1 (or vice versa). A third port is added for future use such as a desktop/mobile companion app, DAW control or Mackie HUI emulation. When USB for MIDI is plugged into the Deluge, you can browse these settings in SETTINGS > MIDI > DEVICES > UPSTREAM USB PORT 1 or UPSTREAM USB PORT 2.
- ([#147](#)) c1.0 Allows CCs to be learnt to the global commands (play, stop, loop, fill, etc.)

- (#170) **c1.0** A new TAKEOVER submenu was created in the MIDI settings menu which consists of four modes that can be selected from. This mode affects how the Deluge handles MIDI input for learned CC controls:
 - 1. JUMP:** This is the default mode for the Deluge. As soon as a MIDI encoder/Fader position is changed, the Deluge's internal encoder position/Parameter value jumps to the position of the MIDI encoder/Fader.
 - 2. PICKUP:** The Deluge will ignore changes to its internal encoder position/Parameter value until the MIDI encoder/Fader's position is equal to the Deluge encoder position. After which the MIDI encoder/Fader will move in sync with the Deluge.
 - Note: this mode will behave like the JUMP mode when you are recording or step editing automation.
 - 3. SCALE:** The Deluge will increase/decrease its internal encoder position/Parameter value relative to the change of the MIDI encoder/Fader position and the amount of "runway" remaining on the MIDI controller. Once the MIDI controller reaches its maximum or minimum position, the MIDI encoder/Fader will move in sync with the Deluge. The Deluge value will always decrease/increase in the same direction as the MIDI controller.
 - Note: this mode will behave like the JUMP mode when you are recording or step editing automation.
 - 4. RELATIVE **c1.1** :** The Deluge will increase/decrease its internal encoder position/Parameter value using the relative value changes (offset) sent by the controller. The controller must be actually sending relative value changes (127 for down and 1 for up) in order for this to work.
- (#837) **c1.1** MIDI control over transpose / scale.
 - Accessed via external MIDI via a new learnable global MIDI command in SETTINGS > MIDI > CMD > TRANSPOSE. It learns the entire channel, not just a single note.
 - Accessed internally from a MIDI clip. Turn the channel to the end of the list past the MPE zones to 'Transpose'. Notes in this clip now alter the transposition of the song.
 - Clips not in scale mode are unaffected (similar to the existing transpose behaviour from the encoders).
 - Configurable in SETTINGS > MIDI > TRANSPOSE between chromatic and in-scale transposition.
 - When set to in-scale mode:
 - an incoming MIDI note that is already in-scale will set the root note, and rotate the existing notes into place. Eg, starting in C major, an incoming D will set the root note to D, but keep the scale notes, resulting in D Dorian. For other scales, eg Harmonic minor, this rotation still applies.
 - Out of scale notes are ignored.
 - MIDI clips routed to transpose can be in either scale mode or chromatic. Using the audition pads, placing notes on the grid, or notes triggered during playback will cause the root note to move around on the audition pads, or in keyboard view.
 - When set to chromatic mode:
 - incoming notes set the root note. Scale mode clips are all transposed chromatically.

- MIDI clips routed to 'Transpose' cannot be in scale mode. Existing clips of this type will drop back to chromatic mode, and pressing the Scale button will display 'CANT'.
- Choice of octave is determined by the first note received by each song (this is reset on each song load). The first transposition will move the root note by at most a fifth, to the closest matching note. Subsequent transpose events will respect the octave as normal.
 - Eg. Song is in C major. Transpose receives a D3. Regardless of whether the song is just a bassline, or pads, or a high synth part, it all goes up to D Dorian or D Major depending on the inkey/chromatic setting. After that a D4 will put everything up an octave. If instead the first transpose is a D4, this will initially only go up a tone, and after that a D5 will go up an octave, or a D3 will go down etc.
- **Limitation** Just as with setting transposition from the encoders, a new transpose event will cut off currently playing notes. If this is done from a MIDI clip, it can cut off notes right at the start so they are never heard. Clip playback ensures transpose clips play first to affect new notes starting at the same position correctly, but any already sounding notes will be stopped.
- (#889) **c1.1** Master MIDI Follow Mode whereby after setting a master MIDI follow channel for Synth/MIDI/CV clips, Kit clips, and for Parameters, all MIDI (notes + cc's) received will be directed to control the active or selected clip).
 - For a detailed description of this feature, please refer to the feature documentation: [MIDI Follow Mode Documentation](#)
 - Comes with a MIDI feedback mode to send updated parameter values on the MIDI follow channel for learned MIDI cc's. Feedback is sent whenever you change context on the deluge and whenever parameter values for the active context are changed.
 - Settings related to MIDI Follow Mode can be found in SETTINGS > MIDI > MIDI-FOLLOW.
 - (#976) For users of Loopy Pro, you will find a MIDI Follow template in this folder: [MIDI Follow Mode Loopy Pro Template](#)
 - It is setup to send and receive on channel 15 when the Deluge is connected via USB (and detected as "Deluge Port 1"), so you must go to your Deluge, and do Shift + Select to enter the main menu, go to MIDI -> MIDI-FOLLOW -> CHANNEL A, and set it to 15. In case your port is detected with a different name in Loopy (it could happen if the language of your iOS device is not English), like for example "Deluge **Puerto** 1" (in Spanish), you can always transfer the existing midi bindings from one port to the other by going to Loopy's Menu -> Control Settings -> Current Project -> Default -> look for the "Deluge Port 1" section and tap on "TRANSFER" to copy or move all the midi bindings to the real port name of your Deluge.
 - As a bonus, this project also contains a page "B" with controls for the Song's global parameters, which must be learned individually (not part of MIDI Follow). To do that, go to Deluge Session View, click Select button to enter the Song menu, go to each parameter (Volume, Pan, LPF Freq, etc), hold Learn button and then move the knobs and faders within page "B" of Loopy's project.
 - Pages "C" and "D" are the controls that are doing the heavy lifting of sending/receiving midi so they can't be deleted. Pages "A" and "B" are just the "user facing" controls, tied to the stepped

dials from the other two pages.

- **How to setup Feedback:** In Loopy, go to Menu -> Control Settings -> MIDI Devices section -> Deluge Port 1 -> make sure that Feedback switch is enabled. In your Deluge, do Shift + Select to enter the main menu, go to MIDI -> MIDI-FOLLOW -> FEEDBACK. Here you can select the Channel to send feedback to, the Rate at which feedback is sent for Automation, and you must set Filter Responses to DISABLED.
- (#1053) For users of Touch OSC, you will find a MIDI Follow template in this folder: [MIDI Follow Mode Touch OSC Template](#)
- (#4526) **c1.3** Added specific track control to MIDI FOLLOW enabling you to have instant mixer control of the parameters of up to 16 tracks.
 - You can now configure up to 16 channels in the MIDI Follow menu.
 - CC's received on the specific track channels are directed to the active clip of the corresponding track.
 - Track 1 corresponds to bottom track in ARRANGER VIEW or left track in GRID VIEW.
 - You can also now configure the Channel TRACK for MIDI Follow Feedback. If a specific track is selected and has been configured for MIDI Follow control, the Deluge will send feedback of the CC values for that specific track.
 - MIDI Follow Feedback can now be sent to both the selected track channel and a regular follow channel by selecting TRACK + A, TRACK + B, or TRACK + C.
 - Combined feedback modes send to the configured track channel first, then to the configured regular channel.
 - If both targets resolve to the same MIDI channel, feedback is sent only once.
- (#4526) **c1.3** Added new default CC 89 to toggle the mute of the active clip in a specific track.
 - Toggle mute: CC Value > 0 (Send a CC value greater than 0 to toggle mute for the active clip in a specific track)
 - If used together with SHIFT, it will trigger instant mute.
- (#4526) **c1.3** Added new default CC 90 to toggle solo of the active clip in a specific track.
 - Toggle solo: CC Value > 0 (Send a CC Value greater than 0 to toggle mute for the active clip in a specific track)
- (#963) **c1.1** MIDI Select Kit Row - Added new Select Kit Row setting to the MIDI Defaults menu, which can be found in SETTINGS > MIDI > SELECT KIT ROW. When this setting is enabled, midi notes received for learned kit row's will update the kit row selection in the learned kit clip. This also works with midi follow. This is useful because by updating the kit row selection, you can now control the parameters for that kit row. With midi follow and midi feedback enabled, this will also send updated cc feedback for the new kit row selection.
- (#1251) **c1.1** MIDI learn for kit - from song or arranger view, a kit can now be learnt to a midi channel in the same way as synths. The note sent for the learn will be treated as the first row for the kit, and increasing notes get mapped to the next rows

- ([#2810](#)) **c1.3** Added new learnable global command `LOAD NEXT SONG` (which can be quickly learned holding `LEARN` and `LOAD` and sending a MIDI note or CC message). When the Deluge receives this command while it is playing, it will queue to load the next song within the folder of the current song (wraps around when reaching the end of the folder).

3.4 - Tempo & Swing

- ([#178](#)) **c1.0** New option (`FINE TEMPO KNOB` in the `COMMUNITY FEATURES` menu). Inverts the push+turn behavior of the `TEMPO` encoder. With this option enabled the tempo changes by 1 when unpushed and ~4 when pushed (vs ~4 unpushed and 1 pushed in the official firmware).
 - This feature is ON by default and can be set to ON or OFF via `SETTINGS > COMMUNITY FEATURES > FINE TEMPO KNOB`.
- ([#2264](#)) **c1.2** Swing interval can now be changed by holding `TAP TEMPO` button while turning the `TEMPO` encoder. To view current swing interval hold `TAP TEMPO` and press `TEMPO`. The menu for setting the swing interval has been moved from `SETTINGS > SWING INTERVAL` to `SONG > SWING INTERVAL`. Additionally, when changing either swing amount or interval using the `TEMPO` encoder, first encoder detent shows the current swing without changing it, with subsequent ones editing it.
- ([#2367](#)) **c1.2** Tempo changes can now be recorded to automation in arranger view

3.5 - Alternative Delay Types for Param Encoders (Gold encoders)

- ([#282](#)) **c1.0** Ability to select in `COMMUNITY FEATURES` menu, which parameters are controlled when you click the `DELAY`-related golden encoders. The default (for upper and lower encoders) is `PINGPONG (ON/OFF)` and `TYPE (DIGITAL/ANALOG)`, and you can modify it so the encoder clicks change the `SYNC TYPE (EVEN, TRIPLETS, DOTTED)` and `SYNC RATE (OFF, WHOLE, 2ND, 4TH, ETC)` respectively.
 - This feature is OFF by default and can be set to ON or OFF via `SETTINGS > COMMUNITY FEATURES > ALTERNATIVE GOLDEN KNOB DELAY PARAMS`.

3.6 - Kits

- ([#395](#)) **c1.0** Load synth presets into kit rows by holding the row's `Audition` + `Synth`. Saving can be done by holding the audition pad and pressing save.
- ([#3079](#)) **c1.3** Midi and Gate kit rows now are arpeggiator-enabled, and they have each a menu to set it up.

- (#3425) **c1.3** Extended the ability to batch change all drum sounds, by holding **Affect Entire** while editing a parameter (indicated by flashing the **Affect Entire** button), from the initially available handful of sample-related parameters, to ALL sound parameters (except for Oscillator Type and patch cable strengths).

3.7 - Global Interface

- (#118) **c1.0** Sticky Shift - When enabled, tapping **Shift** will lock shift ON unless another button is also pressed during the short press duration.
 - This feature is OFF by default and can be set to ON or OFF via **SETTINGS > COMMUNITY FEATURES > STICKY SHIFT**.
- (#118) **c1.0** Shift LED feedback can now be toggled manually, however it will turn ON or OFF in conjunction with Sticky Shift (adjust **SHIFT LED FEEDBACK** afterwards).
 - This feature is OFF by default and can be set to ON or OFF via **SETTINGS > COMMUNITY FEATURES > LIGHT SHIFT**.
- (#1305) **c1.1** Number of count-in bars is now configurable under **SETTINGS > RECORDING > COUNT-IN BARS**.

3.8 - Mod Wheel

- (#512) **c1.0** Incoming mod wheel MIDI data from non-MPE devices now maps to the Y axis.

3.9 - Visual Feedback on Value Changes with Mod Encoders and Increased Resolution for Value's in Menu's

- (#636) **c1.0** Changing parameter values with Mod (Gold) Encoders now displays a pop-up with the current value of the parameter. The **SOUND** and **MODULATION** screens when parameter and modulation editing have also been adjusted to show the same value range as displayed with the Mod Encoders.
 - This allows for better fine-tuning of values.
 - The value range displayed is 0-50 for non-MIDI parameters and 0-127 for MIDI parameters.
 - Note: In the Menu, if you wish to scroll through the parameter value range faster at an accelerated rate of +/- 5, turn **Shift** + turn **SEL Select**.

3.10 - Enable Stutter Rate Automation

- (#653) **c1.0** Enabled ability to record stutter rate automation with **GLD Gold**.
 - Note: This feature does not enable you to automate the triggering of stutter

3.11 - Adjust Metronome Volume

- (#683) **c1.0** The Metronome's volume now respects the song's volume and will increase and decrease in volume together with the Gold Volume Encoder.
 - In addition, a DEFAULTS menu entry was created titled METRONOME which enables you to set a value between 1-50 to further adjust the volume of the Metronome. 1 being the lowest metronome volume that can be heard when the Song's volume is at its maximum and 50 being the loudest metronome volume.

3.12 - Mod Button Pop-up

- (#888) **c1.1** Added Mod Button pop-up to display the current Mod (Gold) Encoder context (e.g. LPF/HPF Mode, Delay Mode and Type, Reverb Room Size, Compressor Mode, ModFX Type and Param).

3.13 - Automatically load the last open/saved song or user-defined template at startup.

- (#1272) **c1.1** Added feature to load automatically projects at startup. To activate the feature, press **Shift + SEL Select** : MENU > DEFAULTS > STARTUP SONG.
- Four modes are available :
 - NEW SONG : default mode, empty project on clip view with default synth.
 - TEMPLATE : it will load DEFAULT.XML project that will be saved automatically when you select this mode, and will enable you to edit it later on and to replace the default blank song by a user-defined template.
 - LAST OPENED SONG : it will load the last long that you OPENED before shutting down the Deluge.
 - LAST SAVED SONG : it will load the least songs that you SAVED before shutting down the Deluge.
- In case of issue loading a song, a failsafe mode will be triggered :
 - If a crash occurs at startup loading a song, it will automatically deactivate the feature and will show you at startup which song is having issues.
 - the feature will be deactivated until either:
 - the canary file SONGS/_STARTUP_OFF_CHECK{SONG} is removed from UI song browser or from the sd card.
 - LAST OPENED SONG/ LAST SAVED SONG / TEMPLATE refers to another song, in which case previous canary file will be ignored (but still needs to be manually removed).
- In case of the crash still persists, you can always factory reset by holding **SEL Select** while powering on the Deluge, which will force to boot up on NEW SONG.

3.14 - Preserve Pad Brightness Preference Through Power Cycle

- ([#1312](#)) **c1.1** Save user-defined pad brightness level and restore it at startup. To use this feature, press **Shift +  Select** : MENU > DEFAULTS > PAD BRIGHTNESS.
 - Default : Full brightness (100).
 - Min value 4, Max Value 100.

3.15 - Learn Mod (Gold) Encoders to full Mod Matrix / Patch Cable value range

- ([#1382](#)) **c1.1** Mod (Gold) Encoders learned to the Mod Matrix / Patch Cable parameters can now access the full value range of those parameters (e.g. from -50 to +50)
 - In addition, a pop-up was added when using gold encoders learned to the Mod Matrix / Patch Cable parameters to show the source parameter(s) and destination parameter.

3.16 - Make Mod (Gold) Encoders LED indicators bipolar

- ([#1480](#)) **c1.1** As a follow-up to ([#1382](#)) which enabled Gold Knobs to access the full range of a Patch cable, the LED indicators for gold knobs editing bipolar params (e.g. Pan, Pitch, Patch Cable), are now bipolar. The lights of a bipolar LED indicator are lit up as follows
 - Middle value = No lights lit
 - Maximum value = Top two lights fully lit
 - Between middle and maximum the top two lights will be lit up proportionately to the value in that range
 - Minimum value = Bottom two lights fully lit
 - Between middle and minimum, the bottom two lights will be lit up proportionately to the value in that range

3.17 - Select Audio Clip Source and Monitoring

- ([#1531](#)) **c1.2** Added ability to select audio source from within an Audio Clip by opening the Audio Clip Sound Menu (**Shift +  Select**) and Selecting the AUDIO SOURCE menu
- ([#2371](#)) **c1.2** Source can now also be set to a specific track on the deluge. This enables an additional TRACK menu to choose which track to record from. The source can also be selected by pressing a clip's pad while in the audio source selection menu.
- ([#2702](#)) **c1.3** Monitoring is now set by the audio output mode. This is done by turning the select encoder

- Player: Monitoring is off, overdubs work by cloning. This is intended to be used for playing a static audio file or recording without monitoring.
- Sampler: Monitoring is on, monitoring turns off after recording, overdubs work by cloning. This is intended to be used for sampling from an ongoing audio stream where you only want to hear the part you're looping afterwards
- Looper: Monitoring is on and remains on. Overdubs do a real overdub in place. This is intended for live looping or use as an fx processor

3.18 - Set Audio Clip Length Equal to Sample Length

- (#1542) **c1.2** Added new shortcut to set the length of an audio clip to the same length as its sample at the current tempo. This functionally removes timestretching until the Audio Clip length or Song tempo is changed.
 - Press **Vertical** + **Horizontal** to set the Audio Clip length equal to the length of the audio sample.
 - This action is also available in the Audio Clip Sound Menu (Press **Select**) by Selecting the ACTIONS menu and Pressing **Select** on the Set Clip Length to Sample Length action.
 - Press **Shift** + **Vertical** + turn **Horizontal** to adjust the audio clip's length independent of timestretching.

3.19 - Sample Slice Default Mode

- (#1589) **c1.1** Added a new default setting that controls which playback mode new slices of a kit will get.
- To change the setting, press **Shift** + **Select** : MENU > DEFAULTS > SAMPLE SLICE MODE.
- every new slice in a kit using the slicer will now get one of the modes by default
 - CUT, ONCE, LOOP, STRETCH
 - the setting is persistent after reboot
 - if a kit slice is shorter than 2s, the slicer will automatically switch to ONCE (default behaviour)

3.20 - Default Hold Press Time

- (#1846) **c1.1** Added new default menu to set the length of time to register a Hold Press for use with Sticky Shift, Performance View, and the Keyboard Sidebar Layouts.
 - Set the default Hold Press time by accessing SETTINGS > DEFAULTS > HOLD PRESS TIME

3.21 - Eased Timeline Zoom Level Restrictions

- ([#1962](#)) **c1.2** The maximum zoom level has been increased. Now, the maximum zoom is the point where the entire timeline is represented by a single grid cell.
 - This allows for more flexibility when entering long notes and chord progressions.
 - While changing the zoom level, the horizontal encoder will briefly pause while passing the zoom level which represents the entire sequence. This is to prevent frustration from users who are used to the prior limitations.

3.22 - Exit menus by holding back

- ([#2166](#)) **c1.1** Holding back will now fully exit your current menu

3.23 - Automated Audio Exporting

- For a detailed description of this feature as well the button shortcuts/combos, please refer to the feature documentation: [Audio Export Documentation](#)
- ([#2260](#)) **c1.2** Added AUDIO EXPORT, an automated process for exporting CLIP's while in Session View and TRACK's while in ARRANGER VIEW. Press SAVE + RECORD to start exporting audio. Press BACK to cancel the export and stop recording and playback.
- ([#2327](#)) **c1.2** You can also start the export via a new EXPORT AUDIO menu found in the SONG menu accessible in Song and Arranger Views. Start the export by entering the SONG\EXPORT AUDIO\ menu and pressing  Select on the menu item titled START EXPORT. It will exit out of the menu and display the export progress on the display.
- ([#2330](#)) **c1.2** You can configure settings for the audio export via the EXPORT AUDIO menu found in the SONG menu accessible in Song and Arranger Views. Enter SONG\EXPORT EXPORT\CONFIGURE EXPORT\ to configure various export settings.

3.24 - Render Clip / Section Launch Event Playhead in Song Grid and Performance Views

- ([#2315](#)) **c1.2** A white playhead is now rendered in Song Grid and Performance Views that let's you know when a clip or section launch event is scheduled to occur. The playhead only renders the last 16 notes before a launch event.
 - Note: this playhead can be turned off in the Community Features submenu titled: Enable Launch Event Playhead (PLAY)

3.25 - Display Number of Bars / Notes Remaining until Clip / Section Launch Event

- (#2315) c1.2 The display now shows the number of Bars (or Quarter Notes for the last bar) remaining until a clip or section launch event in all Session Views (Grid, Row, Performance).

3.26 - Updated UI for Interacting with Toggle Menu's and Sub Menu's

- (#2345) c1.2 For toggle (ON/OFF) menu's, you can now view and toggle the ON/OFF status without entering the menu by simply pressing on the  **SEL Select** encoder while the menu is selected.
 - OLED renders a checkbox that shows current ON/OFF status. Selecting that menu with select encoder will toggle the checkbox as opposed to entering the menu.
 - 7SEG renders a dot at the end of the menu item to show current ON/OFF status. Selecting that menu with select encoder will toggle the dot as opposed to entering the menu.
 - Submenu's on OLED are rendered with a ">" at the end to indicate that it is a submenu.

3.27 - Updated UI for Creating New Clips in New Tracks in Session Grid View

- (#2429) c1.2 Added new mechanism for creating New Clips in New Tracks in Session Grid View
 - When you press a pad in a new track, a menu will appear asking you to confirm the type of clip you wish to create. The clip type selected to be created is shown on the display and is also indicated by the clip type button that is blinking.
 - The default clip type for new clips created can be configured in **SETTINGS > DEFAULTS > UI > CLIP TYPE > NEW CLIP TYPE** menu.
 - You can also configure whether the clip type for the next clip type you create should default to the last clip type you created. This helps with fast creation of multiple clips of the same type. You can enable this default setting in the **SETTINGS > DEFAULTS > UI > CLIP TYPE > USE LAST CLIP TYPE** menu.
 - If you just a tap a pad quickly to create a new clip, it will create that new clip using either the default clip type or the last clip type you created (if you enable this).
 - If you press and hold a pad, you can choose a different type to create in a number of ways:
 - by turning the select encoder to switch between the various clip types. You can create that clip type by pressing on the select encoder or letting go of the pad.
 - by pressing one of the clip type buttons (e.g. **Synth**, **Kit**, **MIDI**, **CV**).
 - If you let go of the pad without selecting a different type, it will create the clip using the last create type (or the last selected type if you changed selection using select encoder).

- If you press **Back** before releasing a pad or selecting a clip type, it will cancel the clip creation.
- These changes only apply to Session Grid View and NOT Session Row View

3.28 - Add Clip Settings Menu in Session View to set Clip Mode and Clip Name and convert Instrument Clips to Audio Clips

- (#2299) **c1.2** Holding a clip in Session Grid View or the status pad for a clip in Session Row View and pressing **SEL Select** brings up a CLIP SETTINGS menu.
 - If you open the menu with with an INSTRUMENT CLIP selected, then the menu will give you three options:
 1. Convert to Audio: Press select on this option to convert the selected instrument clip into an audio clip. The menu will exit after converting the clip.
 2. Clip Mode: Press select on this option to enter the Clip Mode menu so you can change the Clip Mode between INFINITE, FILL and ONCE.
 3. Clip Name: Press select on this option to enter the Clip Name UI to set the name for the clip.
 - If you open the menu with an AUDIO CLIP selected, then the menu will give two options: Clip Mode and Clip Name.

3.29 - UI Accessibility Defaults Menu

- (#2537) **c1.2** Added DEFAULTS (DEFA) > UI > ACCESSIBILITY (ACCE) menu which contains accessibility changes to the Deluge UI to make the deluge more accessible to users with disabilities. These changes included:
 - Shortcuts (SHOR) to make specific shortcut combinations more accessible for users with mobility restrictions.
 - **◀ Horizontal + Play** is changed to **Cross Screen + Play**
 - Menu Highlighting (HIGH) changes how menu highlighting is rendered on OLED displays by drawing a vertical bar | on the left edge of the display beside the selected menu item instead of highlighting the area of the selected menu item by inverting the text.

3.30 - Added ability to Start / Restart Playback from Specific Clip Pad in Arranger View

- (#2615) c1.3 Added ability to start / restart arrangement playback from the clip pad you're holding in arranger view.
 - Note: you need to select a pad of any clip in arranger in order for this to work (it cannot be an empty pad)

3.31 - Added Song New Midi Learn Menu

- (#2645) c1.3 Added new MIDI LEARN menu to the SONG menu. In Session Grid View this menu enables you to learn Clip/Section Launch. In Session Row View this menu enables you to learn the Clip/Section Launch and Instrument.
 - While in this menu, you just need to hold a clip / section and send midi to learn that clip / section. If you press the clip / section again you will unlearn it.

3.32 - Updated UI for Creating New Clips in Session Row View

- (#2716) c1.2 The default clip type for new clips created can be configured in SETTINGS > DEFAULTS > UI > CLIP TYPE > NEW CLIP TYPE menu.
 - You can also configure whether the clip type for the next clip type you create should default to the last clip type you created. This helps with fast creation of multiple clips of the same type. You can enable this default setting in the SETTINGS > DEFAULTS > UI > CLIP TYPE > USE LAST CLIP TYPE menu.
 - NOTE: The default clip type / last clip type setting cannot be used with CV clips and Audio clips in Session Row View. If you set the default to CV or Audio or enable use of the last clip type (and the last clip type is a CV or Audio Clip), then it will create a Synth clip by default.
 - This is because Audio Clips cannot currently be converted to other clip types and thus you will be stuck with only being able to create Audio Clips (unless you change the default and/or disable use of last clip type). The same applies to CV clips, which after two CV clips created, would prevent you from creating other clips (unless you change the default and/or disable use of last clip type).

3.33 - Threshold Recording

- (#2808) c1.3 Added THRESHOLD RECORDING default setting which can be turned on in the SETTINGS > RECORDING > THRESHOLD RECORDING (THRE) > MODE submenu
 - When this is enabled, recording of external audio input (e.g. Line In / Microphone) will only begin when it detects an audio signal according the Recording Threshold mode that has been set. There are five Threshold Recording modes that can be selected from:

- DISABLED (OFF): Standard Deluge behaviour. Recording starts right away.
- LOW: Sets a lower threshold for lower input signals.
- MEDIUM: Sets a medium threshold that is good for most signals (including the internal microphone with gain off).
- HIGH: Sets a high threshold that is good for noisy signals / microphones with gain
- You can also view and temporarily change the current threshold recording setting as follows:
 - Record + turn  Select
 - Enter the Song menu while in Song or Arranger View by pressing  Select and entering the SONG > THRESHOLD RECORDING (THRE) > MODE submenu
- Note: THRESHOLD RECORDING only applies to audio recorded to kit rows and to the first “tempoless” audio clip.
 - For the first “tempoless” audio clip, the tempo will be set from the time the recorded audio first exceeds the threshold to the time the recording is ended.

3.34 - Polyphony / Voice Count

- (#1824) c1.1 Added new Max Voices (VCNT) menu which lets you configure the Maximum number of Voices for a Polyphonic instrument, accessible by pressing  Select in a Synth clip or Kit clip with a Sound Drum selected and Affect Entire Off under the VOICE (VOIC) menu.
 - This menu is also accessible from the VOICE (VOIC) > Polyphony Type (POLY) type menu by selecting Polyphonic and pressing  Select
- c1.1 Updated default Max Voices for new synth's to 8 voices. Old synths for which a max number of voices has not been configured will default to 16 voices.

3.35 - Clip Names

- (#2293, #2299, #3183) c1.2 All clips can be named. Name must be unique per track. Clip name is displayed underneath the track name on OLED.
 1. Via clip settings menu
 2. Via NAME shortcut in the clip view for non-audio clips (in audio clips the NAME shortcut currently names the track instead). In KIT clips AFFECT ALL must be on, or the shortcut names the active drum instead.
- (#3195) c1.2 Clip name display includes the section number. If the clip has no name, it is displayed using just the section number, as “SECTION N”. If the clip has a name, it is prefixed with the section number, as “N: CLIP NAME”.
- (#3195) c1.2 When clips are copied, the clip name is copied as well. If the target track already has a clip with the same name, an integer suffix starting from 2 is added unless the name already has an integer suffix. This integer suffix is incremented until the clip name is unique on the target track. I.e. copying a clip named “BRIDGE” to the same otherwise empty track will first create “BRIDGE2”, then “BRIDGE3”, etc.

3.36 - Selectable Accidental

- (#3794) c1.3 Added toggle in SETTINGS > DEFAULTS > UI > USE SHARPS(#) (SHRP) to allow users to choose which accidentals to display. When enabled in OLED mode, notes will be displayed as A# or D#, as they did prior to this change. When disabled, notes will be displayed as B $\flat$ or E $\flat$. In 7SEG mode, a dot is used to indicate when the note has the configured accidental. If selected, D. will mean D#. If not selected, D. will mean D $\flat$.

3.37 - Battery Level Display in System Menu

- (#4494) c1.3 Added battery level display in the SETTINGS menu
 - Displays the current battery voltage in millivolts and percentage
 - On OLED displays: Shows "Battery Level: X.XXV (XX%)"
 - On 7-segment displays: Shows battery percentage
 - The battery level menu item can be toggled on/off via the Community Features menu
 - This feature is ON by default and can be set to ON or OFF via SETTINGS > COMMUNITY FEATURES > SHOW BATTERY LEVEL

4. New Features Added

Here is a list of features that have been added to the firmware as a list, grouped by category:

4.1 - Session View Features

4.1.1 - Compressors

- (#630) c1.0 In Session View, select AFFECT ENTIRE and the SIDECCHAIN-related parameter button. Adjust the UPPER gold encoder for a single knob compressor with auto makeup gain (ONE mode). For detailed editing, press the SIDECCHAIN -related gold encoder (FULL mode). The top LED will become a compression meter. Clicking the REVERB-related lower gold encoder will cycle through additional params: RATIO (displays ratio), ATTACK & RELEASE (shown in milliseconds) and Sidechain HPF (shown in Hz). The sidechain HPF is useful to remove some bass from the compressor level detection, which sounds like an increase in bass allowed through the compression. There is also a blend control to allow parallel compression.
 - ATTACK: 0ms - 63ms
 - RELEASE: 50ms - 363ms

- HPF SHELF: 0hz - 102hz
- RATIO: 2:1 - 256:1
- THRESHOLD: 0 - 50
- BLEND : 0-100%
- (#1173) **c1.1** In clip view, the settings are available under the COMPRESSOR menu entry. The same parameters exist there. In kits there is both a per row compressor, accessed through the menu when **Affect Entire** is off, and a kit compressor accessed while it is on.

4.1.2 - Change Row Colour

- (#163) **c1.0** In Session View, pressing a clip row pad + **Shift** + turn **Vertical** changes the selected row color. This is similar to the shortcut when setting the color while in a clip view.

4.1.3 - Fill Clips and Once Clips

- (#2299) **c1.2** Holding a clip in Session Grid View or the status pad for a clip in Session Row View and pressing **SEL Select** brings up a CLIP SETTINGS menu. In this menu, you will find a submenu for CLIP MODE.
 - The CLIP MODE menu enables you to set the following launch style options for a clip:
 - **INFINITE (INF)** - the default Deluge launch style.
 - (#196) **c1.0 Fill (FILL)** - Fill clip.
 - When launched it will schedule itself to start at such a time that it *finishes* at the start of the next loop. If the fill clip is longer than the remaining time, it is triggered immediately at a point midway through. The loop length is set by the longest playing clip, or by the total length of a section times the repeat count set for that section.
 - **Limitation:** a fill clip is still subject to the one clip per instrument behavior of the Deluge. Fill clips can steal an output from another fill, but they cannot steal from a non-fill. This can lead to some fills never starting since a default type clip has the needed instrument. This can be worked around by cloning the instrument to an independent copy.
 - (#1018) **c1.1 Once (ONCE)** - Once clip.
 - When triggered it will schedule itself to start at the start of the next loop. Then it will schedule itself to stop, so it just plays once. This type of clips also work when soloing them, they will solo just for one loop and unsolo after that.
 - **Limitation:** a Once clip is still subject to the one clip per instrument behavior of the Deluge, A Once clip can steal an output from other normal clips, so take that into account when you plan your performance.

4.1.4 - Catch Notes

- (#221) **c1.0** The normal behavior of the Deluge is to try to keep up with 'in progress' notes when instant switching between clips by playing them late. However this leads to glitches with drum clips and other percussive sounds. Changing this setting to OFF will prevent this behavior and *not* try to keep up with those notes, leading to smoother instant switching between clips.
 - This feature is ON by default and can be set to ON or OFF via SETTINGS > COMMUNITY FEATURES > CATCH NOTES.

4.1.5 - Grid View

- (#251) **c1.0** Add new grid session layout to Session View. All functionality from (classic) row layout applies except for the following:
 - The data model of rows and grid mode are compatible, you can switch between them freely
 - In grid mode you will not be able to see multiple clips that are in the same section, only the first one. To make them visible move the clips to other sections
 - The colored column on the right are all available sections, the columns are automatically filled with the tracks in the same order as in arrangement mode
 - In Session View turn Song + **SEL Select** to switch between row layout and grid layout
 - Compared to rows layout overdub recording and copying clips to arranger is currently not supported
 - Every track (column) has a random generated color that can be changed in edit mode (see below)
 - Launched clips are full color, unlaunched dimmed and during soloing all non soloed clips are greyed out
 - New default settings that can be reached pressing both **Shift + SEL Select**: MENU > DEFAULTS > UI > SONG
 - Layout: Select the default layout for all new songs
 - Grid
 - Default active mode: "Selection" allows changing the mode as described below, all other settings will always make mode snap back to the configured one (default Selection)
 - Select in green mode: Enabling this will make allow holding clips in green (launch) mode to change their parameters like in blue mode, tradeoff is arming is executed on finger up (default on).
 - In addition, with this mode enabled, if you hold a clip and press the clip button you will enter that clip.
 - Empty pad unarm: Enabling will make pressing empty pads in a track unarm all playing tracks in that track (default off)
 - There are different interaction modes that change how the grid behaves
 - The mode can be changed by clicking on one of the colored pads in the Audition/Section column on the right

- To permanently switch the mode click on a pad and release, to temporarily switch hold the mode pad and use the grid, the mode will snap back to the current permanent one
- Green mode
 - All main pads behave the same as the Mute/Launch pads in rows layout (arm/immediate launch/mute/record/MIDI learn arm)
 - Section pads (left sidebar column) behave the same as in rows layout, in addition Shift+Section will immediate launch all clips in that row
- Blue mode
 - All main pads behave the same as the main pads in rows layout (open/select/create/delete/MIDI learn)
 - While holding a clip it can be copied to other empty slots by clicking on them, apart from audio/instrument conversion clips are automatically moved to that instrument/track and converted (e.g. Synth to MIDI target)
 - Track color can be changed by holding any populated clip in a column and turning  turn  Vertical. For fine changes to the color press & turn  Vertical.
 - Section pads (left sidebar column) will allow changing repeat count while held
- (#970) c1.1 Streamline recording new clips while Deluge is playing
 - This assumes the Deluge is in Grid mode, you are in Green mode, the Deluge is Playing, and Recording is enabled.
 - To use this feature you will need to enable it in the menu:
 1. Enter SETTINGS > DEFAULTS > UI > SONG > GRID > EMPTY PADS > CREATE + RECORD and select ENABLED
 2. Exit Settings menu to save settings
 - The following steps enable you to quickly create and arm new clips for recording:
 1. In Grid view, make sure you are in Green mode.
 2. Press PLAY to start playback and press RECORD to enable recording.
 3. Short-press any empty pad in an existing Instrument column to create and arm a new clip for recording
 4. The new clip that was just created will be selected and start recording at the beginning of the next bar
 5. You can press RECORD to stop recording or press that new clip to stop recording.
 6. Repeat steps as required.
- (#2421) c1.2 Allow true overdubbing for grid audio clips
 - Traditional guitar style looping is now possible for audio clips in grid mode. To use it monitoring must be active
 - The loop will capture all fx in the audio clip (e.g. it's recording at the end of the signal chain) and then reset the fx

- LOOP will begin an auto extending overdub. The initial sample will loop and the clip will extend as you keep playing
- Pressing LOOP again will end recording quantized to the original length (e.g. LOOPing on a 1-bar clip will quantize to 1 bar)
 - This works similarly to increasing loop length on an EDP style looper but without needing to set it in advance
- LAYER will continuously layer over the existing audio without extending the loop
 - This works like an overdub on a pedal style looper
- Only the midi loop commands work at this time but loop controls will be added to grid down the road

4.1.6 - Performance View

- (#711) **c1.1** Adds a new performance view, accessible from Song and Arranger View's using the Keyboard button. Each column on the grid represents a different "FX" and each pad/row in the column corresponds to a different FX value.
 - For a detailed description of this feature as well the button shortcuts/combos, please refer to the feature documentation: [Performance View Documentation](#)
 - Specifications:
 - Perform FX menu to edit Song level parameters and enable/disable editing mode.
 - 16 FX columns
 - 1 Param assigned to each column
 - 8 FX values per column
 - Long press pads (≥ 100 ms by default) in a column to change the value momentarily and reset it (to the value before the pad was pressed) upon pad release
 - Short press pads (< 100 ms by default) in a column to change the value until you press the pad again (resetting it to the value before the pad was pressed)
 - Quickly clear all held values by pressing  Horizontal + Back (resetting FX values back to their previous state)
 - Editing mode to edit the FX values assigned to each pad and the parameter assigned to each FX column
 - Save defaults to SETTINGS/PerformanceView.XML file
 - Adjustable default Values assigned to each FX column via VALUE editing mode or PerformanceView.xml
 - Adjustable default Param assigned to each FX column via PARAM editing mode or PerformanceView.xml
 - Adjustable default held **Pad** settings for each FX column via Performance View or PerformanceView.xml (simply change a held **Pad** in Performance View and save the layout to save the layout with the held pads).

- Load defaults from SETTINGS/PerformanceView.XML file

4.1.7 - Added Master Chromatic Transpose of All Scale Mode Instrument Clips

- (#1159) **c1.1** Using the same combo as in a Synth / Midi / CV clip, press & turn  **Vertical** to transpose all scale mode clips up or down by 1 semitone.
 - You can customize the amount of semitones that clips are transposed by with **Shift** + press & turn  **Vertical**. The display will show the number of semitones.
 - After transposing the display show the new Root Note (and Scale Name if you have an OLED display).
 - Does not affect audio clips or kit clips.
 - Works in Song Row/Grid View, Arranger View, Arranger Automation View and Performance View.

4.1.8 - Added VU Meter rendering to Song / Arranger View

- (#1344) **c1.1** Added VU Meter rendering in the sidebar in Song / Arranger / Performance Views.
 - To display the VU meter:
 - turn **Affect Entire** on
 - select the LEVEL/PAN mod button
 - press the LEVEL/PAN mod button again to toggle the VU Meter on / off.
 - note: the LEVEL/PAN mod button will blink when the VU meter is on and displayed
 - The VU meter will stop rendering if you switch mod button selections, turn **Affect Entire** off, select a clip, or exit Song/Arranger views.
 - The VU meter will render the decibels below clipping on the grid with the colours green, yellow and red.
 - Red indicates DAC clipping and is rendered on the top row of the grid.
 - The Yellow pad below Red (second from top) indicates soft clipping.
 - If you do not want any clipping, you should target levels not exceeding -4.5 dB (e.g. not exceeding the 3rd pad from top)
 - Each row on the grid corresponds to the following decibels below clipping values:
 - y7 = hard clipping (-0.2 or higher)
 - y6 = soft clipping (-4.4 to -0.3)
 - y5 = -8.8 to -4.5 (target -4.5 or lower to avoid any clipping)
 - y4 = -13.2 to -8.9
 - y3 = -17.6 to -13.3
 - y2 = -22.0 to -17.7
 - y1 = -26.4 to -22.1
 - y0 = -30.8 to -26.5

4.1.9 - Song macros

- ([#1545](#) and [#2418](#)) `c1.2` Add song macros. Macros are a way to quickly switch playing clips without needing to go into Session View.
 - From Session View, open the SONG MENU and enter the CONFIGURE MACROS menu to edit macros.
 - There are 8 macro slots shown in the left sidebar (launch / mute) column
 - To assign a macro, first select a macro slot and then press a clip in the grid.
 - Pressing the same clip multiple time cycles through different modes:
 - Clip macro: Launch or mute the clip
 - Individual clips are green/red, so you see if they get deactivated, just like in Session Row View
 - Output macro: cycle through all clips for this particular output (track)
 - Section macro: Launch all clips for this section
 - After assigning a clip to a slot, you can press the macro slot to see what clip has been assigned to it (clip will alternate between the clip's colour and white).
 - Inside a CLIP TIMELINE VIEW, hold Song button and press the LEFT SIDEBAR to launch a macro.
 - In KEYBOARD VIEW, macros are available as a sidebar control.
 - Shift makes the launch immediate just like in Session View.
 - Affect Entire + Macro can be used to jump to edit the clip.

4.2 - Clip View - General Features (Instrument and Audio Clips)

4.2.1 - Filters

- ([#103](#) and [#336](#)) `c1.0` Adds 2 new state variable filters to both LPF dB/OCT and HPF dB/OCT. This filter has significantly less distortion than the ladder filters, think sequential vs. moog.
 - A third parameter is added to all filter types. The shortcut is the pad under dB/Oct and it's value is kept when changing filter types. This param is modulatable and automatable.
 - In SVFs, the MORPH parameter adjusts smoothly from lowpass -> bandpass/notch -> highpass. MORPH is inverted in the HPF MORPH slot so that at 0 the filter is highpass and at 50 it is lowpassed.
 - In lowpass ladder filters, the DRIVE param smoothly increases filter drive.
 - In the highpass ladder filter FM adds filter FM. Try it with the resonance up!
 - FILTER ROUTE is accessible via the SOUND menu only and adjusts the filter order from HPF TO LPF, LPF TO HPF, or PARALLEL.

4.2.2 - Stereo Chorus

- ([#120](#)) [c1.0](#) New Stereo Chorus type added to Mod FX. MOD FX DEPTH will adjust the amount of stereo widening the effect has.

4.2.3 - Dimension

- ([#2882](#)) [c1.3](#) Boss/roland style dimension effect. Controls are the same as for chorus

4.2.4 - Warbler Effect

- ([#2712](#)) [c1.3](#) New Warble fx, which provides randomly warbling pitch shifting and delays to simulate things from a tape reel warbling up to getting chewed up by the machine and spat back out. It's essentially a flanger/chorus/whatever based modulation abomination that makes super cool lofi warbley noises. It essentially consists of two things, a randomly drifting vibrato and a comb filter. Controls are the normal rate/depth/feedback/offset.
 - To make a tape warble type thing set rate to 15ish, depth to 5-10, feedback 0-2 and offset at 25
 - With depth at 0 and feedback at 0 it's not doing anything. If you turn up feedback you'll start to comb filter the signal, offset controls the length of the comb filter. Turning depth up adds modulation to that delay time (like a chorus or flanger) but since the modulation is unpredictable it sounds more "warm" "analog" "chewy" "lofi"
 - Turning rate up makes it go faster
 - Turning feedback up makes it get super weird
 - Turning offset up adds phasing (unless feedback is 0, in which case it does nothing)

4.2.5 - Grain FX

- ([#363](#)) [c1.0](#) New GRAIN added to Mod FX.
- ([#2815](#)) [c1.3](#) Updated Performance and controls of the Grain FX.
 - **MOD RATE:** Sets Grain Rate (0.5hz - 180hz)
 - **MOD DEPTH - GRAIN AMOUNT (AMNT):** Controls Grain Volume / Dry Wet Mix
 - **MOD FEEDBACK - GRAIN RANDOMNESS (GRTY):** Selects the spread of Grain pitch. At minimum it only generates unison and octaves, higher values add 5ths and multi octave jumps.
 - **MOD OFFSET - GRAIN Density (DENS):** Adjusts Grain Density from sparse to 8 layered grains

4.2.6 - Warble LFO

- ([#2712](#)) [c1.3](#) The randomly varying wave at the centre of the warbler, but made into an LFO.

4.2.7 - Patchable Wavefolding Distortion

- (#349) **c1.0** Adds a pre filter WAVEFOLDE distortion, and the depth is patchable/automatable. The depth is accessible in both the menu and on the un-labeled pad between SATURATION and LPF FREQ. The fold has no effect when set to 0 and removes itself from the signal path.
 - Note that it has no effect on square waves, it's best with sines and triangles

4.2.8 - Per-clip Stutter with options: Direction and Quantize

- (#3226) **c1.3** Now the stutter buffer can also be set to play in reverse, and ping-pong. A new menu has been added to the SONG menu, under FX submenu, to set the stutter configuration for the song. An extra menu has been added per sound source (either synths, kit rows, affect-entire kits, or audio clips) to set the stutter configuration independently of the song configuration if you wish. Quantized stutter is enabled by default.

4.2.9 - Reverb Improvements

- (#1065) **c1.1** New reverb models are available for selection inside of the FX > REVERB > MODEL menu. These include:
 - Freeverb (the original Deluge reverb)
 - Mutable (an adapted version of the reverb found in Mutable Instruments' Rings module)
 - The Mutable reverb model has been set as the default reverb model for new songs. Old songs will respect the reverb model used with those songs.
- (#2080) **c1.2** Reverb can now be panned fully left or right. Old songs retain their reverb panning behavior, but display it as smaller numbers. This change also fixes an issue with reverb values displaying differently than how they were set.
- (#2788) **c1.3** Added LPF to Mutable Instruments Model. 50 (default) corresponds to 20khz and 0 corresponds to 0hz.
- (#3277) **c1.3** Added new Digital reverb model.

4.2.10 - Launch Exclusively

- (#3213) **c1.3** A new option, 'Launch Exclusively', isolates a clip section from all other launch activity. This option is found to the left of option 'Launch non-exclusively' when selecting the section's number of repetitions. As a complement to non-exclusive sections that arm and turn off when another section is launched, exclusive sections remain independant and continue playing.

4.3 - Instrument Clip View - General Features

These features were added to the Instrument Clip View and affect Synth, Kit and MIDI instrument clip types.

4.3.1 - New LFO Shapes

LFO types added to the "LFO SHAPE" shortcut.

- (#32) **RANDOM WALK:** c1.0 Starts at zero and walks up or down by small increments when triggered.
- (#32) **SAMPLE&HOLD:** c1.0 Picks a new random value every time it is triggered.

4.3.2 - New LFO Synchronization Options

Additional synchronization modes accessible through SYNC shortcuts for ARP, LFO1, LFO2, and DELAY:

- (#32) **TPLTS:** c1.0 Synchronizes the LFO to triplet (3/2) divisions.
- (#32) **DTTED:** c1.0 Synchronizes the LFO to dotted (2/3) divisions.
- (#1978) c1.2 LFO2 can be synchronized as well, using the labelled LFO2 sync pad. Where LFO2 synchronization is relative to each individual note onset.

4.3.3 - Quantize & Humanize

- (#129) c1.0
 - Press and hold an audition pad in clip view and turn the tempo encoder right or left to apply QUANTIZE or HUMANIZE respectively to that row.
 - Press and hold an audition pad and press and turn the tempo encoder to apply quantize or humanize to all rows.
 - The amount of quantization/humanization is shown in the display by 10% increments: 0%-100%
 - This is destructive (your original note positions are not saved) The implementation of this feature is likely to change in the future
 - This feature is ON by default and can be set to ON or OFF via SETTINGS > COMMUNITY FEATURES > QUANTIZE.

4.3.4 - Fill / Not Fill Modes

- (#211) c1.0 Fill Mode is a new iteration/probability setting for notes. The FILL setting is at the start of the probability range. Notes set to FILL are only played when fill mode is active. These notes will be highlighted in bright blue color when the Fill button is held. There are two ways to activate FILL mode - set it as a Global MIDI

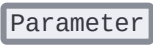
Command and/or set it to override the front panel SYNC-SCALING button. For Global MIDI Commands go to SETTINGS > MIDI > CMD > FILL. To override to SYNC-SCALING, set SETTINGS > COMMUNITY FEATURES > SYNC to FILL. The original `Sync Scaling` function is moved to `Shift + Sync Scaling`.

- (#994) **c1.1** Additionally, there is also the Not Fill Mode, which is right before the FILL setting in the probability selector. On the OLED Deluge, this is shown as NOT FILL, and on 7-SEG Deluge, this will be shown as FILL. (with a dot). Notes set to NOT FILL are only played when fill mode is NOT active, that is, while regular playback, and, contrary to FILL notes, will be silenced when the fill mode is active. These notes will be highlighted in bright red color when the Fill button is held.

4.3.5 - Automation View

- For a detailed description of this feature as well the button shortcuts/combos, please refer to the feature documentation: [Automation View Documentation](#)
- (#241) **c1.0** Automation Clip View is a new view that complements the existing Clip View.
 - It is accessed from within the Clip View by pressing `Clip` (which will blink to indicate you are in the Automation View).
 - You can edit Non-MPE Parameter Automation for Synth, Kit, MIDI, and Audio clips on a per step basis at any zoom level.
 - A DEFAULTS sub-menu titled AUTOMATION was created to access a number of configurable settings for changes to existing behaviour.
 - The three changes to existing behaviour included in this feature are: Clearing Clips, Nudging Notes and Shifting a Clip Horizontally.
- Follow-up PR's:
 - (#347) **c1.0** Added new automatable parameters
 - (#360) **c1.0** Fixed interpolation bugs, added fine tuning for long presses, and added pad selection mode
 - (#636) **c1.0** Updated Parameter Values displayed in Automation View to match Parameter Value Ranges displayed in the Menu's. E.g. instead of 0 - 128, it now displays 0 - 50 (except for Pan which now displays -25 to +25 and MIDI instrument clips which now display 0 - 127).
 - (#658) **c1.0** Added Stutter Rate Parameter to Automation View. Note: this does not allow you to automate the triggering of stutter.
 - (#681) **c1.0** Added new automation community feature menu to re-instate audition pad shortcuts in the Automation Clip View.
 - Currently in the Instrument Clip View if you hold down an audition pad and press a shortcut pad on the grid, it will open the menu corresponding to that shortcut pad.

- By default in the Automation Clip View that same behaviour of holding an audition pad and pressing a shortcut pad is disabled in favour of you being able to hold down an audition pad and adjust the automation lane values so that you can audible hear the changes to the sound while adjusting automation settings.
- Through the community features menu, you can disable this change and re-instate the audition pad shortcuts by setting the community feature to “Off.”
- (#886) c1.1 Remove parameters that have no effect in Automation View:
 - Removed Arp and Portamento from Kit Affect Entire
 - Removed Portamento from Kit Rows
- (#887) c1.1 Added ability to set the parameter value to the middle point between two pads pressed in a single column. E.g. press pads 4 and 5 to set the value to 25/50.
- (#887) c1.1 Updated Master Pitch parameter to display the value range of -25 to +25.
- (#889) c1.1 Fixed bug where automation view grid would not update / refresh when a parameter value was changed by a MIDI Controller that was learned to that param.
- (#966) c1.1 Added automation view for audio clips
- (#1039) c1.1 Added automation view for arranger.
 - Press **Shift** + **Song** to enter Automation Arranger View from Arranger View.
 - Press **Song** while in Automation Arranger View to exit back to Arranger View
 - Press **Affect Entire** while in Automation Arranger View to go back to Automation Overview
 - Press **Cross Screen** while in Automation Arranger View to activate/de-activate automatic scrolling during playback
 - Also, moved automation community features to defaults menu found at **SETTINGS > DEFAULTS > AUTOMATION**
 - **Automation (AUTO)**
 - **Interpolation (INTE)**
 - When On, Interpolation is on by default in the Automation View.
 - Note: This is just a default setting and can be overridden in the Automation View using the Shift + Interpolation grid button shortcut combo.
 - **Clear (CLEA)**
 - When On, clearing the arrangement in arranger view / a clip in the regular Instrument Clip View will clear Notes and MPE, but not Automation.
 - When On, to clear Non-MPE Automation you will need to enter the Automation Instrument Clip View.
 - **Shift Note (SHIF)**
 - When On, shifting notes horizontally in the regular Arranger View / Instrument Clip View will shift the Arrangement / Notes and MPE, but not the Automation.
 - When On, to shift Non-MPE Automation horizontally you will need to enter the Automation Instrument Clip View.

- Nudge (NUDG)
 - When On, nudging a note in the regular Instrument Clip View will nudge the Note and MPE, but not the Automation.
 - When On, to nudge Non-MPE Automation, you will need to either Shift or Manually Edit the automation in the Automation Clip View.
- Disable Audition Pad Shortcuts (SCUT)
 - When On, audition pad shortcuts are disabled. Holding an audition pad and pressing a shortcut pad will not activate the shortcut and will not change the selected parameter.
 - When On, to change the selected parameter you will need to either:
 1. use the select encoder;
 2. use the shift + shortcut pad combo; or
 3. go back to the automation overview;
- (#1083) c1.1 Updated the Automation Overview and grid shortcuts in automation view for MIDI clips to match the grid shortcut cc mappings for MIDI Follow. So if you want to change what CC's map to what grid shortcuts in the Automation View for MIDI Clips, you would need to edit the SETTINGS/MIDIFollow.XML template for MIDI Follow mode.
- (#1156) c1.1 Change interpolation shortcut + Provide better integration with Deluge menu system and consistency with Select encoder usage.
 - Updated AUTOMATION VIEW to move the Interpolation shortcut to the Interpolation pad in the first column of the Deluge grid (second pad from the top). Toggle interpolation on/off using Shift + Interpolation shortcut pad. The Interpolation shortcut pad will blink to indicate that interpolation is enabled.
 - Updated AUTOMATION VIEW to provide access to Settings menu (Shift +  Select)
 - Updated AUTOMATION VIEW to provide access to the Sound menu ( Select)
 - Updated automatable parameter editing menu's (accessed via Sound menu or Shift + ) to provide the ability to access the AUTOMATION VIEW EDITOR directly from the parameter menu. While in the menu press Clip (if you are in a clip) or Song (if you are in arranger) to open the AUTOMATION VIEW EDITOR while you are still in the menu. You will be able to interact with the grid to edit automation for the current parameter / patch cable selected in the menu.
- (#1374) c1.1 Added AUTOMATION VIEW for PATCH CABLES / MODULATION DEPTH. Simply enter the modulation menu that displays SOURCE -> DESTINATION and then press CLIP to access the AUTOMATION VIEW EDITOR for that specific Patch Cable / Modulation Depth.
 - (#1607) You can also use the SELECT ENCODER while in the AUTOMATION VIEW EDITOR to scroll to any patch cables that exist.
- (#1456) c1.1 Added an in-between-layer in the Deluge menu system to be able to access and interact with the AUTOMATION VIEW EDITOR while you are still in the menu from the regular ARRANGER / CLIP VIEW. When you exit the menu you will be returned to the View you were in prior to entering the menu.

Press Clip (if you are in a clip) or Song (if you are in arranger) to temporarily open the AUTOMATION VIEW EDITOR while you are still in the menu.

- (#1480) **c1.1** As a follow-up to #1374 which enabled enabled patch cables to be edited in Automation View, the Automation Editor has now been modified to display param values according to whether the Param is bipolar or not. If it's a bipolar param, the grid will light up as follows:
 - Middle value = no pads lit up
 - Positive value = top 4 pads lit up according to position in middle to maximum value range
 - Negative value = bottom 4 pads lit up according to position in middle to minimum value range
 - Note: per the functionality added in #887 mentioned above, you can set a param to the middle value by pressing the two pads in a column or you can use the fine tuning method with the gold encoders in or out of pad selection mode by selecting a pad and turning gold encoder.
 - To make it easier to set the middle value, functionality has been added to blink the LED indicators when you reach the middle value and it also makes it more difficult to turn the knob past the middle value as it currently did outside automation view editor.
- (#1898 #2136) **c1.1** Change pad selection mode shortcut.
 - Updated AUTOMATION VIEW to move PAD SELECTION MODE shortcut to **Waveform** in the first column of the Deluge grid (very top left pad). Toggle pad selection mode on/off using **Shift + Waveform**. The Waveform shortcut pad will blink to indicate that pad selection mode is enabled.

4.3.6 - Set Probability By Row

- (#368) **c1.0** Extends the probability system to set a row at a time. Hold an AUDITION pad and turn **SEL Select** to change the whole rows probability. This is particularly useful in combination with the euclidean sequencing to get a semi-random pattern going

4.3.7 - Shortcut for “Transpose clip” is now “Nudge notes vertically for clip”

- (#1183) **c1.1** The command **Shift + press & turn  Vertical** inside a clip was causing an unexpected behavior in which all other clips in the song were also transposed. This has been fixed by changing this command to a “Vertical nudge” command, based on current clip display (either in scale or non-scale mode). This saves user from the need to “zoom out, copy all notes, scroll up or down, and paste all notes” to nudge notes vertically.
 - If the clip is in scale mode, all the notes are shifted up or down by one step in the scale.
 - If the clip is not in scale mode, all the notes are shifted up or down by one semitone.
 - Note: the other command for octave transposition, that is, **press & turn  Vertical**, keeps working in the same way, by nudging notes by one octave, regardless of the clip scale mode.

4.3.8 - Advanced Arpeggiator

For a detailed description of this feature, please refer to the feature documentation: [Arpeggiator Documentation](#)

- This feature was first improved in **c1.1** and improved again in **c1.3**
- See related PR's: ([#1198](#) [#2978](#) [#2985](#) [#2990](#) [#3079](#) [#3285](#))
- ([#3388](#)) **c1.3** Added KIT ARPEGGIATOR for KIT clips. This allows the user to engage an arpeggiator layer on top of the kit rows, which will control which rows receive note ON's and note OFF's. That means that the kit rows can have their own arpeggiators also enabled, which allows for unlimited possible pattern combinations. This feature is also explained in [Arpeggiator Documentation](#)

4.3.9 - Randomizer

- For more detailed information about these parameters, refer to the [Arpeggiator Documentation](#).
- **c1.3** A new submenu has been added to the Sound menu called Randomizer. This menu includes some of the Randomizer parameters present in the Arpeggiator submenu, which have been enabled to work also for non-arpeggiated notes. That is, regular notes from the sequencer when the arpeggiator is off, which are the following: - Lock: This parameter allows you to freeze the current set of randomized values so the sequence has a repeatable pattern. - Velocity Spread: This parameters lets you apply some random variation to the notes. - Note probability: This parameter determines the likelihood of a note being played or not (this is in addition to the Note/Row probability). - Reverse Probability: This parameter determines the likelihood of a note's sample of being reversed.

4.3.10 - Velocity View

- For a detailed description of this feature as well the button shortcuts/combo's, please refer to the feature documentation: [Velocity View Documentation](#)
- ([#2046](#)) **c1.2** Added VELOCITY VIEW, accessible from AUTOMATION VIEW OVERVIEW by pressing the VELOCITY shortcut or from INSTRUMENT CLIP VIEW by pressing AUDITION PAD + VELOCITY. Velocity View enables you to edit the velocities and other parameters of notes in a single note row using a similar interface to AUTOMATION VIEW.

4.3.11 - Enhanced Note Probability, Iterance and Fill

- ([#2641](#), [#2751](#)) **c1.3** Enhanced existing note probability, iteration and fill function functionality by enabling you to use each type independently. This means that you can now apply probability to iteration and fill and you can also apply iteration to fill.

- To edit probability, hold a note / audition pad and turn the select encoder to the left to display current probability value / set new probability value.
- To edit iterance, hold a note / audition pad and turn the select encoder to the right to display current iterance value / set new iterance value.
- Note iteration now also supports custom iteration steps. To access them, hold a note and press the **SEL SeLect** encoder to open the Note menu. Scroll to NOTE ITERANCE and press **SEL SeLect** again to enter the Note Iterance menu, the default is OFF. Turn the **SEL SeLect** encoder right through all options until you see CUSTOM, then press the **SEL SeLect** encoder again. A new menu will appear with the DIVISOR parameter (from 1 to 8.) The number of DIVISORS you choose will set how many ITERATION # toggles appear. Each ITERATION # allows you to activate or deactivate an iteration step.
- To edit fill, you need to access the new note and note row editor menu's.

4.3.12 - Added New Note and Note Row Editor Menu's

- For a detailed description of this feature as well the button shortcuts/combos, please refer to the feature documentation: [Note / Note Row Editor Documentation](#)
- (#2641) **c1.3** Added new note and note row editor menu's to edit note and note row parameters.
 - Hold a note and press the select encoder to enter the note editor menu. While in the note editor menu, the selected note will blink. You can select other notes by pressing the notes on the grid. In addition, notes which have had their probability, iterance or fill settings changed from default will be highlighted yellow to help quickly identify edited notes.
 - Hold a note row audition pad and press the select encoder to enter the note row editor menu. While in the note row editor menu, the select note row audition pad will blink. You can select other note row's by pressing the note row audition pad.

4.3.13 - Auto Load sample when browsing

- (#2676) **c1.3** When browsing for sample to assign to a Synth or to a Kit Row, you can now enable auto-load of previewed samples. To do this, open the sample browser (SHIFT + BROWSE), and engage AUTO-LOAD by pressing LOAD. While the LOAD LED is on, all the samples that you preview will automatically be loaded to the instrument as if you had confirmed the selection. This makes previewing single cycle waveforms way more convenient, for example.

4.3.14 - Save/Load Patterns

- (#3352) **c1.3** Added ability to save / load Pattern-Files to Files. A Pattern represents all Notes of the actual Deluge Screen including Velocity, Probability, Lift, Iterance and Fill. The Patterns can be either of Type melodic

Instrument (Synth, Midi, CV) or rhythmic Instrument (Kit, Drum). It's also possible to convert Midi-Files to patterns, which can then be used on the Deluge. See documentation at [Save / Load Patterns feature](#) for more info.

4.4 - Instrument Clip View - Synth/MIDI/CV Clip Features

4.4.1 - Keyboard View

4.4.1.1 - Row Step

- ([#46](#)) **c1.0** Row Step affects the offset between rows, ROW STEP is now configurable by holding **Shift** and turning **turn**  **Horizontal**. The default Deluge Keyboard note offset is 5. A row step of 12 will produce a layout in which any given note's octave is directly above or below it. The setting is saved per clip in the song file.

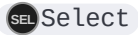
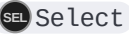
4.4.1.2 - Keyboard API and General Improvements

- ([#138](#) and [#337](#)) **c1.0**
 - Users can switch between layouts with **Keyboard** + **turn**  **Select**
 - Keyboard mode allows freely switch between all types (SYNTH, KIT, MIDI, CV) automatically getting the first compatible layout
 - Drum trigger edge sizes in Drums layout for kits can now be changed between 1 and 8 with **Shift** + **turn**  **Horizontal**
 - A new in-key only layout that removes out of scale buttons/notes.
 - New way to change the scale in keyboard mode: press **Scale** + **SEL**  **Select**
 - New way to change scale ROOT NOTE in keyboard mode: **Scale** + **turn**  **Select**
 - A new menu to select the default Keyboard Layout has been added in MENU -> DEFAULTS -> UI -> KEYBOARD -> LAYOUT

4.4.1.3 - Highlight Incoming Notes

- ([#250](#)) **c1.0** New community feature makes In-Key and Isometric layout display incoming MIDI notes with their velocity.
 - This feature is ON by default and can be set to ON or OFF in the COMMUNITY FEATURES menu (via SETTINGS > COMMUNITY FEATURES > HIGHLIGHT INCOMING NOTES).

4.4.1.4 - Display Norns Layout

- (#250) c1.0 Enables keyboard layout which emulates a monome grid for monome norns using Midigrid mod on norns by rendering incoming MIDI notes on channel 16 as white pads using velocity for pad brightness.
 - This feature is OFF by default and can be set to ON or OFF in the COMMUNITY FEATURES menu (via SETTINGS > COMMUNITY FEATURES > DISPLAY NORNS LAYOUT).
 - Deluge has multiple USB ports, 3 as of this writing. Use Deluge 1 as the device on norns.
 - The Midigrid mod translates MIDI notes between norns and Deluge to use the grid as a controller for a norns script. Midigrid sends MIDI notes on channel 16 from norns to Deluge to light up grid LEDs. When a pad is pressed on Deluge, it sends out a MIDI note on channel 16 to norns. This means that Deluge's usual way of learning a MIDI controller to a synth clip will be constantly interrupted by the stream of MIDI notes coming in on channel 16 from norns. To learn external MIDI controls to Deluge while using the Midigrid mod, first stop the running script on norns, turn off the Midigrid mod in the mod menu, or determine another method to pause the grid updating MIDI messages from norns.
 - The functionality of the grid changes with each norns script.
 1. Connect Deluge to norns with a USB cable for MIDI.
 2. Install [Midigrid](#) on your norns, turn on the mod, set to 128 grid size.
 3. Turn on two features in the COMMUNITY FEATURES menu (via SETTINGS > COMMUNITY FEATURES): "Highlight Incoming Notes" (HIGH) and "Norns Layout" (NORN) both set to ON.
 4. Create a MIDI clip on Deluge by pressing MIDI button in Clip View. Set MIDI output for the clip to channel 16 by turning the  encoder.
 5. Select the keyboard layout on the MIDI clip. Press and hold keyboard button and turn  encoder to select "Norns Layout" (NORN).
 6. Select a [script](#) on norns that supports grid controls (awake, boingg, rudiments, ...).
 7. The grid LEDs should light up indicating that norns is sending MIDI notes out on channel 16 to Deluge. Press a pad to see a change on norns indicating Deluge is sending MIDI notes out on channel 16.

4.4.1.5 - Selectable Sidebar Controls

- (#901) c1.1 In the keyboard view, a control can be mapped to each column of pads in the sidebar. You can change which control is selected by holding the top pad and turning the horizontal encoder. Controls include:
 - **Velocity (VEL - Red)**: Low velocity is on the bottom pad and high on the top pad scaled linearly. The range can be adjusted by holding the top or bottom pad and scrolling the vertical encoder. Hold a pad down to change the velocity of notes played while held. The velocity will return to default when you release the pad. Short press a pad to set a new default velocity. This is called "Momentary" mode and is

the default. You can disable it from the main menu: Defaults -> UI -> Keyboard -> Sidebar controls (CTRL) -> Momentary Velocity (MVEL)

- **Modwheel (MOD - Blue):** This controls the modwheel (Y) setting and has the same controls as the velocity control. Its behaviour is set to "Momentary" by default. You can disable it from the main menu: Defaults -> UI -> Keyboard -> Sidebar controls (CTRL) -> Momentary Modwheel (MMOD)
- **Chords (CHRD - Green):** Press and hold or tap to either temporarily set a chord or change the default chord. Any note you play will be interpreted as the root note and the remaining notes will be played along with it. The default chord is none. You can get back to none by short pressing the current chord. Chords include 5th, Sus2, Minor, Major, Sus4, Minor7, Dom7, Major7. All are in closed root position. (Note: this option is not available while in either of the chord keyboard layouts.)
- **Song Chord Memory (CMEM - Cyan):** Hold a chord down and press a pad to remember the chord. Press that pad again to play it. You can play over the top of your saved chords. To clear a chord, press shift and the pad you want to clear. Chord memory is shared across all song clips and it is saved in the song file.
- **Clip Chord Memory (CCME - Purple):** Hold a chord down and press a pad to remember the chord. Press that pad again to play it. You can play over the top of your saved chords. To clear a chord, press shift and the pad you want to clear. Clip chord memory is available only to the current instrument.
- **Scale Mode (SMOD - Yellow):** Press and hold a pad to temporarily change the scale of the keyboard to the selected scale mode. Tap a scale mode to make it the new default. The scale pads will default to the first 7 scale modes, but you can change any pad to any scale by holding it down and turning the vertical encoder. If the scale that is going to be set can't fit/transpose the existing notes from your clips, screen will show Can't.
- **Song Macro Mode (SONG - various):** Activate [Song macros](#).
- (#2174) c1.1 With the addition of the new Keyboard Sidebar Controls, the default behaviour of being able to immediately exit the menu by pressing a sidebar pad while in Keyboard View was removed. To accommodate users that still wish to be able to exit the menus immediately by pressing a sidebar pad, a new community feature toggle has been added (Enable KB View Sidebar Menu Exit (EXIT)) which will enable you to immediately exit the menu using the top left sidebar pad if you are in the SETTINGS or SOUND menu for KEYBOARD VIEW.

4.4.1.6 - Display Chord Keyboard Layout

- For a detailed description of this feature as well the button shortcuts/combo, please refer to the feature documentation: [Chord Keyboard Documentation](#)
- (#2475) c1.2 Enables CHORD keyboard, out of scale view with two modes, Column mode (providing in-scale harmonically similar chords for substitutions) and Row Mode (based largely on the Launchpad Pro's chord mode that spreads notes out on a row to allow users to build and play interesting chords across the rows). After enabling the Chord Keyboards (CHRD) community feature (see the [Community Features Menu](#) for more

information), the CHORD keyboard is accessible the same way as other instrument supporting keyboards. While on SYNTH, MIDI, or CV, press  Keyboard to enter into a keyboard view, and then  Keyboard + turn  Select to cycle through layouts to find the CHORD keyboard layout.

- As the UI and implementation is still experimental, a community setting has to be activated to access the CHORD keyboard. See the [Community Features Menu](#) for more information.

4.4.1.7 - Display Chord Library Keyboard Layout

- For a detailed description of this feature as well the button shortcuts/combo, please refer to the feature documentation: [Chord Keyboard Documentation](#)
- ([#2385](#))  Enables CHORD LIBRARY keyboard layout which displays a library of chords on the pads. After enabling the Chord Keyboards (CHRD) community feature (see the [Community Features Menu](#) for more information), the CHORD LIBRARY keyboard is accessible the same way as other instrument supporting keyboards. While on SYNTH, MIDI, or CV, press  Keyboard to enter into a keyboard view, and then press  Select +  Keyboard to cycle through layouts to find the CHORD LIBRARY keyboard layout.
- As the UI and implementation is still experimental, a community setting has to be activated to access the CHORD LIBRARY keyboard. See the [Community Features Menu](#) for more information.

4.4.1.8 - Display Piano Keyboard Layout

- ([#2983](#))  Provides a classic piano keyboard layout for Deluge.
- One screen displays 5 octaves with different colors. But you can scroll this keyboard vertically to increase octaves to the highest or decrease to the lowest. You can also shift the keyboard to start on a different note than C. This is done by using the horizontal scroll.
- If the Scale mode is enabled, all the notes in this scale will be displayed brighter than the notes outside the scale. Of course, you can change the scale, and the keys will change accordingly. The same thing with the root note (the brightest one).
- The same notes you play are highlighted in other octaves as well.
- This keyboard highlights incoming MIDI notes.
- You can set this keyboard by default in MENU -> DEFAULTS -> UI -> KEYBOARD -> LAYOUT -> PIAN

4.4.2 - Scales

- ([#991](#))  Added new scales for instrument clips.
 - The new set of scales is:

- 7-note scales: Major, Minor, Dorian, Phrygian, Lydian, Mixolydian, Locrian, Melodic Minor, Hungarian Minor, Marva (Indian), Arabian
- 6-note scales: Whole Tone, Blues
- 5-note scales: Pentatonic Minor, Hirajoshi (Japanese)
- You rotate through them the same way as before, using Shift + Scale.
- **Improvement:** when you exit Scale mode, and enter Scale mode again, if there was already a selected Scale, and it fits the notes you have entered, the Deluge will prefer that scale, instead of trying to change your scale or root note to other scale.
- **Migrating from previous firmwares:** the new Default Scale setting is saved in a different memory slot. The Deluge will import the selected scale from the old location, resetting the old location value to “None”.
- **Limitation:** For being able to change your scale to a scale with less notes (for example, from Arabic to Whole Tone, or from Blues to Pentatonic), in order for the Deluge to be able to transpose them, the notes entered among all clips in the song must fit the new scale. If you have added more notes that what can fit in the new scale, the Deluge will omit those scales, and cycle back to the beginning of the Scales list (that is, going back to the Major scale).
- (#2365) **c1.2** Added learning a user specified scale.
 - Press **Learn** + **Scale** while in clip view. Notes from current clip & all scale mode clips are learned as the “USER” scale. This scale is part of the normal scale rotation, accessible with **Shift** + **Scale** , and saved as part of the song. If another user scale is learned, the previous one is overwritten: currently each song can only have one user scale.
 - If you enter scale mode from a chromatic clip, and the implied scale cannot be represented by any of the existing preset scales, it will be learned as a user scale, overwriting the previous USER scale.
 - NOTE: extended support for user scales is planned, allowing multiple user scales to be learned, saved, and loaded. Soon!
- (#2376) **c1.2** Added ACTIVE SCALES menu.
 - SONG > ACTIVE SCALES toggles scales on and off from the SHIFT + SCALE rotation for the current song. Active scales are saved as part of the song. On 7-segment display dot indicates that the named scale is active, lack of dot indicates it has been disabled.
 - DEFAULTS > SCALE > ACTIVE SCALES sets the active scales for new songs. When RANDOM is set as DEFAULTS > SCALE > INIT SCALE, the random scale is selected from default active scales.

4.5 - Instrument Clip View - Synth/Kit Clip Features

4.5.1 - Mod Matrix

- (#157) **c1.0** Add a MOD MATRIX entry to the SOUND menu which shows a list of all currently active modulations.

4.5.2 - Unison Stereo Spread

- (#223) **c1.0** The unison parts can be spread across the stereo field. Press **SEL Select** when in the UNISON NUMBER menu to access the new unison spread parameter.

4.5.3 - Waveform Loop Lock

- (#293) **c1.0** When a sample has LOOP START (CYAN) and LOOP END (MAGENTA) points set, holding down LOOP START and tapping LOOP END will LOCK the points together. Moving one will move the other, keeping them the same distance apart. Use the same process to unlock the loop points. Use **Shift + turn** **Horizontal** to double or half the loop length.
- **WARNING: If you shift loop points after being locked there is a chance when you delete a loop point, a loop point will exist outside of the SAMPLE START or SAMPLE END range and cause a crash. (Known Bug)**

4.5.4 - Copy row(s)

- (#805) **c1.1** If you hold down the audition pad(s) while pressing the shortcut to “copy notes”, only the auditioned rows will be copied. If you were to normally paste these rows, no behavior is changed from the current implementation. It's exactly the same result as deleting the notes on any rows you didn't have held down before copying.

4.5.5 - Paste gently

- (#805) **c1.1** Pressing **Shift + Cross Screen +** **Horizontal** will paste any notes on the clipboard over the existing notes i.e. the existing notes will not be deleted and the clipboard contents will be added to the existing notes. Positioning/scale/timing semantics have not changed, only whether the notes are cleared before pasting.

4.5.6 - Configure Note Row Play Direction

- ([#1739](#)) [c1.1](#) Added Synth/MIDI/CV clip configuration of note row play direction. Hold audition pad while entering the play direction menu to set the play direction for the selected note row. While in the note row play direction menu, you can select other note rows to quickly set the play direction for multiple note rows.

4.5.7 - DX7 Synth type

- For a detailed description of this feature as well the button shortcuts/combos, please refer to the feature documentation: [DX7 Synth Documentation](#)
- ([#1114](#)) [c1.2](#) A new synth type is added fully compatible with DX7 patches, including editing of all DX7 parameters. This is implemented as an oscillator type within the subtractive engine, so it can be combined with filters and other features of this engine.
 - Patches can be imported from the common 32-patch bank syx-file format, and afterwards saved as SYNTH presets or as part of songs.
 - As the UI and implementation is still experimental, a community setting has to be activated to create new DX7 patches. See the separate document for details.

4.5.8 - More envelopes

- ([#3279](#)) [c1.3](#) Added two more envelopes (Envelope 3 and Envelope 4). Pressing the ENV1 shortcuts toggles between ENV1 and ENV3, while the ENV2 shortcuts toggle between ENV2 and ENV4.

4.5.9 - More LFOs

- ([#3332](#)) [c1.3](#) Added two more LFOs: LFO3 (global) and LFO4 (per voice). Pressing the LFO1 shortcuts toggles between LFO1 and LFO3, while the LFO2 shortcuts toggle between LFO2 and LFO4.

4.5.10 - Send Midi

- ([#3313](#)) [c1.3](#) There is a new submenu MIDI added to the SOUND menu for synths and sound drums, where you can select the MIDI channel (and also base note for drums) that will be sent at the same time as the sound triggers. In case of drums, it is like having a Sound row + a Midi row together triggering at the same time. And in case of synths, it is like having a Synth clip + a Midi clip together triggering at the same time. This feature is limited to regular MIDI (that is, not for MPE).

4.6 - Instrument Clip View - Kit Clip Features

4.6.1 - Keyboard View

- ([#112](#)) **c1.0** All-new use for the  **Keyboard** button in kit clips, uses the main pad grid for MPC-style 16 level playing.  **Horizontal** scrolls by one pad at a time, allowing positioning drums left to right,  **Vertical** jumps vertically by rows.
- Follow-up PR: ([#317](#)) **c1.0** Fixed the issue where audition pads would remain illuminated after pressing pads 9 to 16 and then returning to the Clip View.

4.6.2 - Drum Randomizer / Load Random Samples

- ([#122](#)) **c1.0** : Add drum randomizer feature to load a random sample into one or more drum kit rows.
- ([#955](#)) **c1.1** : Drum randomization limits were removed.
- ([#3546](#)) **c1.1** : Shortcuts for this feature were changed.
- This feature is ON by default and can be set to ON or OFF via **SETTINGS > COMMUNITY FEATURES > DRUM RANDOMIZER**.
- Commands are:
 - When no audition pads are pressed, randomize just the selected drum by: Pressing **Load** + **Random**
 - To randomize more than one selected drum at a time: Press **Load** + **Audition** + **Random**
 - To randomize all active drums (not muted and have notes playing): Press **Load** + **Affect Entire** + **Random**

4.6.3 - Manual Slicing / Lazy Chop

- ([#198](#)) **c1.0** In the SLICE menu, press  **Horizontal** to enter MANUAL SLICING. When you press the green pad in the bottom left, it starts playing the first slice, and pressing any empty pad creates a new slice at the time you've pressed it. Turning  **Select** to the left or pressing the **PAD + DELETE** button allows you to delete a slice.
- Turning **turn**  **Horizontal** allows you to adjust the start point of the slice. Additionally, **turn**  **Vertical** transposes the slice by a semitone.
- Follow-up PR: ([#210](#)) **c1.0** Changed to stop audio preview (played by the sample browser) when entering manual slicer mode.

4.6.4 - Batch Delete Kit Rows

- (#234) c1.0 While you can delete a kit row by holding a Note in a row and pressing SAVE/DELETE, the DELETE UNUSED KIT ROWS feature allows you to batch delete kit rows which does not contain any notes, freeing kits from unused sounds (which take some precious RAM). While inside a Kit, press **Kit** + **Shift** + **Save**. A confirmation message will appear: "DELETE UNUSED ROWS". This command is not executed if there are no notes at all in the kit.
 - This feature is ON by default and can be set to ON or OFF via SETTINGS > COMMUNITY FEATURES > DELETE UNUSED KIT ROWS.

4.7 Instrument Clip View - Midi Clip Features

4.7.1 - Save/Load MIDI Presets

- (#1390) c1.1 Allows saving and loading midi presets. They end up in a new folder named MIDI.
 - Note: The information that is saved is the MIDI channel selection, and the assignments of CC parameters to golden knobs.

4.7.2 - Save/Load MIDI CC Labels + MIDI Device Definition File

- (#2823) c1.3 Added ability to rename MIDI CC's in MIDI clips. Changes are saved by Instrument (e.g. per MIDI channel). Changes can be saved to a MIDI preset, with the Song, or to a MIDI device definition file.
 - To rename a MIDI CC, enter Automation View and select the CC you wish to rename using the Select Encoder or using the Grid Shortcut.
 - With the MIDI CC selected, press **Shift** + **Name** to open the MIDI CC Renaming UI. Enter a new name and press **SEL Select** or **Enter**.
 - The new MIDI CC name will be immediately visible in Automation View and you can assign that CC to a **GLD Gold** in the MIDI clip and it will show that name when you press down on the **GLD Gold** encoder.
 - To save the MIDI CC labels to a MIDI Device Definition File, press **Save** + **GLD Gold**. It will ask you to enter a file name. Press **SEL Select**, **Enter** or **Save** to save the file.
 - To load the MIDI CC labels from a MIDI Device Definition File, **Load** + **GLD Gold**. It will ask you to select a file. Press **SEL Select**, **Enter** or **Load** to load the file.
 - Saving or Loading a MIDI Device Definition File will link that file to the current MIDI Instrument in the current song. If you save the song or save the current midi instrument as a preset, the song file and midi instrument preset file will include a file path to the MIDI Device Definition File. If you re-load

the song or re-load the midi instrument preset, it will load information from the linked MIDI Device Definition File.

- You can unlink a Song or Midi Instrument preset from the a MIDI Device Definition File via the MIDI > Device Definition (DEVI) menu. You will need to re-save the song and/or preset to save the changes.
- You can also manually unlink the song file / preset file from the MIDI Device Definition File by searching for definitionFile. You should see name="****" right under it. Do not delete the name line from the preset. Instead replace the name with name=""
- You can also use the MIDI > Device Definition menu as another way to link / load a MIDI Device Definition File. When clicking on the File Linked (LINK) setting, it will prompt you to select a MIDI Device Definition File to load. After successfully loading the file, the file name will be displayed (on OLED only) below the File Linked setting.

4.8 - Instrument Clip View - CV Clip Features

4.8.1 - Expression

- (#2771) **c1.2** Added the ability to set a CV instrument to use both 1 and 2 channels, which makes the cv2 source selectable between mod wheel, velocity, and aftertouch
 - Turn **SEL Select** to choose 1 AND 2 (BOTH) CV / Gate channel.
 - Press **SEL Select** to enter the CV Instrument Menu
 - Enter the CV 2 Source (CV2) submenu
 - Select from OFF, Y, Aftertouch, Velocity

4.9 - Audio Clip View - Features

4.9.1 - Shift Clip

- (#141) **c1.0** press & turn **Horizontal** will shift the waveform of an Audio clip, similar to Instrument clips.

4.9.2 - Trim from the start of the clip

- (#3291) **c1.3** You can now trim/crop audio from the start of a clip
 - Pressing a pad in the first column of an audio clip now makes it flash green allowing you to move the start position. Once trimmed, new start position snaps to column one.
 - You can revert by pressing **Undo** (or reverse the clip and altering as before).

- Previously, this was only possible by reversing the audio clip and trimming the start as if it were the end.
- This feature is ON by default and can be set to ON or OFF via `SETTINGS > COMMUNITY FEATURES > TRIM FROM START OF AUDIO CLIPS`.

See this demo for more details: [Audio Clip View - Trimming Tips](#).

4.10 - Third Party Device Integration

This is largely on the development side and created the start of a system of modules and hook points for enabling actions on the Deluge to signal third-party equipment over hosted USB. To start things off this includes some support for the Lumi Keys Studio Edition, described below.

4.10.1 - Lumi Keys Studio Edition

- (#812) **c1.1** When using the Deluge as a USB Midi Host and attaching a Lumi Keys Studio Edition, the keys will go dark until it is learned to a clip. Once learned to a clip, the keys will match the colour of the currently visible octave (compatible Deluge scales that will match Lumi scales are Major, Minor, Dorian, Phrygian, Lydian, Mixolydian, Locrian, Harmonic Minor, Arabian, Whole Tone, Blues, and Pentatonic Minor).
 - The lit and darkened keys will be aligned with the selected root and scale, so long as the selected scale is one of the builtin scales supported by the Lumi.
 - While Lumi has limited options for MPE separation, it will be configured to align with the dominant MPE range defined on the Deluge (upper or lower dominant).

5. Community Features Menu (aka Runtime Settings)

In the main menu of the Deluge (accessed by pressing both “SHIFT” + the “SELECT” encoder) there is the `COMMUNITY FEATURES (OLED)` or `FEAT (7SEG)` entry which allows you to turn features on and off as needed. Here is a list of all options as listed in OLED and 7SEG displays and what they do:

Note: these settings are saved to `SETTINGS/CommunityFeatures.XML` on your SD card.

- Drum Randomizer (DRUM) **c1.0**
 - When On, the Drum Randomizer shortcuts are enabled.
- Fine Tempo Knob (TEMP) **c1.0**
 - When On, the Fine Tempo change option is enabled.
- Quantize (QUAN) **c1.0**
 - When On, the Note Quantize shortcut is enabled.

- Catch Notes (CATC) **c1.0**
 - When Off, existing “Catch Notes” behaviour is disabled.
- Delete Unused Kit Rows (UNUS) **c1.0**
 - When On, the Delete Unused Kit Rows shortcut (hold “KIT” then “SHIFT” + “SAVE/DELETE”) is enabled.
- Alternative Golden Knob Delay Params (DELA) **c1.0**
 - When On, it changes the behaviour of the Mod Encoder button action from the default (PingPong and Type) to the alternative params (SyncType and SyncLevel).
- Allow Insecure Develop Sysex Messages (SYSX) **c1.0**
 - When On, the ability to load firmware over USB is enabled.
- Sync Scaling Action (SCAL) **c1.0**
 - When set to Fill, it changes the behaviour of the “SYNC-SCALING” button is changed to activate “FILL” mode. The original Sync Scaling button function is moved to “SHIFT” + “SYNC-SCALING”.
- Highlight Incoming Notes (HIGH) **c1.0**
 - When On, In-Key and Isometric Keyboard layouts display incoming MIDI notes with their velocity.
- Display Norns Layout (NORN) **c1.0**
 - When On, enables keyboard layout which emulates monome grid for monome norns using midigrid mod where incoming midi notes on channel 16 are rendered as white pads using velocity for brightness.
- Sticky Shift (STIC) **c1.0**
 - When On, tapping shift briefly will enable sticky keys while a long press will keep it on. Enabling this setting will automatically enable “Light Shift” as well.
- Light Shift (LIGH) **c1.0**
 - When On, the Deluge will illuminate the shift button when shift is active. Mostly useful in conjunction with sticky shift.
- Enable DX7 Engine (DX7) **c1.2**
 - When On, enables access to the DX7 synth engine (see [DX7 Synth Documentation](#)).
- Emulated Display (EMUL) **c1.0**
 - This allows you to emulate the 7SEG screen on a deluge with OLED hardware screen.
 - In “Toggle” mode, the **Shift** + **Learn** + **Affect Entire** combination can used to switch between screen types at any time.
 - With the “7SEG” mode, the deluge will boot with the emulated display.
 - This option is technically available also on deluge with 7SEG hardware. But as you need an external display to render the OLED screen, it is of more limited use.
- KB View Sidebar Menu Exit (EXIT) **c1.1**
 - When On, while in the SETTINGS or SOUND menu of KEYBOARD VIEW, pressing the top left sidebar pad will immediately exit the menu.
- Launch Event Playhead (PLAY) **c1.2**
 - When On, a red and white playhead will be rendered in Song Grid and Performance Views that let's you know that a maximum of one bar (16 notes) is remaining before a clip or section launch event is

scheduled to occur.

- Chord Keyboards (CHRD) c1.2
 - When On, enables the CHORD keyboard, which allows playing in-scale chords in a column or accross pads in a row as well as enables the CHORD LIBRARY keyboard layout which allows playing a library of chords on the pads. See [Chord Keyboard Layout](#) and [Chord Library Keyboard Layout](#) for more information.
- Alternative Playback Start Behaviour (STAR) c1.2
 - When On, the behaviour of playback start shortcuts changes as follows:
 - With playback off, pressing **Play** will start playback from the current grid scroll position
 - With playback off, pressing **Horizontal** + **Play** will start playback from the start of the arrangement or clip
- Grid View Loop Pads (LOOP) c1.2
 - When On, two pads (Red and Magenta) in the GRID VIEW sidebar will be illuminated and enable you to trigger the LOOP (Red) and LAYERING LOOP (Magenta) global MIDI commands to make it easier for you to loop in GRID VIEW without a MIDI controller.
- Alternative Tap Tempo Behaviour (TAPT) c1.3
 - When On, the number of TAP TEMPO button presses to engage **Tap Tempo** is changed to FOUR (4) to avoid mistakingly changing tempo.
- Horizontal Menus c1.3
 - When On, on OLED, some menu items render in horizontal menus, with multiple items visible and editable at the same time.
- Rounded Corners c1.3
 - When On, on OLED, corners are rounded in the menus.
- Trim from start of audio clips (TRIM) c1.3
 - When On, the ability to trim from the start of an audio clip without needing to reverse it is enabled.
- Show Battery Level (BATT) c1.3
 - When On, displays battery level information in the System menu. Shows voltage and percentage on OLED displays, percentage on 7-segment displays.

6. Sysex Handling

Support for sending and receiving large sysex messages has been added. Initially, this has been used for development centric features.

- ([#174](#) and [#192](#)) c1.0 Send the contents of the screen to a computer. This allows 7SEG behavior to be evaluated on OLED hardware and vice versa
- ([#215](#)) c1.0 Forward debug messages. This can be used as an alternative to RTT for print-style debugging. (`./dbt sysex-logging <port_number>`)

- (#295) `c1.0` Load firmware over USB. As this could be a security risk, it must be enabled in community feature settings. (`./dbt loadfw <port_number> <hex_key> <firmware_file_path>`)

7. Compiletime settings

This list includes all preprocessor switches that can alter firmware behaviour at compile time and thus require a different firmware

- `ENABLE_SYSEX_LOAD`

Allow loading firmware over sysex as described above

- `ENABLE_MATRIX_DEBUG`

Enable additional debug output for matrix driver when pads are pressed

- `FEATURE_...`

Description of said feature, first new feature please replace this

Arpeggiator

The arpeggiator was redesigned in [c1.1](#) to have advanced features for the user like independent OCTAVE MODE and NOTE MODE, RHYTHM, SEQUENCE LENGTH and RATCHETS notes. It also enabled MPE keyboards to give more expression to the arpeggiated notes by updating live the velocity of the notes based on Aftertouch or MPE Y data coming from the keyboard.

In [c1.3](#), the arpeggiator was redesigned again so it can be used on Synth clips, MIDI clips, CV clips, all types of Kit rows (Sound, MIDI and CV), and also to arpeggiate the entire Kit. Many new Arpeggiator parameters were also added which greatly improve the Arpeggiator's capabilities.

Video Tutorials



[Chord](#) Ron Cavagnaro
[Memory &](#)
[Arpeggiator](#)



[New](#)
[Community](#)
[Firmware](#)
[Features:](#)
[New Arp](#)



[Latest](#)
[Community](#)
[Firmware:](#)
[Crazy](#)
[Arpeggiator](#)
[Updates](#)

Arpeggiator Modes (or Presets) c1.1 Feature

Arpeggiator Modes were used to set the arpeggiator to play in different ways. On the official firmware you were only able to select 4 modes. Now you can customize much more deeply the arpeggiator behaviour, with independent direction settings for Note and for Octave. That's why we changed the Arp Mode grid shortcut to an Arp Preset shortcut. A preset sets at the same time 3 parameters: Arp Mode, Octave Mode and Note Mode. The available presets are:

- Off will disable arpeggiator.
- Up will setup Mode to Arpeggiator, Octave Mode to Up and Note Mode to Up. This is equivalent to Up in official firmware.
- Down will setup Mode to Arpeggiator, Octave Mode to Down and Note Mode to Down. This is equivalent to Down in official firmware.
- Both will setup Mode to Arpeggiator, Octave Mode to Alternate and Note Mode to Up. This is equivalent to Both in official firmware.
- Random will setup Mode to Arpeggiator, Octave Mode to Random and Note Mode to Random. This is equivalent to Random in official firmware.
- Walk will setup Mode to Arpeggiator, Octave Mode to Alternate and Note Mode to walk2.

c1.3 Feature

- Custom will setup Mode to Arpeggiator, and enter a submenu to let you edit Octave Mode and Note Mode.

Arpeggiator Parameters (submenus)

Now the menu options are the following:

Mode Official Feature

- **Enabled (ON)**: enables the arpeggiator, that is, it internally sets Mode to Arpeggiator. In the future, this will be replaced by the Mode setting, which will have other modes other than Arpeggiator.

Basic Parameters (BASl) Official Feature

The following parameters define the basic parameters of the arpeggiator:

- **Gate**: This changes the length of the note, as a relative percentage of the time window set between this note and the next. A gate of 25 will make the notes last for 50% of the available time window. It can be **automated** and **learned** to golden knobs and MIDI CC (not automatable in MIDI clips).

- **Sync**: allows you to set the synced rate between Off, 2-Bar, ..., 128th notes, etc.
- **Rate**: manually sets a sync rate when Sync is set to Off. It can be **automated** and **learned** to golden knobs and MIDI CC (not automatable in MIDI clips).

Pattern (PATT) c1.1 Feature

The following parameters will define the pattern of the arpeggio, by ordering the notes you have played, adding extra octaves, setting how many times they are repeated, and setting the direction in which they are walked:

- **Octaves (OCTA)**: sets the number of octaves
- **Octave Mode (OMOD)**:
 - Up (UP) will walk the octaves up.
 - Down (DOWN) will walk the octaves down.
 - Up & Down (UPDN) will walk the octaves up and down, repeating the highest and lowest octaves.
 - Alternate (ALT) will walk the octaves up, and then down reversing the Notes pattern (without repeating notes). Tip: Octave Mode set to Alternate and Note Mode set to Up is equivalent to the old Both mode.
 - Random (RAND) will choose a random octave every time the Notes pattern has played. Tip: Set also Note Mode to Random to have the equivalent to the old Random mode.
- **Chord Simulator (CSIM) c1.3 Feature**: is only available for Kit Rows. This allows you to simulate a chord so you can use Note Mode on the Kit Row. It will take the base pitch of the sample and add extra “notes” to the sequence by pitching the sample up several semitones to form a chord.
- **Note Mode (NMOD)**:
 - Up (UP) will walk the notes up.
 - Down (DOWN) will walk the notes down. Tip: this mode also works in conjunction with Octave Mode Alternate, which will walk all the notes and octaves all the way down, and then up reversing it.
 - Up & Down (UPDN) will walk the notes up and down, repeating the highest and lowest notes.
 - Random (RAND) will choose a random note each time. If the Octave Mode is set to something different than Random, then the pattern will play, in the same octave, the same number of random notes as notes are in the held chord and then move to a different octave based on the Octave Mode. Tip: Set also Octave Mode to Random to have the equivalent to the old Random mode.
 - Walk1 (WLK1) c1.3 Feature is the “slow” walk and next note is selected this way:
 - 30% of probability to walk the sequence a step in reverse.
 - 30% of probability to just repeat the same step of the sequence.
 - 40% of probability to walk the sequence a step forward (as normal).
 - Walk2 (WLK2) c1.3 Feature is the “normal” walk and next note is selected this way:
 - 25% of probability to walk the sequence a step in reverse.

- 25% of probability to just repeat the same step of the sequence.
- 50% of probability to walk the sequence a step forward (as normal).
- Walk3 (WLK3) **c1.3 Feature** is the “fast” walk and next note is selected this way:
 - 20% of probability to walk the sequence a step in reverse.
 - 20% of probability to just repeat the same step of the sequence.
 - 60% of probability to walk the sequence a step forward (as normal).
- Played Order (PLAY) **c1.3 Feature** will walk the notes in the same order that they were played.

Tip: this mode also works in conjunction with Octave Mode Alternate, which will walk all the notes and octaves all the way up (with notes as played), and then down reversing the order of played notes. Note: this mode is not available for Kit Rows.
- Pattern (PATT) **c1.3 Feature** each time you select this Note Mode on the menu it will generate a new pattern for you. The pattern is like if you had selected Played Order and the Deluge had decided the order for you. Tip: as this mode is the last selectable one, if you try to scroll past the end of the menu, the Deluge will interpret it as a re-selection of the Pattern mode and so it will generate a new pattern for you. Note: the pattern is saved to the song so you can recreate it after reloading the song. Note: this mode is not available for Kit Rows.
- **Step Repeat (REPE)** **c1.3 Feature** : allows you to set how many times the same note in the pattern is repeated before moving on to the next one.
- **Rhythm (RHYT)** **c1.1 Feature** : This parameter will play silences in some of the steps. This menu option shows zeroes and dashes, “0” means “play note”, and “-” means “don’t play note” (or play a silence). It can be **automated** and **learned** to golden knobs and MIDI CC (not automatable in MIDI clips). The available options are:

> Rhythm Options

- **Sequence Length (LENG)** **c1.1 Feature** : It defines the length of the pattern in number of steps.
 - If set to zero, the arpeggiator pattern will play fully without restrictions.
 - If set to a value higher than zero, the pattern will play up to the set number of steps, and then reset itself to start from the beginning. Tip: You can use this in combination with the Rhythm parameter to create longer and more complex rhythm patterns.
 - It can be **automated** and **learned** to golden knobs and MIDI CC (not automatable in MIDI clips).

Randomizer (RAND) **c1.3 Feature**

The following parameters are all **automatable** and **learnable** to golden knobs and MIDI CC (not in MIDI clips), and they define how probable a value is to change on each step:

- **Lock Randomizer (LOCK)**: This parameter allows you to freeze the current set of randomized values so the sequence has a repeatable pattern. Note: you can find this parameter also at the root level of the sound menu, under Randomizer, because this toggle is also applied for both sequenced notes and arpeggiated notes.

- If Lock is OFF, every single note or arp step will get a new random value for each randomized parameter, and as a result for every single step it's unpredictable what result values it will have for Velocity/Octave/Gate spreads, or Note Prob, Ratchet Prob, etc.
- If Lock is ON, the dice is rolled just once for every note or arp step of the whole clip sequence (based on the probability values you have set), so you will feel the clip like it is repeating, with a fixed and predictable sequence. = If you want to re-roll the dice just for one of the parameters, slightly change its value (even increasing or decreasing it by 1 is enough) and a new set of random values will be generated and locked again.
- Extending on the previous tip, if you want some parameters to be locked, but not others, add some automation variation in the clip to those, so the dice is re-rolled for them and hence you always get fresh new random values for them, while the others have fixed values.
- **Octave Spread (OCTA)**: The note will get a change in pitch of a random amount of octaves, going from 0 up to a maximum of +3 octaves.
- **Gate Spread (GATE)**: The gate of the arp step will get a random **positive** or **negative** deviation from the base gate.
- **Velocity Spread (VELO)**: The velocity of the arp step will get a random **positive** or **negative** deviation from the base velocity. Note: you can find this parameter also at the root level of the sound menu, under Randomizer, because this parameter affects both sequenced notes and arpeggiated notes.
- **Ratchet Amount (RATC)** c1.1 Feature : A ratchet is when a note repeats itself several times in the same time interval that the original note has to play. This will set the maximum number of notes that a single step can have (each step will pick a random number of ratchet notes between 1 and this maximum value set). Ratchet bursts can contain 2, 4 or 8 notes. By increasing this parameter, it is more likely that bigger ratchet bursts can occur.
- **Ratchet Probability (RPRO)** c1.1 Feature : This sets how likely a step is to be ratcheted. The ratchet amount is randomized on each step between 1 and the maximum value set with the Ratchet Amount parameter.
- **Chord Polyphony (CHRD)**: is not available for Kit Rows. This will set the maximum number of notes that will play at the same time when a step is played as a chord. Increase parameter Chord Probability to make some steps play a chord instead of a single note. Values range from no chord, to 5th, to triad (3rd + 5th), to seventh chord (3rd + 5th + 7th) as the maximum size of a chord. By increasing this parameter, it is more likely that bigger chords can occur.
- **Chord Probability (CPRO)**: is not available for Kit Rows. This parameter will allow you to control the chance of a note to play as a chord. The size of the chord is determined by the Chord Polyphony parameter.
- **Note Probability (NOTE)**: It applies a probability for notes to play or not (after Rhythm has been evaluated, that is, only for note steps, not for silent steps). Note: you can find this parameter also at the root level of the sound menu, under Randomizer, because this parameter affects both sequenced notes and arpeggiated notes.
- **Bass Probability (BASS)**: It applies a chance of replacing the current note to be played with the lowest note of arpeggiator pattern. The higher the value, the more likely that the note played is the bass note of the

arpeggiated chord. This can be used as a performance tool to open up or close the arpeggio's pitch range.

- **Swap Probability (SWAP):** It applies a chance of replacing the current note to be played from the sequence pattern with a random note picked from the pattern. The higher the value, the more likely that the note played is random instead of the next note in the sequence.
- **Glide Probability (GLID):** It applies a chance of delaying a note's note-off event to be executed at the same time as the following arp note. If your sound has some Portamento applied, then it will produce a glide effect.
- **Reverse Probability (RVRS):** It applies a chance of inverting the Reverse sample setting just for the current note to be played. This probability only affects the oscillator whose type is set to Sample. Note: you can find this parameter also at the root level of the sound menu, under Randomizer, because this parameter affects both sequenced notes and arpeggiated notes.

The randomizer's parameters that are also available for non-arpeggiated notes are:

- Lock Randomizer (LOCK)
- Velocity Spread (VELO)
- Note Probability (NOTE)
- Reverse Probability (RVRS)

MPE c1.1 Feature

This submenu contains parameters that are useful if you have an MPE controller connected to the Deluge:

- **Velocity:** It will allow you to control the velocity of each new arpeggiated note with an MPE expression parameter.
 - Off: This disables control of velocity with MPE.
 - Aftertouch (AFTE): The pressure applied to the key sets the velocity of the note.
 - MPE Y (Y): The Y position on the MPE controller sets the velocity of the note.

Kit Arpeggiator c1.3 Feature

The Kit Arpeggiator is a new layer on top of the kit rows, which will control which rows receive note ON's and note OFF's. That means that the kit rows can have their own arpeggiators also enabled. If you want to use the Kit Arpeggiator, you need to enable **Affect Entire** in the Kit. Then access the menu with  **Select** knob and go to the Kit Arpeggiator submenu.

The Kit Arpeggiator parameters are also controllable with MIDI FOLLOW.

Opting in and out of the Kit Arpeggiator

Kit rows by default opt-in to the Kit Arpeggiator. You can make a kit row opt-out of it by going into the Arpeggiator submenu from the kit row menu and disabling the option `Include in Kit Arp`.

There is a special case where the kit row is forced to opt-out of the Kit Arpeggiator, which is when their notes in the sequencer don't have "tails". That is, if when you paint a note in the sequencer, it doesn't allow you to extend its length, it means this kit row is going to be excluded from the Kit Arpeggiator. This happens when you load a sample in the row and the sample mode is set to `Once`. Or it could also happen when you load a synth preset and you set the `Env1 Sustain` to zero.

Reverse Probability

The `Reverse Probability` parameter is available for the Kit Arpeggiator, but it works a little bit differently than the same parameter for sounds. In this case it is able to "invert" the `Reverse` setting for each note, which means that:

- If `Reverse Probability` evaluates to `Yes` for a note, and the kit row's own `Reverse` evaluates to "play forward", then this will be inverted and the sample will play in reverse.
- If `Reverse Probability` evaluates to `Yes` for a note, and the kit row's own `Reverse` evaluates to "play in reverse", then this will be inverted and the sample will play forward.
- If `Reverse Probability` evaluates to `No` for a note, then, the kit row's `Reverse` settings will be respected.

Tips for using the Kit Arpeggiator

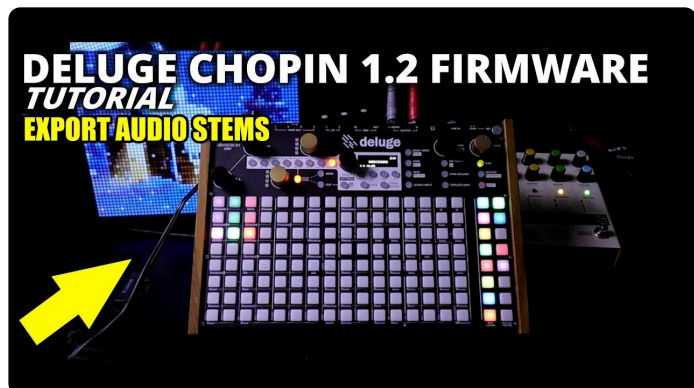
- To be able to use the Kit Arpeggiator with a sliced sample, remember to set all kit rows to sample mode `Cut`. You can do this by entering sample mode menu for any kit row, and while holding the `Affect Entire` button, you can change the sample mode to `Cut`. That will apply the change to all kit rows. Then it is up to you how you place the notes, but a simple experiment could be to place a long note occupying the whole length of the clip for all the kit rows, then enable the Kit Arpeggiator and have fun playing with the settings.

Audio Export

c1.2 Feature

Automatically export your clips in Session View, tracks in Arranger View, and drums (c1.3) in Kit Instrument Clip View into audio WAV files.

Video Tutorials



[How to](#)
[Auto](#)
[Export](#)
[Stems](#)
[on](#)
[Deluge](#)



[New](#)
[Community](#)
[Firmware](#)
[Features:](#)
[Audio](#)
[Export](#)

Description

Added AUDIO EXPORT, an automated process for exporting CLIP 's while in SESSION VIEW, TRACK 's while in ARRANGER VIEW, and DRUM 's (c1.3) while in KIT INSTRUMENT CLIP VIEW. Press **Save** + **Record** to start exporting.

Now with one quick action you can start an export job, walk away from your Deluge and come back to a collection of renders from all your clips, arranger tracks, and kit drums.

Exports Folder

Audio exports are placed in a new SAMPLES/EXPORTS/ folder.

Within the EXPORTS folder, a folder with the SONG NAME is created if it does not already exist when exporting. Unsaved songs are saved with the song name UNSAVED. Thus, you will have a new folder named SAMPLES/EXPORTS/SONG NAME/.

Within the SONG NAME folder, a folder for the type of export (e.g. CLIPS or TRACKS or DRUMS) is created for each export job which contains all the WAV file recordings.

If the same SONG and EXPORT TYPE is exported more than once, a 2 digit incremental number is appended to that export type's folder name (e.g. TRACKS## or CLIPS## or DRUMS##).

File Names

Exported files are given a meaningful name in the following format:

ClipType_ExportType_PresetName_Tempo_Root Note-Scale Name_FileNumber.WAV

For example:

```
SYNTH_CLIP_PRESETNAME_###BPM_Root Note-Scale Name_000.WAV
SYNTH_TRACK_PRESETNAME_###BPM_Root Note-Scale Name_000.WAV
MIXDOWN_###BPM_Root Note-Scale Name.WAV
KIT_DRUM_KITNAME_DRUMNAME_Root Note-Scale Name_000.WAV
```

Shortcuts to Start/Stop Exporting

Start Export

- Press **Save** + **Record** while Playback and Record are disabled to launch the export process
- When the export is finished, a dialog will appear on the display that tells you that the export process has finished. Press **SEL Select** , **Back** or any **Pad** on the grid to exit the dialog.
- Note 1: Master (Song) FX are excluded from the export by default (but can be included - see below)
- Note 2: MIDI and CV Tracks and Clips are excluded from the export

- Note 3: Tracks, Clips and Drums that are EMPTY (e.g. they have no Notes or Audio Files) are excluded from the export
- Note 4: In Arranger View, any Tracks that are MUTED are excluded from the export
- Note 5: In Kit Instrument Clip View, any Drums that are MUTED are excluded from the export
- You can also start the export via a new EXPORT AUDIO menu found in the SONG menu accessible in Session and Arranger Views and in the KIT FX/ACTIONS menu accessible in Kit Instrument Clip View when Affect Entire is enabled.
 - In Session and Arranger Views, start the export by entering the SONG/EXPORT AUDIO/ menu and pressing  on the menu item titled START EXPORT. It will exit out of the menu and display the export progress on the display.
 - In Kit Instrument Clip View, start the export by entering the KIT FX/ACTIONS/EXPORT AUDIO/ menu and pressing  on the menu item titled START EXPORT. It will exit out of the menu and display the export progress on the display.

Cancel Export

- Press  to cancel the export process
- When you cancel exporting, a dialog will appear on the screen asking you for confirmation. Press on the  encoder to confirm that you want to cancel. Press  to exit out of the dialog and continue with the export process.
- Note: The export still continues in the background until you confirm you want to stop.

Recording Parameters

Recording Length

- In terms of the length of each rendered audio file:
 - In Arranger, a track is played until the end of the arrangement's length is reached.
 - In Session, a clip is played until the end of the longest note row with notes in it is reached.
 - In Kit Instrument Clip View, a drum is played until the end of the drum row is reached.
 - If EXPORT TO SILENCE is enabled, tails will be allowed to ring out and recording will continue past the track, clip or drum length until silence is reached (see below).

Silence

- By default, files are rendered until silence is reached (mutable noise floor, ~70dB from peak) to allow for sound tails (e.g. delay, reverb) to be captured
 - This can be turned off in the export configuration menu located at:
 - In Session and Arranger: SONG/EXPORT AUDIO/CONFIGURE EXPORT/EXPORT TO SILENCE;
 - In Kit Instrument Clip: KIT FX/ACTIONS//EXPORT AUDIO/CONFIGURE EXPORT/EXPORT TO SILENCE;
- If silence is not reached within 60 seconds of playback stopping, then the recording will stop automatically as a safety precaution.

Normalization

- By default, normalization is off. Normalization sets the peak of the renders to be at 0dB (as loud as possible without distorting).
 - Normalization can be turned on in the export configuration menu located at:
 - In Session and Arranger: SONG/EXPORT AUDIO/CONFIGURE EXPORT/NORMALIZATION
 - In Kit Instrument Clip **c1.3**: KIT FX/ACTIONS/EXPORT AUDIO/CONFIGURE EXPORT/NORMALIZATION

Song FX

- By default, Song FX are excluded (these are the master FX in Session and Arranger Views when **Affect Entire** is enabled). They can be included in the export configuration menu located at: SONG/EXPORT AUDIO/CONFIGURE EXPORT/SONG FX

Kit FX **c1.3**

- This is applicable for exporting Kit Drums only and is not visible in the Session and Arranger Audio Export menu's
- By default, Kit FX are excluded (these are the Kit Global FX in Kit Instrument Clips when **Affect Entire** is enabled).
- They can be included in the export configuration menu located at: KIT FX/ACTIONS/EXPORT AUDIO/CONFIGURE EXPORT/KIT FX
 - Note: When Kit FX are excluded, the Kit Global FX pitch adjustment will still be included

Clip / Drum Loop Points

- For clip and drum exports, a loop point marker is saved with the exported file to mark the clip's / drum's loop length. This makes it easy to load your rendered files so they will play back and loop properly in a DAW.

Offline Rendering

- By default, offline Rendering is enabled. Offline rendering enables you to render and export faster than if you recorded playback using live audio (e.g. resampling/online rendering). There are still improvements to be made to make offline rendering even faster, but it is significantly faster as is!
 - Offline rendering can be turned off in the export configuration menu located at:
 - In Session and Arranger: SONG/EXPORT AUDIO/CONFIGURE EXPORT/OFFLINE RENDERING
 - In Kit Instrument Clip: KIT FX/ACTIONS/EXPORT AUDIO/CONFIGURE EXPORT/OFFLINE RENDERING

Mixdown Export c1.3

- This is only applicable when exporting from Arranger
- Exporting all unmuted tracks as a single stereo file is disabled by default.
- This can be enabled in the export configuration menu located at: SONG/EXPORT AUDIO/CONFIGURE EXPORT/EXPORT MIXDOWN

Audio Export Menu

A new EXPORT AUDIO menu has been added to the SONG menu accessible in Session and Arranger Views and in c1.3 the KIT FX/ACTIONS/ menu is accessible in Kit Instrument Clip View.

This menu allows you to start an export and configure various settings related to the export.

- Start the export by entering the SONG/EXPORT AUDIO/ or KIT FX/ACTIONS/EXPORT AUDIO/ menu and pressing  Select on the menu item titled START EXPORT. It will exit out of the menu and display the export progress on the display.
- Configure settings for the export by entering the SONG/EXPORT AUDIO/CONFIGURE EXPORT/ or KIT FX/ACTIONS/EXPORT AUDIO/CONFIGURE EXPORT\ menu.
 - You can currently configure the following:
 - KIT FX (for Drum Exports only): Exports are rendered with or without Kit FX applied. Kit FX pitch adjustment is always rendered.

- **NORMALIZATION**: Normalization sets the peak of the render to be at 0dB (as loud as possible without distorting).
- **EXPORT TO SILENCE**: Exports are rendered until silence is reached (mutable noise floor, ~70dB from peak) to allow for sound tails (e.g. delay, reverb) to be captured.
- **SONG FX**: Exports are rendered with or without Song FX applied.
- **OFFLINE RENDERING**: Exports are rendered offline. You will not hear any audio playback, as exports are rendered at a faster than real-time basis.
- **EXPORT MIXDOWN**: A single master mixdown track is exported for all unmuted tracks in Arranger View.

Multi-Sampling using Kit Audio Export c1.3

The c1.3 firmware provides a way to sample and multi-sample external audio instruments by leveraging two features:

- Kit Drum Export
- MIDI note out from Kit Rows

Attached are 3 multi sample template songs with a kit preconfigured with 128 rows outputting notes 0-127 on Channel 7. The only difference between the songs is the note length sampled (1 bar, 1/2 bar, 1/4 bar).

- [1 bar template](#)
- [1/2 bar template](#)
- [1/4 bar template](#)

If you need to change the output Channel I'd recommend opening the XML's on a computer and doing a mass find replace.

In addition to the preconfigured kit, there is also an audio clip configured to sampler mode so that incoming audio is monitored.

Each kit row is also configured for live oscillator input, however I have muted the kit volume at the Kit FX level because I think live oscillator input degrades the audio quality (but I'm not 100% on that). But the option is there in case you want to delete the audio clip and multi sample using the live oscillators instead. Or you could stack both the audio clip and the live oscillator sound together for some cool effects!

Another advantage of using the audio clip is that you could sample with the same Audio Clip FX applied to all notes sampled.

Attached below are some videos as well showing the workflow. It's quite nifty!

Troubleshooting

I have a track that won't export

Scenario: Track(s) get exported with only 5 seconds of audio

Several users reported that their tracks were not getting exported properly as they included only 5 seconds of audio.

All of these users were using offline rendering.

All of these users had complex arrangements.

Solution:

For heavy arrangements, if you encounter the above issue, we recommend turning off `Offline Rendering` in the `SONG\EXPORT AUDIO\CONFIGURE EXPORT\` menu.

The problem is due to memory filling up faster when using `Offline Rendering` compared to `Online (Live) Rendering`. We hope to find a solution for this problem as soon as possible.

Scenario: Special characters in the track name

One user reported that they were unable to export a track even though the export process indicated that the track had been exported.

Solution:

Check that the track name doesn't have any special characters. In this case, the user had a track called `<< Organ >>`. Removing the characters `<< >>` and just naming the track "Organ" allowed the track to be exported.

I have a track that takes much longer to export than others

Scenario: The track has an exceptionally long tail that doesn't not drop to silence

If you are using the `EXPORT TO SILENCE` feature, it may take longer for your track to export because the renderer is waiting for your track to become silent. Thus, you will see that playback has turned off but the record button continues to blink rapidly because it is still waiting for silence before stopping the render.

As a safety measure, if your track does not become silent within 60 seconds of playback stopping, then the render will stop automatically.

If you do not want to wait potentially 60 seconds, you will need to press BACK to cancel the export and save what has been recorded up to that point.

If you want to continue using the EXPORT TO SILENCE feature, check what might be contributing to the exceptionally long tails (e.g. delay, reverb, release, compressor). Use the VU Meter to check the levels when you start and stop a track. If the VU Meter gets stuck with pads that do not turn off, then it is an indication that you have exceptionally long tails.

The tails of one export “bleeds” into the beginning of another

If you are not using the EXPORT TO SILENCE feature, it is possible that while exporting, the audio from the previous render may bleed into the start of the next render.

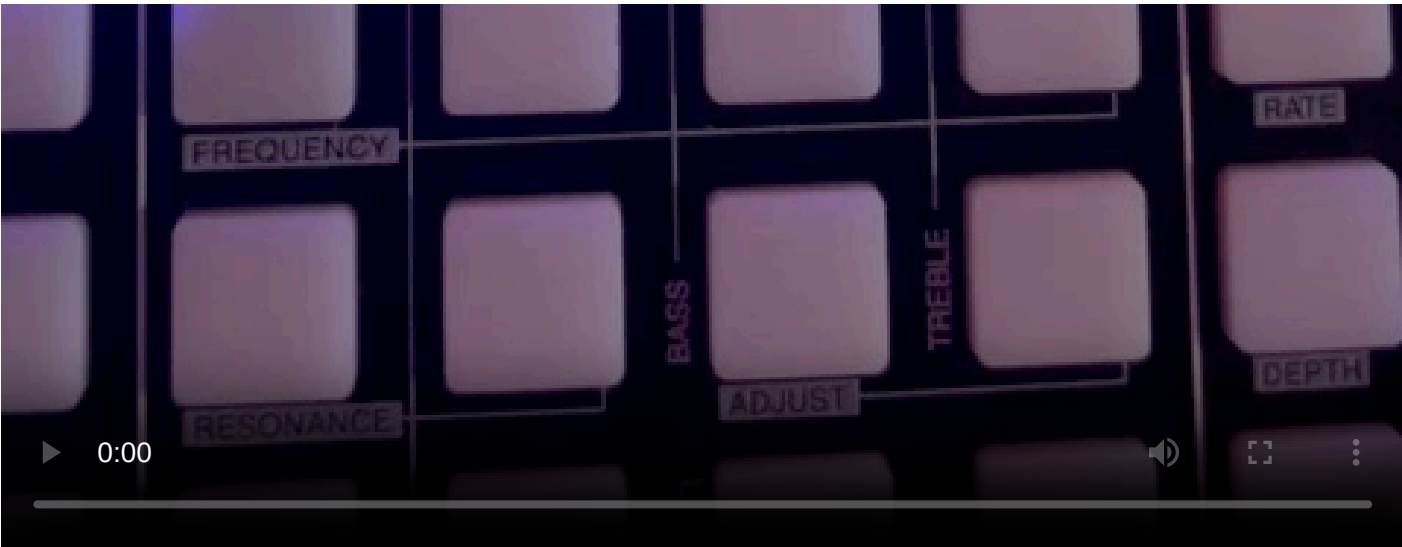
Other than using the EXPORT TO SILENCE feature, we do not have a solution for this yet. Ideally if we can find a way to cut any sustaining audio from the previous track / clip rendered that would ensure that no bleed occurs, however we have not found a way to do this yet.

Videos

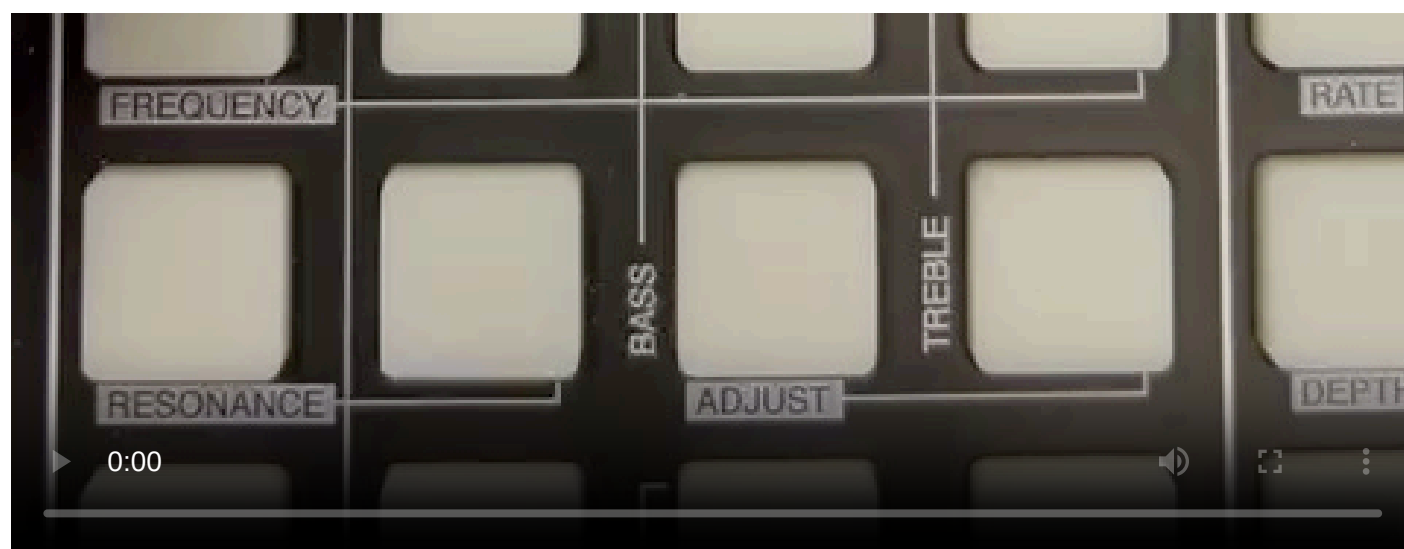
Audio Export Demos



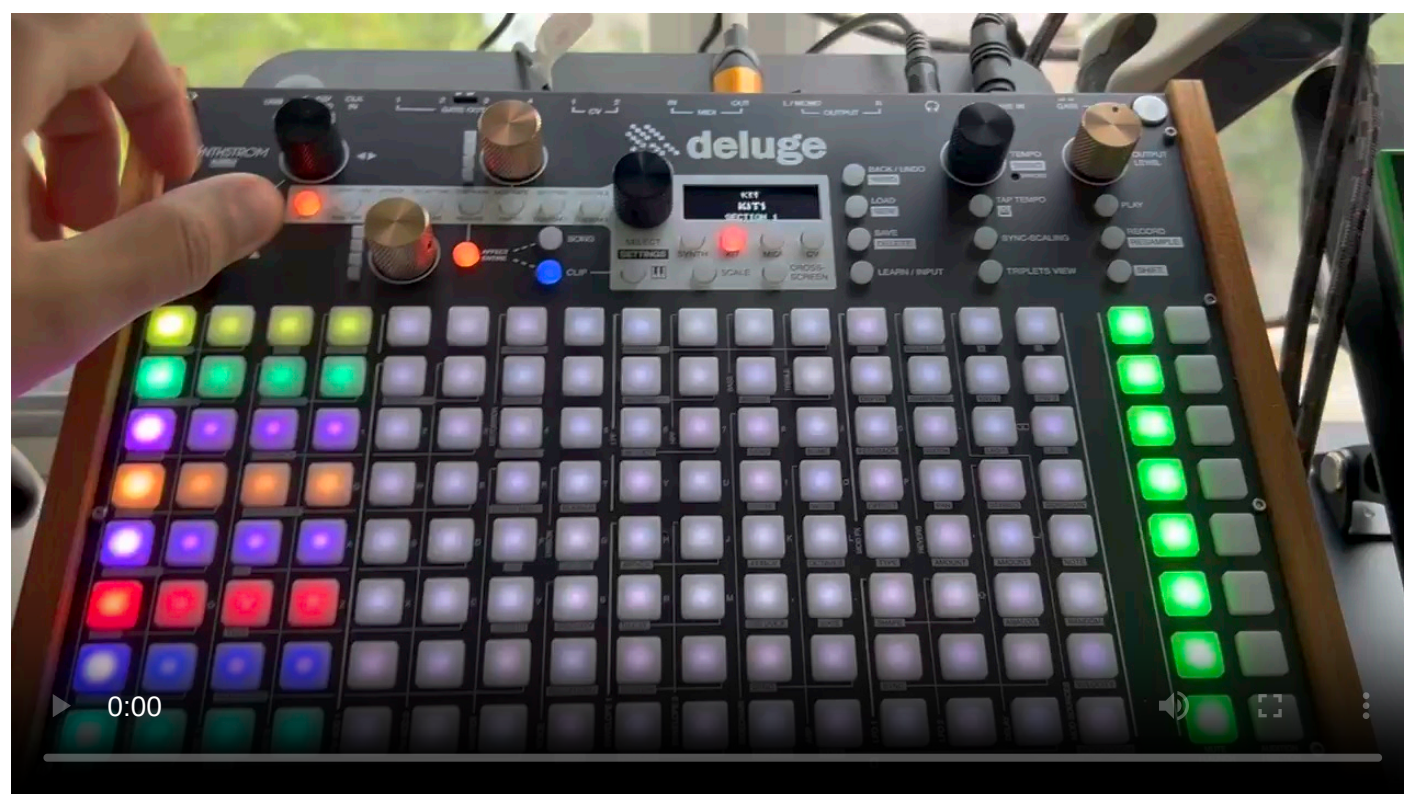


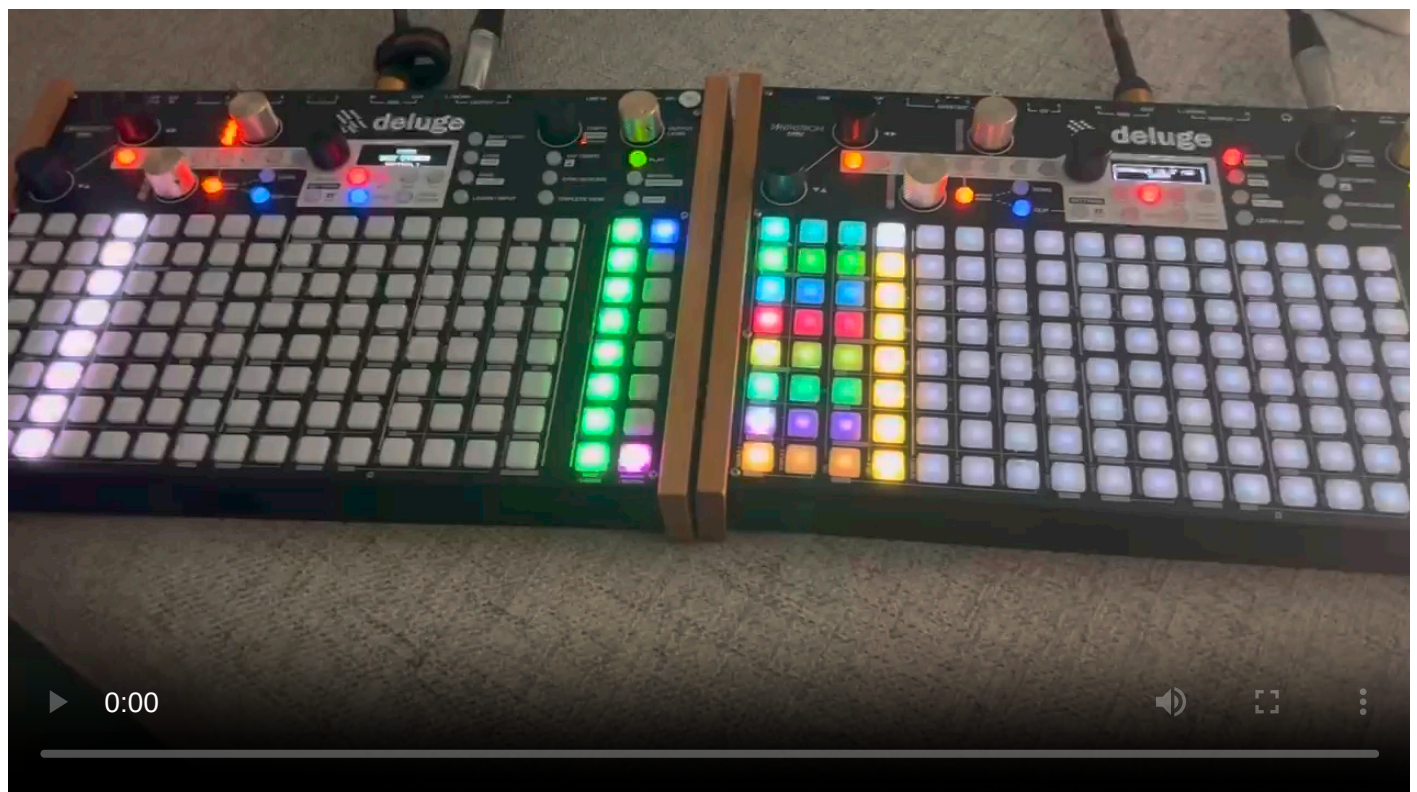
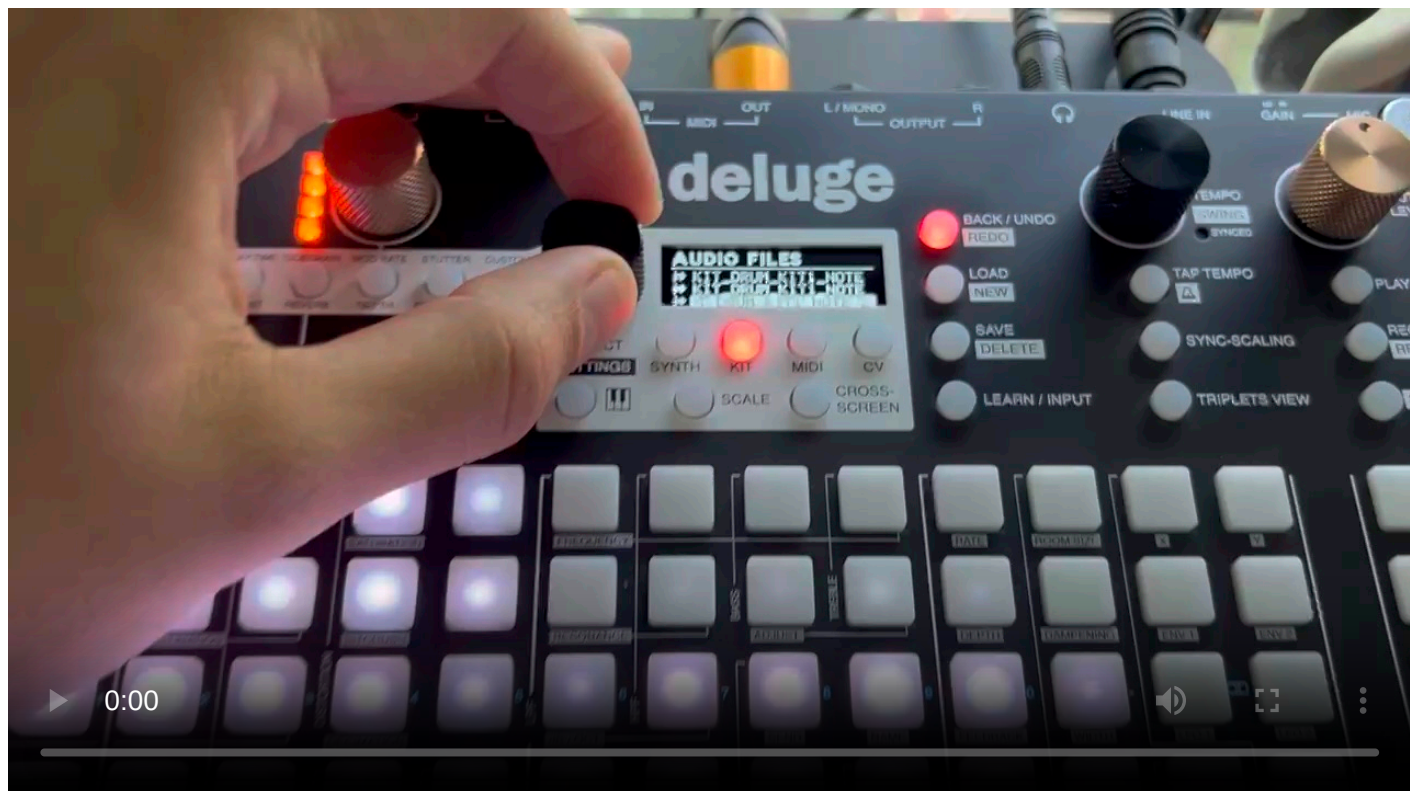


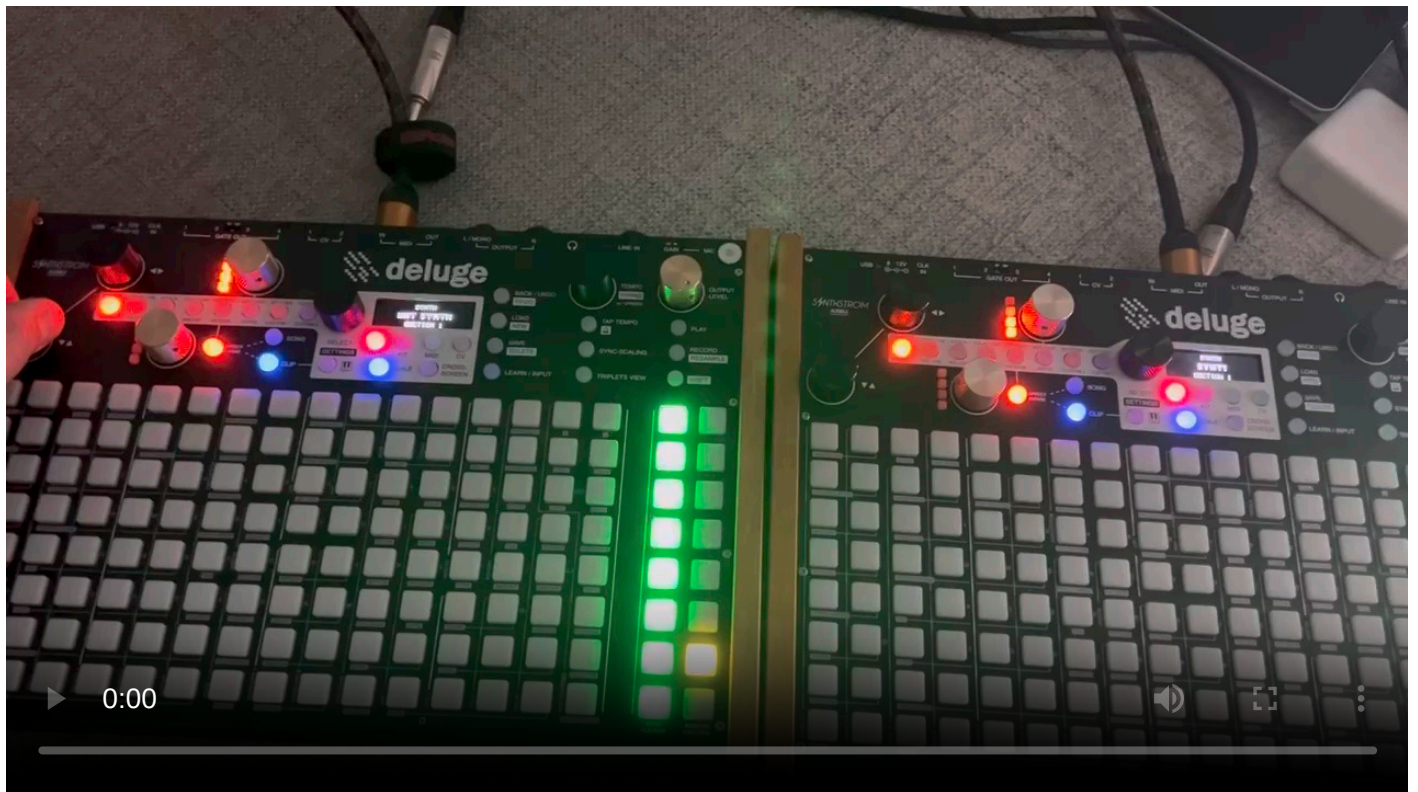




Multi-sampling with Kit Drum Export Demos





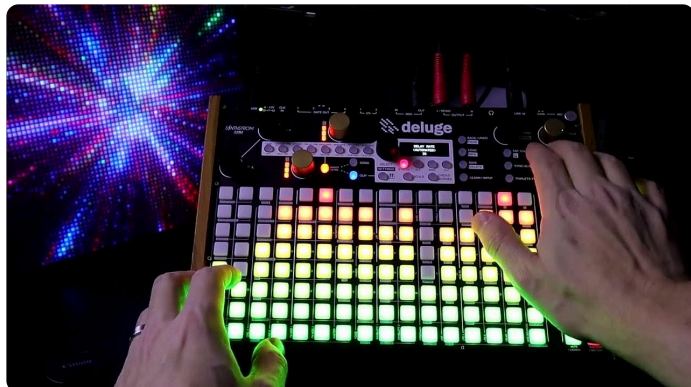


Automation View

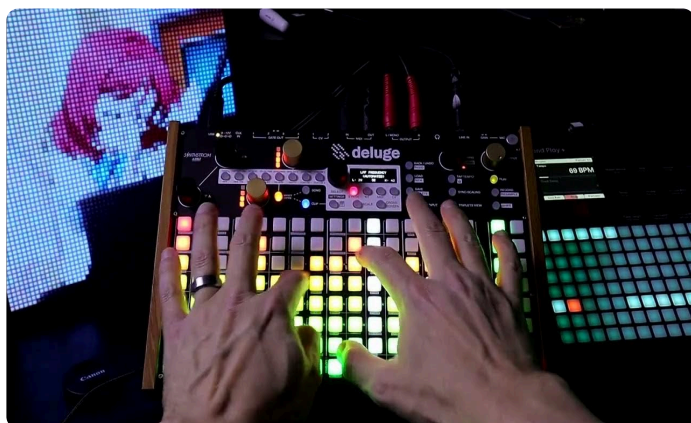
c1.0 Feature

Automation View that has been added in Clip and Arranger Views to edit parameter automation using the sequencer grid.

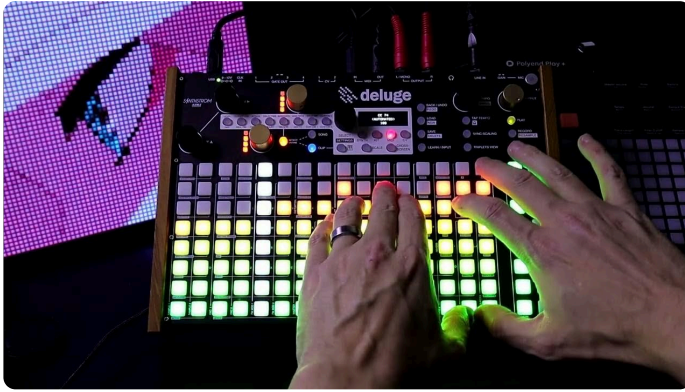
Video Tutorials



[Automation
Mode - Part 1:
Experimentation](#)



[Deluge Is
Now an
Advanced
Glitch
Effects
Pedal -
Automation
Mode Part
2](#)



[MIDI CC](#)
[and Line In](#)
[FX -](#)
[Automation](#)
[Mode Part](#)
[3](#)



[The](#)
[Synthstrom](#)
[Deluge](#)
[Just Got](#)
[Even](#)
[Better](#)

Description

Automation View is a new view that complements the existing Arranger and Clip Views.

- The Automation Arranger View is accessed from within Arranger View by pressing **Clip**
 - Note: the automation arranger view editor for a specific parameter can be accessed directly from the arranger song menu for that parameter (e.g., the one you would access by pressing **SEL Select** or by using the **Shift + Pad** shortcut) by pressing the **Clip** button while in the parameter menu.
- The Automation Clip View is accessed from within the Clip View by pressing the Clip button
 - Note: the automation clip view editor for a specific parameter can be accessed directly from the clip sound menu for that parameter (e.g., the one you would access by pressing on select encoder or by using the **Shift + Pad** shortcut) by pressing the **Clip** button while in the parameter menu.

It allows you to edit automatable parameters on a per-step basis at any zoom level.

Automatable Parameters are broken down into four categories for Automation View purposes:

1. Automatable Clip View Parameters for Synths and Kits with a row selected and **Affect Entire** DISABLED

The 81 parameters that can be edited are:

- **Master** Level, Pitch, Pan

- **LPF** Frequency, Resonance, Morph
- **HPF** Frequency, Resonance, Morph
- **EQ** Bass, Bass Frequency, Treble, Treble Frequency
- **Reverb** Amount
- **Delay** Rate, Amount
- **Sidechain** Shape
- **Distortion** Decimation, Bitcrush, Wavefolder
- **OSC 1** Level, Pitch, Phase Width, Carrier Feedback, Wave Position
- **OSC 2** Level, Pitch, Phase Width, Carrier Feedback, Wave Position
- **FM Mod 1** Level, Pitch, Feedback
- **FM Mod 2** Level, Pitch, Feedback
- **Env 1** Attack, Decay, Sustain, Release
- **Env 2** Attack, Decay, Sustain, Release
- **Env 3** Attack, Decay, Sustain, Release
- **Env 4** Attack, Decay, Sustain, Release
- **LFO 1** Rate
- **LFO 2** Rate
- **LFO 3** Rate
- **LFO 4** Rate
- **Mod FX** Offset, Feedback, Depth, Rate
- **Arp** Rate, Gate, Spread Gate, Spread Octave, Spread Velocity, Ratchet Amount, Ratchet Probability, Chord Polyphony, Chord Probability, Note Probability, Bass Probability, Swap Probability, Glide Probability, Reverse Probability, Rhythm, Sequence Length
- **Noise** Level
- **Portamento**
- **Stutter** Rate
- **Compressor** Threshold
- **Mono Expression X** (Pitch Bend)
- **Mono Expression Y** (Mod Wheel)
- **Mono Expression Z** (Channel Pressure / Aftertouch)

You can also edit any patch cables that are created

2. Automatable Clip View Parameters for Kits with **Affect Entire** ENABLED, and Audio Clips

The 26 parameters that can be edited are:

- **Master** Level, Pitch, Pan

- **LPF** Frequency, Resonance, Morph
- **HPF** Frequency, Resonance, Morph
- **EQ** Bass, Bass Frequency, Treble, Treble Frequency
- **Reverb** Amount
- **Delay** Rate, Amount
- **Sidechain** Level, Shape
- **Distortion** Decimation, Bitcrush
- **Mod FX** Offset, Feedback, Depth, Rate
- **Stutter** Rate
- **Compressor** Threshold

3. Automatable Parameters for Arranger

The 22 parameters that can be edited are:

- **Master** Level, Pan
- **LPF** Frequency, Resonance, Morph
- **HPF** Frequency, Resonance, Morph
- **EQ** Bass, Bass Frequency, Treble, Treble Frequency
- **Reverb** Amount
- **Delay** Rate, Amount
- **Distortion** Decimation, Bitcrush
- **Mod FX** Offset, Feedback, Depth, Rate
- **Stutter** Rate

4. Automatable Patch Cables and Modulation Depths

You can automate all patch cables and modulation depths.

Simply enter the modulation menu that displays SOURCE -> DESTINATION and then press CLIP to enter Automation View for that specific Patch Cable.

5. Automatable CC's for MIDI Clips

You can automate MIDI CC's 0-119 You can automate Monophonic (Channel) Expression parameters (X - Pitch Bend, Y - Mod Wheel, Z - Channel Pressure / Aftertouch). Note: Mod Wheel is CC 1. In Automation View for MIDI Clips, MIDI CC's have been mapped to grid shortcuts using the template file from MIDI Follow Mode (MIDIFollow.XML). So if you want to change what CC's map to what grid shortcuts in the Automation View for MIDI Clips, you would need to edit the MIDIFollow.XML template for MIDI Follow mode. See Appendix below for an overview of the MIDI CC to Grid Shortcut mappings

6. Automation for CV Clips

In CV Clips, you can automate Monophonic (Channel) Expression parameters (X - Pitch Bend, Y - Mod Wheel, Z - Channel Pressure / Aftertouch)

Summary

Automation View can be thought of as a layer sitting on top of the Arranger View and Clip View for Synths, Kits, MIDI, and Audio clip types.

For Arranger, the sidebar from Arranger View is available in the Automation Arranger View so that you can change clip statuses. If you are in Automation Overview it will also provide access to audition clips.

For Non-Audio Instrument Clip Types (Synths, Kits, MIDI and CV), the sidebar from these instrument clip types is available in the Automation Clip View so that you can audition sounds while viewing/editing parameter automations.

The Automation View functionality covered by this feature can be broken down into these sections:

1. Entering/Exiting the Automation View
2. Automation Overview
3. Parameter Selection
4. Automation Editor
5. Button Shortcuts/Combos
6. Default Settings (Enhancements to the existing Arranger / Clip View behaviours)

A more detailed break-down of the above sections is found below.

Enter/Exit Automation View

Automation View can be accessed from the Arranger View and Clip Views by pressing the **Clip** button.

Automation View can also be accessed from the Sound menu for any automatable parameter, patch cable, modulation depth. While in the menu, press **Clip** to toggle the Automation Editor for that parameter.

Some additional things to note:

- If you are in Automation Clip View and transition to Song/Arranger View, the Deluge will remember that on a per-clip basis. This means that when you transition back to a Clip, it will re-load the Automation Clip View if you were in that view previously.

Note: This information is saved with the song.

- For non-Audio Instrument Clip Types, you can load up the Keyboard Screen while in the Automation Clip View so you can quickly switch between editing a Parameter and playing notes on the Keyboard.
- Automation Clip View settings are saved per Instrument per Clip with the Song
- Automations that are recorded in using  are always recorded with Interpolation.
- MPE automations are not covered/edited by the Automation Clip View. If MPE must be edited/nudged/shifted, it must be done in the current Instrument Clip View.

Automation Overview

The Automation Overview provides an overview of the Parameters that can be automated, are currently automated, and acts as a launchpad for the Automation Editor.

The Automation Overview **will**:

- Allow you to automate Master FX section parameters using the Mod Encoders (gold knobs)
- For Arranger View, Synth, Kit, and Audio clips, illuminate the shortcut pad's on the grid that correspond to a parameter that can be automated.
- For MIDI clips, illuminate the pads to represents the CC values that can be automated from 0-121 (with the last two being Pitch Bend and After Touch and are placed in the bottom right hand corner).
- provide visual feedback on which parameters that can be automated and are currently automated by illuminating the corresponding shortcut pads white

Note: While in the automation overview, if you hit play, record and then record in Master FX automations using the Mod Encoder (Gold Knobs), the automation overview grid will update to show you that those parameters are now automated by highlighting the corresponding pads on the grid white. Note: the update will happen after you turn record off.

- be quickly accessible at any time from within the Automation Arranger View by pressing **Affect Entire**
- be quickly accessible at any time from within the Automation Clip View by holding **Shift + Clip**, **Audition + Clip**, or **Affect Entire**.

Note 1: The Automation Overview will also be displayed if you change clip types (e.g. from Synth to MIDI).

Note 2: In a Kit clip, the Automation Overview will be displayed any time you change your kit row selection (e.g. by pressing on the mute or audition pads).

Note 3: In a Kit clip, if you press and hold an audition pad and turn the vertical encoder, you can quickly scroll through all automation overviews for kit clip's rows

- enable you to quickly access the Automation Editor for any automatable parameter by pressing any of the pads that are illuminated or by turning select

- enable you to clear all automations using the current combo of pressing down on Horizontal Encoder at the same time as pressing the Back button (note: for kit clip the behaviour will operate differently than usual: with **Affect Entire** enabled you will only clear all kit level automations. with **Affect Entire** disabled it will clear all kit row level automations).

Note: When automations are cleared, Parameters are reset to the current value in the Sound Editor. E.g. if an automation playing back and you deleted it mid playback, the parameter value would be set to the last played back value. Or if you just edited the automation by pressing on the grid, the last value would be the value corresponding to the last pad you pressed.

- enable you to quickly turn interpolation on/off by using the shift + interpolation shortcut (the interpolation shortcut pad is the interpolation pad in the first column of the grid, second from the top). The interpolation shortcut pad will blink every few seconds to remind you that interpolation is on.
- enable you to copy paste automations and the overview grid will show you the movement of pasted automations by illuminating the pads of the params that automation was copied to white
- allow you to use the keyboard screen
- allow you to mute/audition sounds using the sidebar

The Automation Overview **will not allow you to:**

- access the sample browser
- use regular grid shortcuts (except for shift + param)
- view/change the clip length / row length settings (go into the automation editor or back to the regular instrument clip view if you want to view/edit those settings)
- edit existing note row values in a synth (e.g. change a pad from F to F#)
- edit existing note row sounds in a kit (e.g. change the sample)
- add new rows in a kit
- re-arrange rows in a kit
- enter the Automation Editor in Automation Arranger View if you are currently auditioning a clip

Parameter Selection

You can select the Parameter that you want to edit in four ways:

1. From the Automation Overview by pressing any of the illuminated pads
2. By turning select
3. From the menu by selecting an automatable parameter for editing and then pressing clip
4. By pressing shift + the shortcut pad corresponding to the parameter you want to edit

Once you select a Parameter in the Automation Clip View, it will be remembered and stored on a per clip basis unless you go back to the Automation Overview. This means that if you are editing a Parameter and go back to the regular Clip View, Song View or Arranger View, when you transition back to the Automation Clip View it will open the last Parameter that you were editing in the Automation Editor. Similarly if you were last on the Automation Overview it will remember that.

Note: This information is saved with the song.

Automation Editor

The Automation Editor enables you to view and edit parameter automation values.

- For Arranger, automations are recorded on a song arrangement basis
- For Synths, MIDI, CV and Audio clips, automations are recorded/edited on a clip basis (e.g. not on a per note row basis).
- For Kit clips, automations can be recorded/edited on a clip basis and on a row basis (two layers of automation).

The Automation Editor **will**:

- show you visually whether automation is enabled on a parameter by dimming the pads when automation is off, and increasing the brightness when automation is on
- display on the screen what parameter you are currently editing and its automation status (for 7seg it will only display on the screen for MIDI clips)
- enable you to use either of the Mod Encoders (gold knobs) to quickly change the parameter value of the parameter in focus. The knobs automatically map to the selected parameter and you can use either knob (eliminating the guess work about which knob to turn).
- enable you to quickly change parameters in focus for editing by turning select or using **Shift** + **Shortcut** or going back to automation overview using **Affect Entire** or **Shift** + **Clip** or **Audition** + **Clip**
- enable you to view the current parameter value setting for the parameters that are currently automatable.
- illuminate each pad row according to the current value within the range of 0-128. E.g. bottom pad = 0-16, then 17-32, 33-48, 49-64, 65-80, 81-96, 97-112, 113-128)

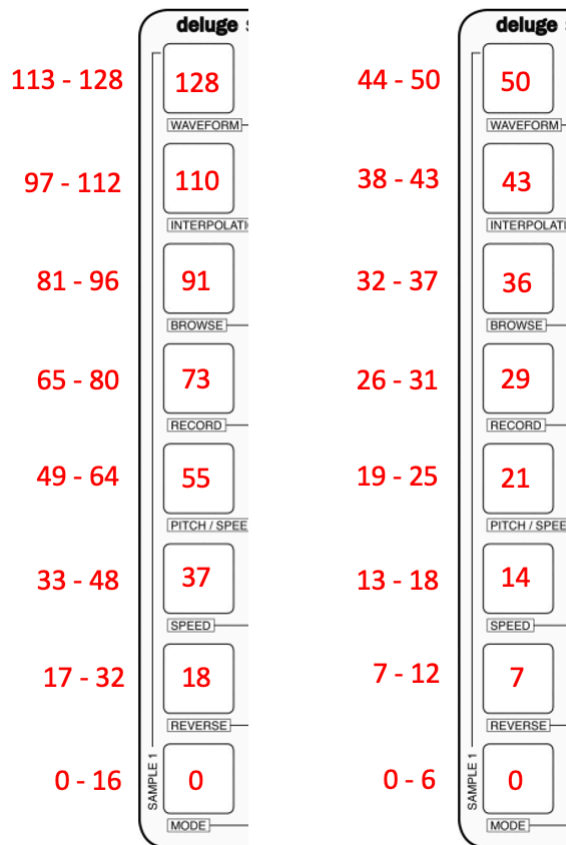
Update The values displayed in automation view have been updated to display the same value range displayed in the menu's for consistency across the Deluge UI. So instead of displaying 0 - 128, it now displays 0 - 50. Calculations in automation view are still being done based on the 0 - 128 range, but the display converts it to the 0 - 50 range.

- edit new or existing parameter automations on a per step basis, at any zoom level across the entire timeline. Each row in a step column corresponds to a range of values in the parameter value range (0-128) (see above).

If you press the bottom row, the value will be set to 0. if you press the top row, the value will be set to 128.

Pressing the rows in between increments/decrements the value by 18.29 (e.g. 0, 18, 37, 55, 73, 91, 110, 128).

Update The values displayed in automation view have been updated to display the same value range displayed in the menu's for consistency across the Deluge UI. So instead of displaying 0 - 128, it now displays 0 - 50. Calculations in automation view are still being done based on the 0 - 128 range, but the display converts it to the 0 - 50 range.



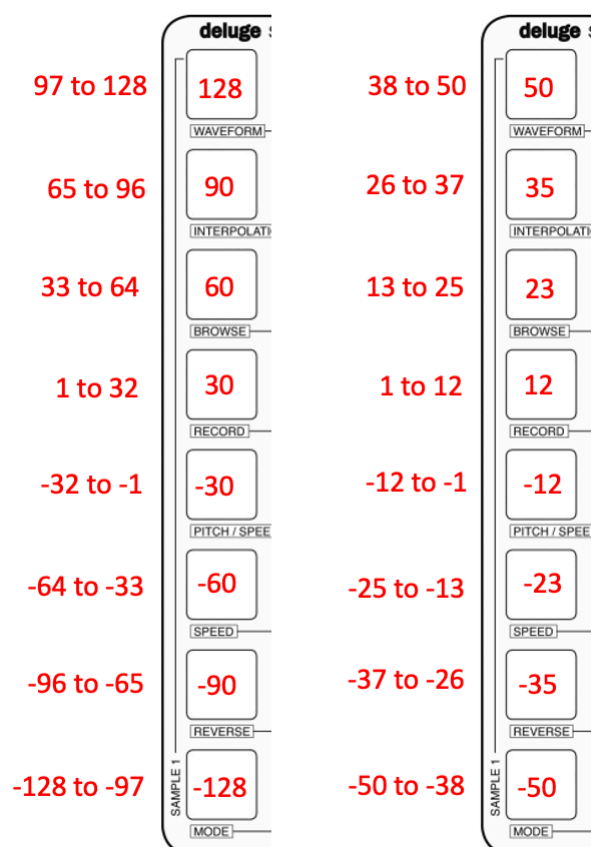
Note For patch cables / modulation depth, the grid value ranges for each pad have been adapted to accomodate the full -50 to +50 range.

The bottom pad in the grid will set the value to -50 and the top pad in the grid will set the value to +50.

You can set the value to 0 by pressing and holding the two middle pads.

The LED indicators for the mod encoders have been updated to show the full -50 to +50 range as well.

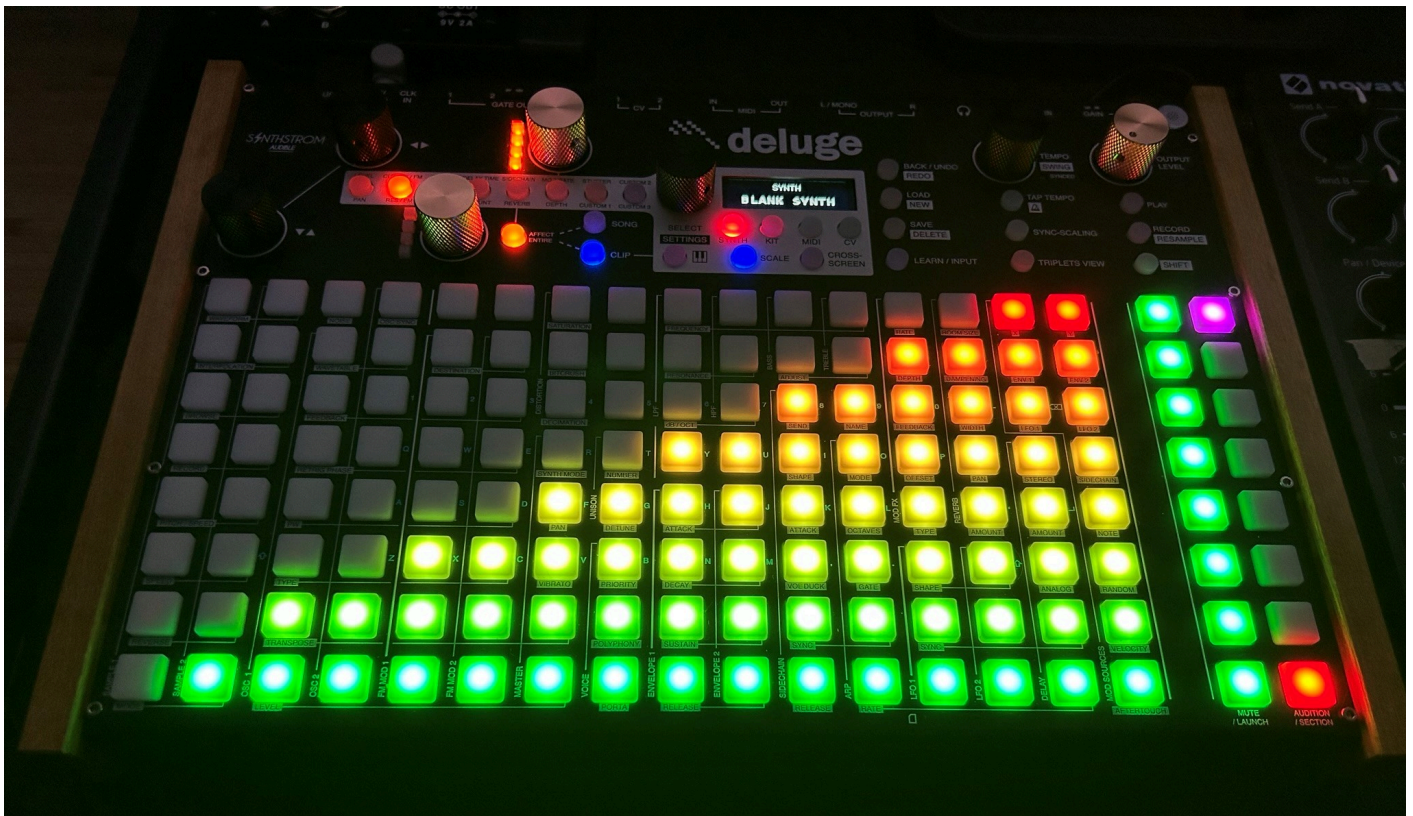
This diagram shows the updated value ranges for the pads when automating a patch cable / modulation depth.



- enable you to press two pads in a single automation column to set the value to the middle point between those two pads
- enable you to enter long multi-step automations by pressing and holding one pad and then pressing a second pad

Note 1: to enter long multi-step automations across multiple grid pages you will need to zoom out as both pads pressed must be visible on the grid). Values in between steps are linearly calculated based on the value corresponding to the pads pressed. For example: you could program a sweep up from value 0 to value 128 by pressing and holding on pad 0,0 and then pressing on pad 15,8).

Note 2: with interpolation turned off, the values between pads will sound like they are changing in a step fashion. to smooth out these values, turn interpolation on before entering your long multi-step automation. By playing with the interpolating setting you could create hybrid parameter changes that sound smooth and stepped.



- enable you to fine tune the parameter automation values set by pressing and holding on a pad (or multiple pads) in a grid column and turning either of the Mod Encoders (Gold Knobs) (the value will increase/decrease relative to the current parameter value corresponding to the pad(s) you are holding).

Note 1: you can also fine tune your long multi-step automations with the Mod Encoders (Gold Knobs).

You have the ability to fine tune a long press's start and end values which automatically adjusts the interpolation between those values (without needing to enter the pad selection mode).

Simply enter a long press and while continuing to hold the first pad in the long press, turn the gold knobs to adjust the start and end values of the long press.

When refining a long presses start/end values, each gold knob is used separately to adjust the start/end position values.

The bottom left gold knob is used to adjust the start value.

The top right gold knob is used to adjust the end value.

In a long press, you will also note that the LED indicators change to show the current value of the start and end position. Once you've let go of the long press, the LED indicators reset back to the parameters overall current value.

Note 2: the existing master FX section is disabled in the automation editor and can only be accessed if you go back to the Automation Overview, Arranger View, Clip View, or open the keyboard screen. When you turn either of Mod Encoders (Gold Knobs) it will display the parameter value between 0 and 128 on the screen of the current parameter being edited (not the parameter selected in the master FX section).

Note 3: If the parameter selected is not currently automated, turning the Mod Encoders (Gold Knobs) will increase the value of every step in the automation grid in unison (e.g. same value for all steps).

- you can also fine tune automation values by entering **Pad Selection Mode**. You enter / exit this mode by pressing the pad selection mode shortcut (Shift + Waveform Pad in first column of grid / the very top left pad). The waveform shortcut pad will blink every few seconds to remind you that you are in pad selection mode.



In pad selection mode, you cannot edit the automation grid by pressing on the pads.

With a single or multi pad (long) press you select the pad(s) to edit.

A cursor is displayed on the grid to identify the single or multiple pads you've selected. Seeing the cursor means you are in pad selection mode.

Once you've made your pad selection, you can use the gold knobs to tweak the value of the singular pad or the value of the start/end pads in a long press.

When one pad is selected, one cursor is displayed on the grid and both led indicators show the value for that pad (cursor position).

When two pads are selected, two cursors are displayed on the grid and the lower led indicator shows the value of the left pad (left cursor), and the upper led indicator shows the value of the right pad (right cursor).

With this mode you can also press on each pad to see its current value without changing its value.

Note 1: if you've entered a long press and wish to see the value of each column in the long press, you will need to press and hold any pad in the column you wish to query.

Note 2: if you've entered a long press and wish to switch back to a single press, you can do so by quickly pressing a pad in any column (e.g. don't hold it).

- enable you to lay down longer automations with interpolation

Note: Interpolation only has an effect if you are entering a “long automation press.” (see below). that is to say: you press and hold one pad and then press a second pad.

Note: If an automation value has been entered with the interpolation setting turned on and then subsequently the interpolation setting is turned off, the automation value will not be affected unless you to re-enter it.

- enable you to lay down automations without interpolation (parameter values change in a step ladder fashion).

Note: If an automation value has been entered with the interpolation setting turned off and then subsequently the interpolation setting is turned on, the automation value will not be affected unless you to re-enter it.

- enable you to lay down automations by pressing two pads and linearly interpolate the values in between

Note: With Interpolation On, the values will smoothly transition from the first pad pressed to the second pad pressed. With Interpolation Off, the values will transition in a step fashion from the first pad pressed to the second pad pressed. Note, as mentioned above, the interpolation setting only takes effect when you are editing the automation.

- enable you to shift the automation for the parameter in focus horizontally across the grid timeline by using the existing familiar combo of pressing down the vertical encoder and turning the horizontal encoder
- enable you to copy / paste automations from one parameter to another based on the parameter editor in view using the current combo (learn + press on either of the Mod Encoders (Gold Knobs) to copy and learn + shift + press on either of the Mod Encoders (Gold Knobs) to paste)
- enable you to record in automations live with either of the Mod Encoders (Gold Knobs) so that you can see your automations displayed on the grid
- display the current parameter being edited on the grid by flashing the parameter shortcut pad white. you can also see the name of the parameter you are editing by holding shift + pressing the flashing shortcut pad to see the parameter name on the screen. Note: for 7seg, you will only see the MIDI CC # on the screen, not the parameter names in a Synth or Kit as the names are too complicated to abbreviate for a 7seg display and they are not currently shown in the sound editor).
- enable you to quickly turn interpolation on/off by using the shift + interpolation shortcut (the interpolation shortcut pad is the interpolation pad in the first column of the grid, second from the top). The interpolation shortcut pad will blink every few seconds to remind you that interpolation is on.
- delete automation for the current parameter being edited using shift + press on either of the Mod Encoders (Gold Knobs). You can also delete automation for the current parameter being edited by pressing down on Horizontal Encoder at the same time as pressing the Back button.

Note: When automation is deleted, the Parameter’s value is reset to the current value in the Sound Editor. E.g. if an automation playing back and you deleted it mid playback, the parameter value would be set to the last played back value. Or if you just edited the automation by pressing on the grid, the last value would be the value corresponding to the last pad you pressed.

- extend/shorten the arrangement / clip length using the current combo (Shift + turn  Horizontal)

Note: For Arranger View, Synth, MIDI, CV and Kit Clips with **Affect Entire** enabled, and Audio Clips, the Automation Editor grid will display the shortened arrangement/clip size (e.g. you cannot edit automation past the arrangement/clip length boundary).

- in automation clip view, extend/shorten a note row length using the current combo (**Audition** + turn  Horizontal)

Note 1: For Synth, MIDI and CV clips, the automation editor will not display the shortened note row, but you will see that it has been shortened when playing the clip as the cursor will move independently of other rows).

Note 2: For Kit Clips with **Affect Entire** disabled, the Automation Editor grid will display the shortened clip row size (e.g. you cannot edit automation past the clip row length boundary).

- in automation clip view, double clip length using the current combo (**Shift** + Press  Horizontal)
- enable you to quickly turn interpolation on/off by using the **Shift** + **Interpolation** shortcut (the interpolation shortcut pad is the interpolation pad in the first column of the grid, second from the top). The interpolation shortcut pad will blink every few seconds to remind you that interpolation is on.
- in automation clip view, enable you to mute/audition sounds using the sidebar
- in automation arranger view, enable you to change clip statuses using the sidebar

****Note: **** In a kit, whenever you select a different kit row (whether via muting or auditioning), the Automation Overview will be opened as you are changing the focus of the automation view).

The Automation Editor **will not allow you to:**

- access the sample browser
- use regular grid shortcuts (except for **Shift** + Param **Pad**)
- edit MPE parameter values
- edit existing note row values in a synth (e.g. change a pad from F to F#)
- edit existing note row sounds in a kit (e.g. change the sample)
- add new rows in a kit
- re-arrange rows in a kit
- change root note in a synth/MIDI/CV clip
- audition clips in Automation Arranger View

Default Settings

Described below are a couple of toggable enhancements that change existing behaviour in the Clip View but are of benefit to the user now that Automation's can be edited separately from the Arranger / Clip View.

These default settings are found in the Settings Menu under Defaults/Automation/.

Interpolation

Interpolation does not change existing behaviour. This toggle is only used in the new Automation View.

This sets the default value for the Interpolation setting in the Automation View.

Note: This default value is loaded every time you enter the Automation View.

Interpolation itself can be toggled on/off by using the **Shift** + **Interpolation** shortcut (the interpolation shortcut pad is the interpolation pad in the first column of the grid, second from the top). The interpolation shortcut pad will blink every few seconds to remind you that interpolation is on.

Interpolation is only applied when you are physically entering a long automation pad press (e.g. when you hold one **Pad** and press a second **Pad** to connect the pads together). If you turn interpolation on and do not edit any parameter values, it will not have any effect.

With interpolation turned on it will sound like values are smoothly transitioning from one value to the next.

With interpolation turned off it will sound like a value is jumping from one value to the next.

The default setting for Interpolation can be changed in the in the Settings/Defaults/Automation/Interpolate menu.

Clearing Automation

Currently in the Arranger View and Instrument Clip View if you press **Horizontal** and press the **Back** button at the same time, all **Clips/Notes** AND **Automations** are cleared.

This is not ideal as your goal may be to simply re arrange your clips / re record your notes without changing your parameter automations.

It is important to recognize that in the Deluge, Arrangement Clips / Clip Notes, are recorded **separately** from the Automations. That is to say that if you remove a clip from arranger or a note from an instrument clip, the automation will still exist, and if you clear an automation, the clip in arranger / note in an instrument clip will still exist.

Thus, this default setting clearly delineates this behaviour by changing the Arrangement/Clip Clearing behaviour in the Arranger View / Instrument Clip View to only clear Clips or Notes, and not Automations.

Similarly, in the Automation View, clearing the arrangement or clearing the clip will only clear Automations, and not the Arrangement clips or Clip Notes.

Through the Settings/Defaults/Automation/Clear submenu, you can disable this change in behaviour and re-instate the original automation clearing behaviour by setting 'Clear' to "Disabled."

Note: for kit clips, clip clearing is delineated between clearing the kit level automations (when **Affect Entire** is on) and the kit row level automations (when **Affect Entire** is off).

Note: MPE recorded will still be cleared as the scope of this PR does not cover editing MPE.

Shifting Automation Horizontally

Currently in the Clip View if you press **Vertical** and turn **Horizontal** or hold **Shift** + press & turn **Horizontal**, it will shift Notes / Audio File AND the ALL Automations of the entire clip horizontally.

This default setting will disable the shifting of Automations within the existing Clip Views and leave that behaviour to the Automation View.

In the Automation View, functionality is provided to shift automations at the parameter level.

Through the Settings/Defaults/Automation/Shift submenu, you can disable this change in behaviour and re-instate the original automation shifting behaviour by setting 'Shift' to "Disabled."

Note: MPE recorded will still be shifted as the scope of this PR does not cover editing MPE.

Nudging Notes

Currently in the Instrument Clip View if you press down on a **Note** and turn **Horizontal**, it will nudge the Note AND the Automations for that same step.

This is not ideal as your goal may be to simply nudge the note and not the parameter automation.

This default setting addresses this by changing the behaviour to only nudge notes.

Through the Settings/Defaults/Automation/Nudge Notes submenu, you can disable this change in behaviour and re-instate the original nudge note behaviour by setting 'Nudge Notes' to "Disabled."

Note: there is no Automation nudging functionality in the Automation Clip View. But you can shift the entire Automation sequence horizontally left/right or manually edit the automation.

Note: MPE recorded will still be nudged as the scope of this PR does not cover editing MPE.

Disable Audition Pad Shortcuts

Currently in the Instrument Clip View if you hold down an **Audition** and press a **Shortcut** pad on the grid, it will open the menu corresponding to that shortcut pad.

By default in the Automation Clip View that same behaviour of holding an **Audition** and pressing a **Shortcut** pad is disabled in favour of you being able to hold down an audition pad and adjust the automation lane values so that you can audibly hear the changes to the sound while adjusting automation settings.

Through the Settings/Defaults/Automation/Disable Audition Pad Shortcuts submenu, you can disable this change in behaviour and re-instate the audition pad shortcuts by setting 'Disable Audition Pad Shortcuts' to "Disabled."

Note: in automation view, shortcuts do not open the menu. They change the selected parameter for automation lane editing.

Fun things to try with the new Automation Clip View

Two Hand Automation Drumming

1. Set a long sustaining clip length note.
2. Press play.
3. Switch to Automation Clip View
4. Enter the Automation Editor for a Parameter, e.g. LPF Frequency is a good one
5. Now start drumming on the LPF Frequency Automation Lanes and see how much fun you can have adjusting automation with all your fingers at once

Editing Automations with your left hand and playing the piano roll with your right hand

1. While in the Automation Clip View, start playing the Piano roll in the sidebar
2. While you're playing the Piano roll, use your left hand to select the parameters you want to edit. E.g. while holding an audition pad you can press the clip button to go back to the Automation Overview and select a Parameter.
3. Select a Parameter and enter the Automation Editor and while you're playing the Piano roll with your right hand, start adjusting the automation lanes with your left hand
4. Quickly switch back to the Automation Overview and select another Parameter

5. Keep the flow going! Playing the Piano roll and switching between all the Parameters at the same time to create some amazing rhythmic sounds

Development Notes

This view is tightly integrated with the Instrument Clip View and calls many of the functions and writes to many of the variables in the Instrument Clip View.

Some functions and variables that were previously Private in the Instrument Clip View were made Public so that they could be used by the Automation Clip View.

The Automation Clip View is recognized as a new UI so many of the calls that check the current UI in view (e.g. `getCurrentUI()`, `getRootUI()`) were modified to check if the Automation Clip View is currently open.

Also, similar to the Keyboard screen which uses the variable “onKeyboardScreen” to tell other views (e.g. Song, Arranger) whether to open up the Keyboard screen (instead of the Instrument Clip View) when transitioning to/from the Instrument Clip View / Audio Clip View, the Automation Clip View also uses a similar variable “onAutomationClipView” for the same purpose.

De-scoped Items (Future Release)

- Key Frames + Parameter value for each frame
- Automation Shapes
- Zoom in Vertically
- Shading of lower node changes when viewing higher node level
- How can we reset automation to default preset levels
- Can automation changes work as an offset to preset levels? (Eg if you increase preset default, it shifts all automation up, if you decrease preset default, it shifts all automation down)
- Can you use the buttons in the FX bar to cycle through parameters in the automation editor
- Can automation run at a sequence length independent of clip/row? (Currently no, the deluge isn't built that way)
- MPE note automation view

Button Shortcuts/Combos

These are the main button shortcuts/combos that will be used in the Automation Clip View

Automation Overview



Automation View ON, Button flashing

While in the Instrument Clip View, press the Clip button to enter/exit the Automation Instrument Clip View



Display Overview
Of Parameter Automation



+



or



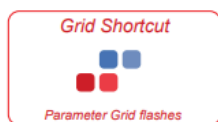
+



The overview shows what parameters are currently automated and provides another means to select a parameter to be edited



Select Parameter
To be edited



or



Access the Automation Editor



Kit Clip Affect All

Affect Entire



ON

In a Kit Clip, to edit Automation that affects all Kit Clip rows, toggle the Affect Entire button to On. This setting applies to recording automations, copying, pasting, and deleting automations as well



Kit Clip Affect Row

Affect Entire



OFF



With Affect Entire off, pressing the audition button will change the Overview screen in focus to show the overview of the Kit row that has been selected

In a Kit Clip, to edit Automation that affects a specific kit row, toggle the Affect Entire button to Off and Select the specific Kit row to be edited. This setting applies to recording automations, copying, pasting, and deleting automations as well



Clear Automation



+

Back / Undo



Clears automation for all parameters. For a Kit Clip, the Affect Entire setting will impact whether automation is cleared at the affect all or affect row level



Record Automation
Of parameters



Resample



or



Can also use external MIDI from a controller that has been LEARNed



Copy Automation
Of parameters

Learn / Input



+



or



Can copy between different parameters, clips and song files. Automation is copied one parameter at a time at current zoom level



Paste Automation
Of copied parameters



Shift

+



Learn / Input



or



Delete Automation
Of recorded parameters.



Shift

+



or



Keyboard View



Interpolation On/Off



Shift

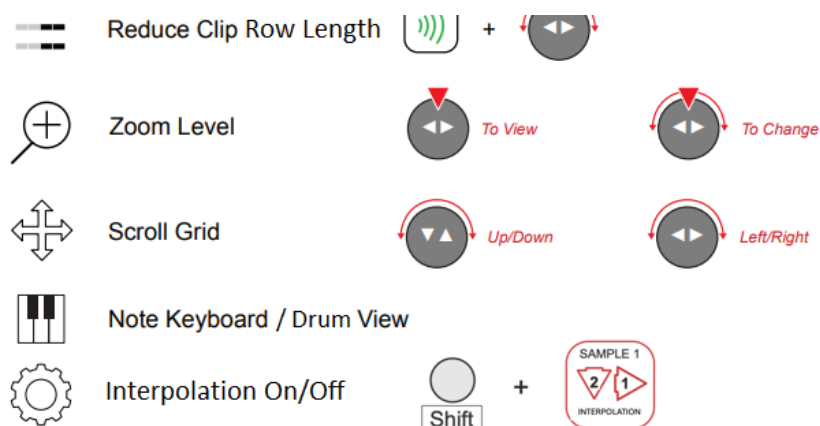
+



Changing the Interpolation On/Off only has an effect on automations that are manually edited in the Automation Editor (e.g. it does not affect Automations that are recorded in, as those are always recorded with Interpolation On)

Automation Editor

	Automation View ON, Button flashing			While in the Instrument Clip View, press the Clip button to enter/exit the Automation Instrument Clip View
	Display Overview Of Parameter Automation	+ or +		The overview shows what parameters are currently automated and provides another means to select a parameter to be edited
	Select Parameter To be edited	Parameter Grid flashes or		Changing the Parameter while in the Automation Editor will cause the Editor grid to refresh to display the Automation settings for the Parameter that is selected
	Check Parameter Being edited	or Parameter Grid flashes		When a parameter is being edited, the shortcut for that Parameter on the grid flashes Holding shift + the shortcut pad will also display the parameter name on the screen
	Kit Clip Affect All			In a Kit Clip, to edit Automation that affects all Kit Clip rows, toggle the Affect Entire button to On This setting applies to recording automations, copying, pasting, and deleting automations as well
	Kit Clip Affect Row	or	With Affect Entire off, pressing the audition button will change the Editor screen in focus to show the editor for the Kit row that has been selected	In a Kit Clip, to edit Automation that affects a specific kit row, toggle the Affect Entire button to Off and Select the specific Kit row to be edited This setting applies to recording automations, copying, pasting, and deleting automations as well
	Record Automation Of parameters	Resample or	or	Can also use external MIDI from a controller that has been LEARNed
	Parameter Change / Lock Per note in clip view			Press on any of the 8 pads in a note column to adjust the Parameter Value from 0-127 with the bottom pad being Value 0 and top pad being Value 127
	Parameter Change / Lock Per note in clip view	+ or		You can refine automation further by pressing on any of the 8 pads in one or more note columns and turning either of the mod encoders to adjust Parameter's current value in those respective note columns.
	Make Long Automation	+		Press and hold one grid pad and then select a second grid pad and automation will be draw/set in between those two pads
	Pad Selection Mode To fine tune Automation	+		Enter/Exit Pad Selection Mode from the Automation Editor by pressing Shift + the Sample 1 Waveform Pad.
	Duplicate Automation Double and append	+		In Pad Selection mode, you will be able to select a single step, or multiple steps (e.g. long press) and fine tune the values of your selections using the Mod Encoders. In this mode, pressing on the pads displays a cursor to identify your selection. Pressing on pads does not change the values directly.
	Shift Automation Horizontally Left / Right	+		
	Copy Automation Of parameter	+ or		Can copy between different parameters, clips and song files. Automation is copied one parameter at a time at current zoom level
	Paste Automation Of copied parameter	+ + or		
	Delete Automation Of edited / recorded parameter	+ or or +		
	Reduce Clip Length	+		



Changing the Interpolation On/Off only has an effect on automations that are manually edited in the Automation Editor (e.g. it does not affect Automations that are recorded in, as those are always recorded with Interpolation On)

Additional Shortcut Combos for Automation Arranger View

- Press **Affect Entire** while in Automation Arranger View to go back to Automation Overview
- Press **Cross Screen** while in Automation Arranger View to activate/de-activate automatic scrolling during playback

Additional Shortcut Combos for Entering the Automation Editor from the Sound Menu's

- While in the Arranger Song / Clip Sound Menu for a specific automatable parameter, press CLIP to enter the Automation Editor for that parameter

Automation Overview of Grid Shortcuts mappings to MIDI CC's for MIDI Clips

This image shows the default MIDI Follow CC to Grid Parameter Shortcut mappings. You can edit these mappings in MIDIFollow.XML which will update the CC to Grid Parameter Shortcut mappings used in Automation View for MIDI Clips.

deluge

SHORTCUT SYSTEM 3.0

[WAVEFORM]	[INTERPOLATION]	41 [NOISE]	[OSC SYNC]	[SATURATION]	19 [WAVEFOLDER]	74 [FREQUENCY]	81 [RESONANCE]	84 [BASS]	85 [TREBLE]	16 [RATE]	[ROOM SIZE]	120 [X]	1 [Y]
[BROWSE]	[RECORD]	25 [WAVETABLE]	30 [DESTINATION]	62 [BITCRUSH]	[DISTORTION]	71 [LFO 1]	82 [LFO 2]	86 [SEND]	87 [NAME]	93 [DEPTH]	[DAMPENING]	[ENV 1]	[ENV 2]
[PITCH / SPEED]	[SPEED]	24 [FEEDBACK]	29 [RETRIG PHASE]	55 [DECIMATION]	57 [SYNTH MODE]	63 [NUMBER]	[LPF]	[HPF]	[SEND]	17 [FEEDBACK]	[WIDTH]	[LFO 1]	[LFO 2]
[REVERSE]	[MODE]	23 [PW]	28 [TYPE]	[PAN]	10 [DETUNE]	[UNISON]	70 [ATTACK]	83 [HOLD]	60 [OCTAVES]	[MODE]	18 [OFFSET]	[PAN]	[STEREO]
		[TRANSPOSE]	[TYPE]	[VIBRATO]	[PRIORITY]	[POLYPHONY]	73 [SUSTAIN]	77 [RELEASE]	[VOL DUCK]	[GATE]	[SHAPE]	[ANALOG]	[RANDOM]
		12 [LEVEL]	13 [FM MOD 1]	14 [FM MOD 2]	15 [MASTER]	3 [VOICE]	75 [ENVELOPE 1]	78 [ENVELOPE 2]	61 [SIDECHAIN]	50 [ARP]	[LFO 1]	[LFO 2]	[MOD SOURCES]
		21 [OSC 1]	26 [OSC 2]	54 [FM MOD 1]	56 [FM MOD 2]	7 [MASTER]	5 [PORTA]	72 [RELEASE]	80 [RELEASE]	51 [RATE]	58 [LFO 1]	59 [LFO 2]	53 [DELAY]
													121 [AFTERTOUCH]

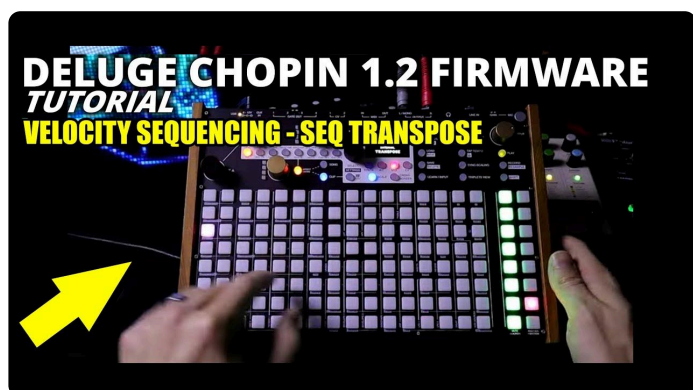
Automation View: Note Velocity Editor

c1.2 Feature

Note Velocity Editing View that has been added as part of the existing Automation View implementation so that you can edit the velocities and other parameters of notes in a single note row.



Video Tutorials



[Sequencing](#)
[in Velocity](#)
[Mode and](#)
[Sequence](#)
[Transpose](#)



[New](#)
[Community](#)
[Firmware](#)
[Features:](#)
[Velocity](#)
[View](#)

Description

- imagine if the whole grid was just one note row, or one kit row
- each column of colours represents a note
- the vertical colours represents that notes velocity which you can edit by interacting with the grid (like you would with a parameter in automation view)

Quick Overview

Enter the Velocity Editor View

- While in the Automation or Instrument Clip View, hold **Audition** + Velocity Patch Source **Pad**

Select note row

- Press **Audition** pad or turn **Vertical** to select different note rows
- The **Audition** pad will blink to indicate the currently selected note row

- The display will indicate the note code / drum name of the row you have selected

Add Note / Adjust Velocity Using Grid

- Press grid **Pad** to set/adjust velocities of existing notes and add note (if no note exists)
- Set a Velocity Ramp:
 - Press and hold two grid **Note** pads to set a velocity ramp between the two notes.
 - Note: for this to work, you must first press a **Pad** that has a note in it and then press a second **Pad** that has a note in it.
 - If the second **Pad** has no note already in it, it will set a tail instead for the first **Note** pad pressed (or if it's a drum sound, like a kick, it will just add another note in the position of the second **Pad** press).

Remove Note

- Short press top velocity **Pad** in a note column to remove note

Select Note and Adjust Note Parameters

- Long press top velocity **Pad** in a note column to see note's velocity and perform note related adjustment actions (e.g. adjust velocity, probability). Note press related actions include:
 - **Adjust Velocity:** **Note** + turn  Horizontal
 - **Adjust Probability:** **Note** + turn  Select left
 - **Adjust Iterance:** **Note** + turn  Select right
 - **Adjust Fill:** **Note** + Sync Scaling (Community Feature Setting must be enabled)
 - **Adjust Note Repeat:** **Note** + press & turn  Vertical
 - **Adjust Automation:** **Note** + turn  Gold

Adjust Note Row Transpose

- press & turn  Vertical
- Note: does not work if you are holding a note (transpose gets replaced with editing note repeats)

Adjust Note Row Probability

- Hold **Audition** + turn  Select left to change the selected Note Row's probability
 - Note: does not work if you are currently holding a note

Adjust Note Row Iterance

- Hold **Audition** + turn **SEL Select** right to change the selected Note Row's probability
 - Note: does not work if you are currently holding a note

Adjust Note Row Fill

- Hold **Audition** + **Sync Scaling** (Community Feature Setting must be enabled)
 - Note: does not work if you are currently holding a note

Add/Remove Notes with Euclidean

- Hold **Audition** + press & turn **Vertical**
- Note: The Euclidean action is replaced by note repeat editing if you have selected a note (either by holding a note outside pad selection mode or if you are in pad selection mode)

Change clip length

- **Shift** + turn **Horizontal**

Change selected note row length

- **Audition** + turn **Horizontal**
- Note: does not work if you have selected a note

Clear notes in selected note row

- **Horizontal** + **Back**
- Note: does not work if you have selected a note

Rotate Note Row

- **Vertical** + turn **Horizontal**
- **Audition** + press & turn **Horizontal**
- Note: does not work if you have selected a note

Quantize / Humanize notes

- Enabling Quantize community feature
- Hold **Audition** + press & turn  Tempo to set quantize / humanize %

Cross Screen Editing

- Press **Cross Screen** while in the Velocity Note Editor to edit notes across multiple screens.
- Note: you can only toggle cross screen editing if the clip has multiple screens OR the current note row selected has multiple screens.

Chord Keyboard and Library

c1.2 Feature

Video Tutorials



[Chord](#)
[Keyboard,](#)
[Chord](#)
[Library,](#)
[Chord](#)
[Memory](#)



[New](#)
[Community](#)
[Firmware](#)
[Features:](#)
[Chord](#)
[Library](#)



[Latest](#)
[Community](#)
[Firmware:](#)
[New](#)
[Keyboard](#)
[Layouts](#)

Description

Two new chord focused keyboards as an additional keyboard options.

The first CHORD (CORK) keyboard is a layout that facilitates the creation and exploration of chords within a scale. It offers two modes, Column mode (providing in-scale harmonically similar chords for substitutions) and Row Mode (based largely on the Launchpad Pro's chord mode that spreads notes out on a row to allow users to build and play interesting chords across the rows).

The second CHORD LIBRARY (CURL) keyboard is a library of chords where each column is a note (chromatic, all 12 notes), with chords laid out vertically within each column.

Community Feature Setting

Enable the Chord Keyboards (CHRD) community setting for full access to the relevant UI behaviors. As the UI and implementation is still experimental, a community setting has to be activated to access the CHORD keyboard.

Change Keyboard Layout

To access the Chord Keyboard Layout:

1. Enable the Chord Keyboards (CHRD) community feature
2. While in SYNTH, MIDI, or CV mode, press  Keyboard to enter a keyboard view.
3.  Keyboard + turn  Select to cycle through layouts until you find the CHORD keyboard or CHORD LIBRARY keyboard.

Chord Keyboard Layout

The Chord Keyboard Layout is designed to facilitate the creation and exploration of chords within a scale. It offers two modes, a Column Mode and Row Mode, each providing a different approach to chord arrangement and selection.

Modes

Column Mode

This mode arranges harmonically similar chords vertically. Chords in the same column can often be substituted for each other to explore different harmonic flavors. For example, if you are in a major scale, the first column will contain various options for the I chord, the second column will contain various options for the ii chord, and so on.

Row Mode

Based largely on the Launchpad Pro, with the notes spread out horizontally across the pads to allow users to build and play interesting chords across the rows. Generally simpler and more standard intervals for chords are on the left and

less standard ones on the right.

Each row starts from the next scale degree up or down, and then moving across the pads, the intervals are the following in scale intervals (if a 3rd up from a scale degree is a major 3rd, it will be a major 3rd in the row, if it is a minor 3rd, it will be a minor 3rd in the row).

- Root, 5th, 3rd + Octave (Compound 3rd), 7th + Octave (Compound 7th), 5th + Octave (Compound 5th), 3rd + 2 _ Octave (Double Compound 3rd), 2nd + 2 _ Octave (Double Compound 2nd), 6th + Octave (Compound 6th), Octave, 5th, 7th, 3rd - Octave, 2nd
- The final column is a triad based on the Root of the row with 5th, Compound 3rd above it.

As the Chord Keyboard is still in development, the intervals chosen for each row are not final and may change in the future. We welcome feedback on the intervals chosen for each row.

Color Coding

In Column mode, Chords are colored based on their quality, and in Row mode, the Rows are based on the quality of the chord from that scale degree:

- Major: Blue
- Minor: Purple
- Dominant: Cyan
- Diminished: Green
- Augmented: Greyish Blue
- Other: Yellow

Controls

turning either  Horizontal or  Vertical will move up or down by scale degrees.

Embedded Controls:

Because the Chord Keyboard has more features than other keyboard layouts, controls are embedded into the two rightmost columns of the main grid. Currently it includes controls for switching between Row Mode and Column Mode, with more features planned for the future.

- At the top of the rightmost main grid column, you can select the current mode (ROW and COLUMN) by pressing the corresponding pad. It defaults to Column Mode.
 - In addition, you can use Shift +  Horizontal to also cycle through the ROW and COLUMN mode.

Scale Considerations

The Chord Keyboard is currently limited to scales that are modes of the major scale. (Major, Minor, Dorian, Phrygian, Lydian, Mixolydian, and Locrian scales).

Chord Library Layout

The Chord Library Layout provides a comprehensive library of chords, making it easy to explore and use a wide variety of chord types.

Features

Layout

Each column represents a note (chromatic, all 12 notes), with chords laid out vertically within each column. The first row contains root notes, the second row contains major triads, the third row contains minor triads, and so on.

Each column is a different color with the colors repeating on the octave. This is to help you quickly identify the root note of the chord you are looking for, no matter how high or low you have scrolled in the layout.

In scale mode, the chords with notes entirely within the scale are highlighted, while the chords with notes outside the scale are dimmed.

When out of scale mode, the final 2 columns change colors each 8 chords you scroll up to help you keep track of where you are in the layout as you scroll up and down. Other than these columns, the column of the root note of the key you are in is highlighted, while the all other columns are dimmed.

Controls

Turning  **Horizontal** scrolls through the scale, allowing you to raise or lower the chords. Turning  **Vertical** scrolls up or down to access more chords.

Voicing Adjustment

Holding a pad on a row and press and turning  **Horizontal** allows you to change the voicing for all the chords in that row simultaneously.

Scale Considerations

The Chord Library will show chords utilizing both notes entirely in your current scale and not. With the current implementation of accidentals in the Deluge, if you record chords while in scale mode with out of scale notes, these will be added to your scale. A future update is in development to address this limitation.

Notation

In the interest of brevity, and to display as much of the chord name as possible for the 7SEG Deluge, the Chord names use a concise notation. The chords list the note name with no octave number, followed by the chord symbol. The main types of chord symbols used are:

- Major: M
- Minor: -
- Diminished: DIM
- Augmented: AUG
- suspended: SUS

Chords with accidentals in their names (like C-7^b5) will use a # or ^b representation in 7SEG, while the root note will use a . to represent the presense of the accidental. If Use Sharps(#) setting is selected F# [#11](#) will be displayed F.[#11](#). If not [Gb#11](#) will be displayed G.[#11](#).

Then the chord would be followed by any additional information such as the extension (7, 9, 11, 13) or alterations (b5, [#5](#), b9, [#9](#), [#11](#), b13). Finally, if the chord has a well known nickname, it may be included as well.

So for example, a C Major chord would be displayed as CM, a C Minor chord would be displayed as C-, and a C Diminished chord would be displayed as CDIM. A C Dominant 7 chord would be displayed as C7, a C Minor 7 Flat 5 chord would be displayed as C-7^b5.

DX7 Synth

c1.2 Feature

DX7 Synth oscillator type which enables you to load and edit existing DX7 patches and also create your own.

Video Tutorials



[New](#)
[Community](#)
[Firmware](#)
[Features:](#)
[DX7 Synth](#)



[Latest](#)
[Community](#)
[Firmware:](#)
[D\(eluge\)X7](#)

Description

Synth type fully compatible with DX7 patches with full editing support.

The implementation is based on [Music Synthesizer for Android](#) for the “modern” engine, and [Dexed](#), for loading of .syx patch banks as well as a tuned “vintage” engine.

Implemented as a special case of the subtractive engine, where OSC1 is changed to a new DX7 oscillator type. It is possible to use the filters on a DX7 patch (though this increase CPU usage and decrease polyphony).

Usage

Presets

Optional: place DX7 compatible patch banks in .syx format in a “DX7/” folder at the root of your SD card.

Community Feature Setting

Enable the “DX7 ENGINE” community setting for full access to the relevant UI behaviors.

Create New Synth

Shortcut

To create a new synth in DX7 mode, use the new shortcut “CUSTOM 1” + .

This shortcut has to be used to create a new DX7 synth rather than changing the osc type of a existing patch (or the default init patch) as it sets up better defaults, like opening the map ENV1, so the DX7 envelopes can be heard, and no default VELOCITY->global volume modulation, as velocity sensitivity is set per operator anyway.

DX7 Menu

This shortcut will show up a menu. The first option in this menu lets you load patches. First you browse for .syx files in the folder (nested subdirs are allowed). After selecting a file, you will get a list with the 32 patches in the bank. Make sure to enable  Keyboard, to be able to audition different patches while browsing through.

If you want to create a patch from scratch, you can use the second “DX7 PARAMETERS” option, or just exit the menu to use the shortcuts for editing (see Community Feature Setting above for access to all shortcuts).

To re-enter this menu later, use the  +  shortcut and press  Select when DX7 value is active.

Community Feature UI

Keyboard View Sidebar

For interactive editing you likely want to use the DX7 sidebar in Keyboard View to quickly jump to relevant operator parameters.

With the community setting active, this column will automatically appear as the right column, unless it was manually set to something else.

When the Keyboard view is active, the first 6 rows of the sidebar shows the operators as green for a carrier and blue for a modulator.

1. Taping a single **Pad** in isolation lets you switch an operator on or off.
2. Pressing **Shift** + **Coloured** pad opens the editor for that operator.
 - The first press of **Shift** + **Coloured** pad selects the level parameter.
 - Pressing **Shift** + **Coloured** pad again selects the COARSE tuning parameter.
3. Pressing **Shift** + **Seventh** pad will open up the editor for global parameters, starting with algorithm and feedback.

Editor View

Inside the editor view (when the sidebar is flashing), the **Horizontal** encoder can be used to browse between parameters.

1. Some parameters have a shortcut in a layer which is only active when editing any DX7 parameter (otherwise the regular synth shortcuts apply). This shortcut layer is outlined as follows:
 - The first 6 rows correspond to the operators.
 - The seventh and eighth row contain some of the global parameters

DX7 Editor Grid Shortcuts

Row / Col	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
OPERATOR 6	rate 1	rate 2	rate 3	rate 4	level 1	level 2	level 3	level 4	level	mode	coarse	fine	detune	velocity		
OPERATOR 5	rate 1	rate 2	rate 3	rate 4	level 1	level 2	level 3	level 4	level	mode	coarse	fine	detune	velocity		
OPERATOR 4	rate 1	rate 2	rate 3	rate 4	level 1	level 2	level 3	level 4	level	mode	coarse	fine	detune	velocity		
OPERATOR 3	rate 1	rate 2	rate 3	rate 4	level 1	level 2	level 3	level 4	level	mode	coarse	fine	detune	velocity		
OPERATOR 2	rate 1	rate 2	rate 3	rate 4	level 1	level 2	level 3	level 4	level	mode	coarse	fine	detune	velocity		
OPERATOR 1	rate 1	rate 2	rate 3	rate 4	level 1	level 2	level 3	level 4	level	mode	coarse	fine	detune	velocity		
PITCH ENVELOPE	rate 1	rate 2	rate 3	rate 4	level 1	level 2	level 3	level 4	algorithm	feedback	osc sync					
LFO	rate	delay	pitch	amp	sync	shape	detune									

Legend:

LFO	
RANDOM DETUNE	
PITCH ENVELOPE	
ALGORITHM	
FEEDBACK	
OSC SYNC	
OPERATOR ENVELOPE	
OPERATOR TUNE / LEVEL	
OPERATOR PARAMS	includes Velocity, Amp Mod, Rate Scale

2. If OLED screen is available a group of related parameters is displayed at a time, like all the envelope levels and rates for a specific envelope. With 7SEG the parameter name will be shown briefly before the value
3. Press **Back** to exit the Editor View, and access the standard synth shortcuts again.

Engine versions

Two engine versions are available, “modern” and “vintage”, as well as the “auto” engine mode used by default.

Auto will use the “modern” engine for *most* algorithms is chosen as it offers higher polyphony via an optimized SIMD implementation. However when feedback is activated on algorithm 4 and 6 (those will multi-operator feedback), “auto” will instead use the “vintage” engine as the modern one doesn’t implement these algorithms properly. “vintage” engine is meant to more accurately model a DX7 synth, but has lower polyphony.

Patch Sources

Need some DX7 patches? Check out the following:

- [DX7 factory banks](#) from Yamaha Black Boxes.
- [Bobby Blue’s “All The Web”](#) patch collection.
- [This DX7 Cart Does Not Exist](#), a random patch bank generator.
- [patches.fm](#) has over 20,000 individual patches.
- [The Dexed home page](#) links to “Dexed Cart 1.0” which is a collection of ~5000 DX7 patches. Reddit user [Finetales on /r/synthesizers](#) narrowed this down to just 3 carefully curated banks.

Missing features

- ☐ midi implementation
- ☐ modulating/automating individual operators

Looping in Grid View

The Synthstrom Deluge offers several different workflows for looping audio and sequences. This page focuses on looping in Grid View, a [c1.0 Feature](#).

Video Tutorials



[Audio Clips](#) Ron Cavagnaro

[Grid - New](#)

[Workflow](#)



[Turn](#)
[Deluge into](#)
[your Dream](#)
[Guitar](#)
[Audio Loop](#)
[Songwriting](#)
[Box](#)



[Grid Mode](#)
[Audio Clips](#)
[and Tempo](#)
[Automation](#)

Description

There are two different looping techniques that can be used in the new Song Grid View:

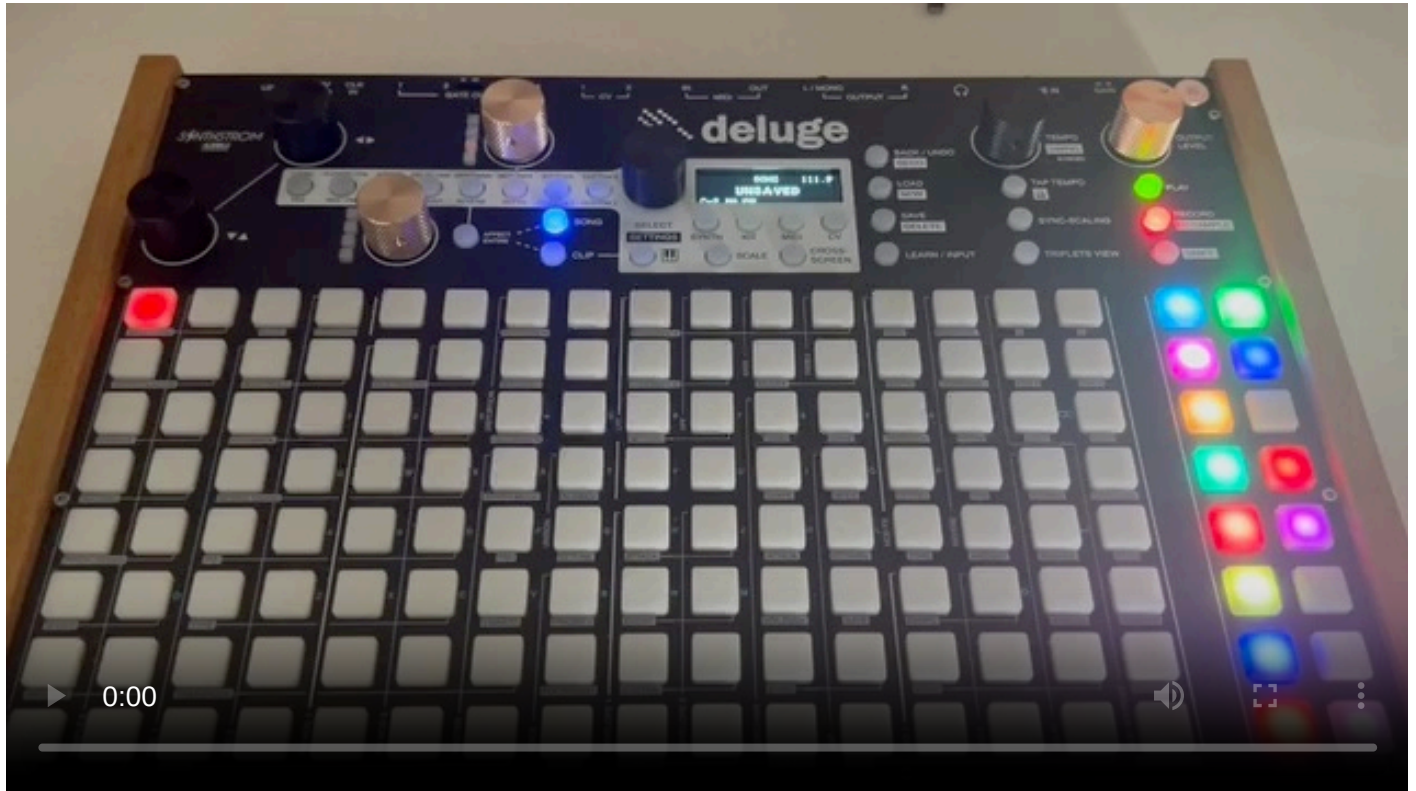
1. Using green mode, create and immediately arm a clip within an existing track for recording
2. Select an existing clip [Pad](#) and use the Global MIDI Commands: LOOP and LAYERING LOOP

The above techniques are described below

Create and immediately arm a clip within an existing track for recording

c1.1.0 Feature

This video demonstrates how to do it with an audio clip, using the microphone as the audio source, however it also works for arming non-audio clip's for recording.



To use the technique shown in the video above, you must follow these steps:

- Enable Create + Record:
 - Enter SETTINGS > DEFAULTS > UI > SONG > GRID > EMPTY PADS > CREATE + RECORD and select ENABLED
 - Exit Settings menu (**Back**) to save settings
- The following steps enable you to quickly create and arm new clips for recording:
 - In Grid view, make sure you are in Green mode (**Green Audition**).
 - Press **Play** to start playback and press **Record** to enable recording.
 - Short-press any empty **Pad** in an existing Instrument column to create and arm a new clip for recording
 - The new clip that was just created will be selected and start recording at the beginning of the next bar
 - You can press **Record** to stop recording or press the NEW CLIP **Pad** to stop recording.
 - Repeat steps as required.

Select an existing clip and use the Global MIDI Commands: LOOP and LAYERING LOOP

This technique requires the following:

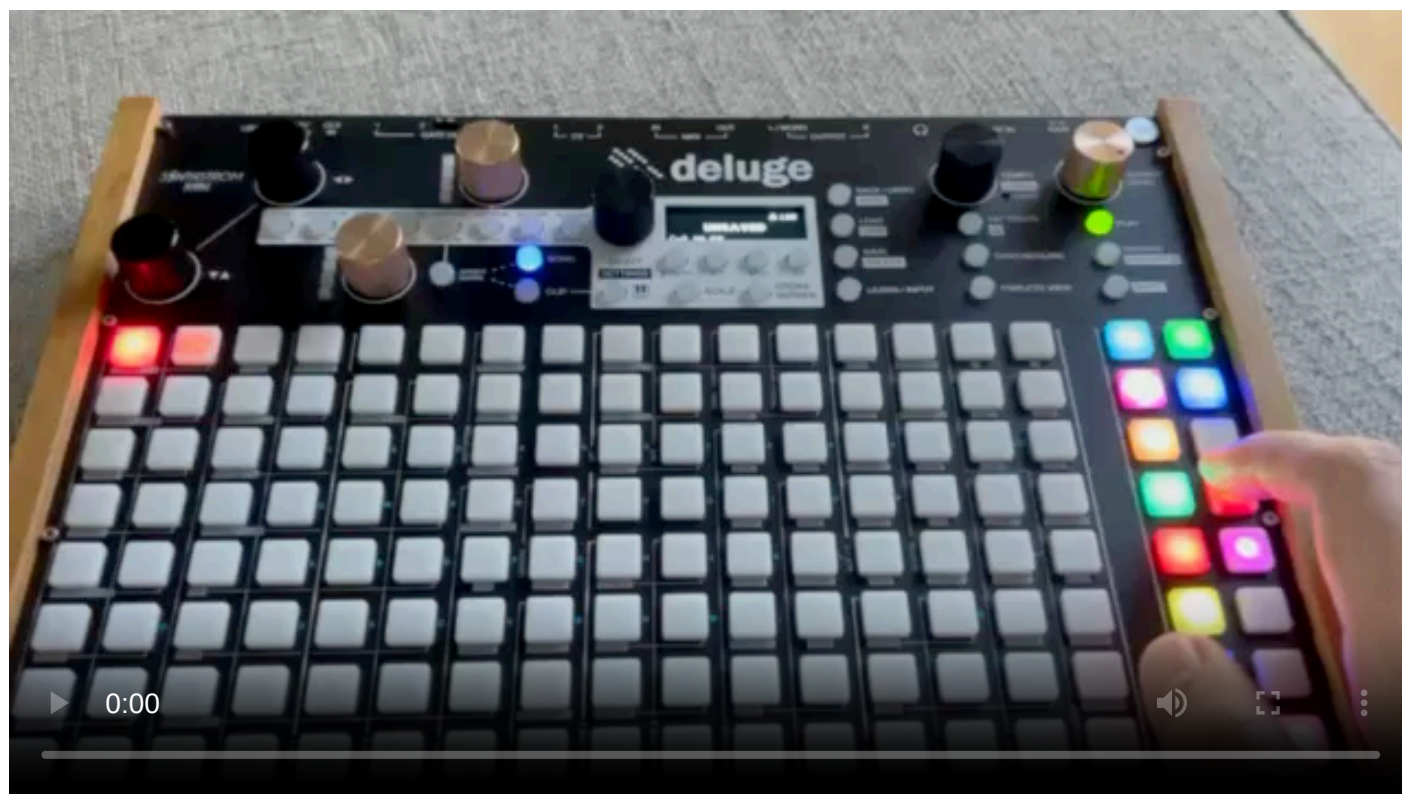
- you have created a clip
- you have selected that clip by pressing and holding it from grid view or by entering it
- you are able to use the Global MIDI Commands: LOOP or LAYERING LOOP by either using the Grid Loop/Layering Loop pads or by sending the Loop/Layering Loop Global MIDI Commands using an external controller.

To enable the Grid Loop/Layering Loop pads (**c1.2 Feature**), enable Grid View Loop Pads (LOOP) in the Community Features menu.

- When On, two pads (**Red Audition** and **Magenta Audition**) in the GRID VIEW sidebar will be illuminated and enable you to trigger the LOOP (Red) and LAYERING LOOP (Magenta) global MIDI commands to make it easier for you to loop in GRID VIEW without a MIDI controller.

After you have setup the above, you can now use the LOOP/LAYERING LOOP global MIDI commands in grid view.

This video demonstrates using the Magenta LAYERING LOOP pad in grid view which will continuously create a new audio clip in a new track until you stop it.



MIDI Device Definition Files

c1.3 Feature

Added ability to rename MIDI CC's in MIDI clips. Changes are saved by Instrument (e.g. per MIDI channel). Changes can be saved to a MIDI preset, with the Song, and to a MIDI device definition file.

The MIDI Device Definition File is saved on the SD Card in the folder path: MIDI_DEVICES/DEFINITION/.

Updated MIDI CC name's will be displayed when you press **encoder**  Gold / **turn encoder**  Gold the CC is assigned to and also when automating that CC in Automation View

Rename a MIDI CC

To rename a MIDI CC, enter Automation View and select the CC you wish to rename using the **turn**  Select or using the **Shift** + **Shortcut**.

With the MIDI CC selected, press **Shift** + **Name** to open the MIDI CC Renaming UI. Enter a new name and press  Select or **Enter**.

The new MIDI CC name will be immediately visible in Automation View and you can assign that CC to a Gold Knob in the MIDI clip and it will show that name when you press **encoder**  Gold and when you **turn encoder**  Gold to change the CC value.

Save MIDI CC Name(s)

If you made changes to the name of a MIDI CC, they will need to be saved so that you can use them should you reboot the Deluge. They can be saved to the Song, to a MIDI Preset or to a MIDI Device Definition File.

Save to the Song

Simply save the song by pressing **Save**

If you had previously linked a MIDI Device Definition File to the Song, then the file path to that definition file will be saved to the Song.

In addition, the last edited midi cc name(s)'s will also be saved with the song in case the MIDI Device Definition File cannot be found.

Save to the MIDI Preset

While in the MIDI clip, press **Save** + **MIDI**

If you had previously linked a MIDI Device Definition File to the MIDI Instrument, then the file path to that definition file will be saved to the preset.

In addition, the last edited midi cc name(s)'s will also be saved with the preset in case the MIDI Device Definition File cannot be found.

Save to the MIDI Device Definition File

To save the MIDI CC labels to a MIDI Device Definition File, press **Save** + **GLD Gold**. It will ask you to enter a file name. Press **SEL Select**, **Enter** or **Save** to save the file.

A MIDI Device Definition File is saved on the SD Card in the folder path: MIDI_DEVICES/DEFINITION/.

Load MIDI CC Name(s)

Load with the Song

When you load a song for which MIDI CC name changes were previously saved, those name changes will be re-loaded.

If you linked the Song to a MIDI Device Definition File, then the changes will be loaded from that definition file.

If the Song is not linked to a definition file, then the name changes will be loaded from the Song.

Load from Midi Preset

When you load a MIDI preset for which MIDI cc name changes were previously saved, those name changes will be re-loaded.

If you linked the preset to a MIDI Device Definition File, then the changes will be loaded from that definition file.

If the preset is not linked to a definition file, then the name changes will be loaded from the preset.

Load from Midi Device Definition File

To load the MIDI CC labels from a MIDI Device Definition File, **Load** + **GLD Gold**. It will ask you to select a file. Press **SEL Select**, **Enter** or **Load** to load the file.

Saving or Loading a MIDI Device Definition File will link that file to the current MIDI Instrument in the current song. If you save the song or save the current midi instrument as a preset, the song file and midi instrument preset file will include a file path to the MIDI Device Definition File. If you re-load the song or re-load the midi instrument preset, it will load information from the linked MIDI Device Definition File.

Linking / Unlinking a MIDI Device Definition File

You can unlink a Song or Midi Instrument preset from the a MIDI Device Definition File via the MIDI > Device Definition (DEVI) menu. You will need to re-save the song and/or preset to save the changes.

You can also manually unlink the song file / preset file from the MIDI Device Definition File by searching for definitionFile. You should see name="***" right under it. Do not delete the name line from the preset. Instead replace the name with name=""

You can also use the MIDI > Device Definition menu as another way to link / load a MIDI Device Definition File. When clicking on the File Linked (LINK) setting, it will prompt you to select a MIDI Device Definition File to load. After successfully loading the file, the file name will be displayed (on OLED only) below the File Linked setting.

Hiding / Unhiding Unlabeled CC'S

You can hide CC's that are unlabeled by toggling Hide Unlabeled CC (HIDE) via the MIDI > Device Definition (DEVI) menu.

With unlabeled CC's hidden, when you scroll through assignable CC's (e.g.  Gold + turn  Select or turn  Select in Automation View), you will only see labeled CC's.

Tips and Tricks

Scenario: I want to load a MIDI Device Definition File but make changes to the CC labels afterwards

Firstly, when you load a MIDI Device Definition File, the song will become linked to that file. If you wish to make changes to the cc labels, you will need to either:

A) unlink the song from the MIDI Device Definition File and make changes to the labels and save them to the song,

or

B) you will need to save those label changes back to a MIDI Device Definition File and save the song so that it reloads from that file.

A) Make changes to labels without updating MIDI Device Definition File

TLDR steps:

1. Load song
2. Load label file
3. Unlink label file
4. Make changes
5. Save song

If you loaded a MIDI Device Definition File and now wish to make changes, but don't wish to save those changes to that MIDI Device Definition File or another definition file (e.g. you want to keep your changes specific to the Song / MIDI preset), then

As a preliminary step, after loading a MIDI Device Definition File, go to the MIDI > Device Definition menu. It will show if a MIDI Device Definition File is linked. Press  Select on File Linked (LINK) to unlink that file.

Now you can go follow the steps to update CC Labels.

After updating the CC Labels, save your changes to the Song and/or to a MIDI preset.

When you re-load the Song or MIDI preset next time, it will load the CC labels from the Song or MIDI preset and not from the MIDI Device Definition File you started with.

B) Make changes to labels and update MIDI Device Definition File

TLDR steps:

1. Load song
2. Load label file
3. Make changes
4. Save label file
5. Save song

If you loaded a song and loaded a MIDI Device Definition File and now want to make changes to CC Labels, or you just started making changes as part of that song, you can save those changes back to the same or a new MIDI Device Definition File.

After you have saved the changes to the MIDI Device Definition File, you will need to Save the song and/or MIDI preset to link the Song / Preset to that MIDI Device Definition File.

When you re-load the Song or MIDI preset next time, it will load the CC labels from the MIDI Device Definition File. The Song or MIDI preset will also keep a copy of those changes in case the MIDI Device Definition File is removed from your SD card.

Midi Device Definition File Layout

The same information saved to the Midi Device Definition File is also saved to the Song / MIDI Preset with the exception of the Definition File Name which is not saved to the Definition File.

```
<midiDevice>
  <definitionFile
    name="" />
  <cclabels
    0=""
    2=""
    3=""
    4=""
    5=""
    6=""
    7=""
    8=""
    9=""
    10=""
    11=""
    12=""
    13=""
    14=""
    15=""
    16=""
    17=""
    18=""
    19=""
    20=""
    21=""
    22=""
    23=""
    24=""
    25=""
    26=""
    27=""
    28=""
    29=""
    30=""
    31=""
    32=""
    33=""
    34=""
    35=""
```

36=""
37=""
38=""
39=""
40=""
41=""
42=""
43=""
44=""
45=""
46=""
47=""
48=""
49=""
50=""
51=""
52=""
53=""
54=""
55=""
56=""
57=""
58=""
59=""
60=""
61=""
62=""
63=""
64=""
65=""
66=""
67=""
68=""
69=""
70=""
71=""
72=""
73=""
74=""

75=""
76=""
77=""
78=""
79=""
80=""
81=""
82=""
83=""
84=""
85=""
86=""
87=""
88=""
89=""
90=""
91=""
92=""
93=""
94=""
95=""
96=""
97=""
98=""
99=""
100=""
101=""
102=""
103=""
104=""
105=""
106=""
107=""
108=""
109=""
110=""
111=""
112=""
113=""

```
114=""  
115=""  
116=""  
117=""  
118=""  
119="" />  
<hideUnlabeledCC  
  value="0" />  
</midiDevice>
```

MIDI Follow Mode with MIDI Feedback

c1.1 Feature

MIDI control mode which enables you to learn your external controller to the Deluge only once.

- Edit the active clip in the track you last interacted with
- **c1.3** Edit the active clip of specific tracks.
- Provides a standard MIDI CC implementation to control Deluge parameters with ease.



Video Tutorials



[Midi](#) Ron Cavagnaro
[Follow](#)
[Basics](#)



[New](#) Ron Cavagnaro
[Workflow:](#)
[Midi Follow](#)
[Grid](#)



[MIDI](#)
[Follow on](#)
[the](#)
[Synthstrom](#)
[Deluge Is](#)
[Your Best](#)
[Friend](#)
[When](#)
[Working](#)
[with](#)
[External](#)
[Synth Gear](#)

Description

Master MIDI follow mode whereby after setting a master MIDI follow channel for Synth/MIDI/CV clips, Kit clips, and for Parameters, all MIDI (notes + cc's) received will be directed to control the active or selected clip. MIDI follow mode does not control song parameters.

- There are three regular MIDI follow channel's (A/B/C) which will control the instrument of the active context. These follow channel's allows you to learn different devices to MIDI follow, should you require device specific channel settings.
- **c1.3** There are sixteen specific track MIDI follow channel's (Track1-16) which will always control the specific track configured.

Comes with a MIDI feedback mode to send updated parameter values on the MIDI follow feedback channel for mapped MIDI cc's. Feedback is sent whenever you change context on the deluge and whenever parameter values for the active context are changed.

Comes with an XML file (SETTINGS/MIDIFollow.XML) with default CC to Deluge parameter mappings. You can customize this XML file to map CC's differently as required.

Simple summary:

- Set your follow and feedback channel(s)
- Set your MIDI Controller(s) to the same channel(s)
- Set a root note for your kits
- Confirm that your controller cc's are mapped to the parameters you want (via SETTINGS/MIDIFollow.XML)
- Play and control the deluge instruments and parameters with ease!

No more re-learning your MIDI controllers every time you start a new song, add new clips or change instrument presets.

- Note: Your existing MIDI learnings will remain untouched and can be used together with the master MIDI follow mode.

Usage

Set Master MIDI Follow Channel(s), Set Kit Root Note, Enable/Disable Pop-ups and Enable/Disable MIDI Feedback

To use MIDI follow mode, you will need to configure the various MIDI Follow Mode settings by entering the settings menu and going to the sub menu for MIDI > MIDI-Follow

- In the MIDI-Follow > Channel submenu, set the channel between 1 and 16 for Non-MPE or MPE Lower/Upper for MPE.
 - There are three regular channel's (A/B/C) available to accomodate learning multiple devices / channels to MIDI Follow Mode.
 - These channels will always control the selected / active clip context
 - **c1.3** There are sixteen specific track channel's (1-16) available so that you can always control specific tracks (e.g. like a mixer) - These channels will always control the active clip of the specific track configured
 - You can quickly learn a Channel (and Device) by pressing **Learn** and sending a MIDI CC/Note while in the Channel submenu
 - You can quickly unlearn a Channel by pressing **Shift** + **Learn** while in the Channel submenu
 - Note: if no Channel has been set, MIDI Follow Mode will be Disabled
- In the MIDI-Follow > Kit Root Note submenu, set the root note for kits between 1 and 127 in order to map MIDI Notes received to Kit rows. The root note corresponds to the bottom row in a Kit.
- In the MIDI-Follow > Display Param submenu, enable or disable param pop-ups
- In the MIDI-Follow > Feedback > Channel submenu, Enable or Disable MIDI follow feedback by setting a MIDI Follow Feedback Channel.
 - You can choose MIDI Follow Channel A/B/C, Track, Track + A/B/C, or NONE. Thus, when you update MIDI Follow Channel A/B/C or a configured Track channel it will automatically update the channel used

for MIDI Feedback.

- Track + A/B/C feedback modes send Track feedback first when the selected clip belongs to a configured track, then send the selected A/B/C feedback channel if it is configured and is not the same MIDI channel.
 - Note: if no Channel has been set, MIDI Feedback will be Disabled
- In the MIDI-Follow > Feedback > Automation Feedback submenu, Enable or Disable MIDI follow feedback for automated parameters and set the rate at which feedback for automated parameters is sent
 - With Automation Feedback enabled, the Deluge will also send feedback while you are holding a note (e.g. step editing automation). This will override the sending of automation feedback until you release the note.
- In the MIDI-Follow > Feedback > Filter Responses submenu, Enable or Disable filtering of responses received within 1 second of sending a MIDI feedback value update.

Input Device Differentiation

If you wish to use Input Device Differentiation with MIDI Follow Mode, you will need to enable Input Differentiation and learn your device to the required MIDI Follow Channel(s).

To enable Input Differentiation, go to **SETTINGS > MIDI > Differentiate Inputs (DIFF)**

To learn the device, you need to enter the MIDI Follow Channel submenu, hold **Learn** and then send a MIDI Note or CC.

For example, if you enter the channel submenu (e.g. **MIDI-Follow > Channel > Channel A** or **MIDI-Follow > Channel > Channel B**) and then press and hold the **Learn** button and then send a Note to the deluge, the Deluge will update the the Synth channel to match the device and, if you are using an OLED Deluge, it will display the Device that has been learned on the screen.

Learning a Channel / Root Note

As explained above, in the MIDI-Follow Channel submenu's you can hold learn to learn a device for input differentiation. You can also use this same functionality with input differentiation off to quickly update the MIDI-Follow channel's to match the channel used by your device. Simply hold **Learn** and send a Note or CC for any of the channels.

You can also use this method for updating the Kit Root Note. In the Kit Root Note menu, hold **Learn** and send a MIDI note from your device to update the Kit Root Note.

Unlearning a Channel and Device

You can unlearn a channel and device by pressing **Shift** + **Learn** while in the channel submenu's.

If you unlearn all MIDI Follow channels, MIDI Follow Mode will be disabled (including MIDI Feedback). If set the MIDI Feedback channel to NONE, MIDI Feedback will be disabled.

You can also unlearn a channel using the **turn SEL Select** by scrolling between MPE Upper Zone and Channel 1.

Notes

Notes and note associated performance data received (e.g. CC1, MPE CC74) on the master MIDI channel will play the instrument in the active clip (e.g. a synth, MIDI clip, cv clip, or all kit rows).

- Note 1: You can play a synth, kit, MIDI or cv clip without entering the clip from arranger or song view. Simply press and hold the clip **Pad** in arranger or song view to preview the clip (as you would to change the parameters of that clip with the gold encoders) and then send notes from your MIDI controller.
- Note 2: For Kit's, the bottom Kit row is mapped by default to the root note C1 (note # 36). All kit rows above are mapped to note's incrementally (e.g. 36, 37, 38, etc.). This kit root note # is configurable (from 0 to 127) through the Kit Root Note submenu.
- Note 3: MIDI Follow mode will always send notes to the active clip. This means that if you leave or unselect a clip, you can still send notes to that clip because in the Deluge, that clip is still recognized as the last active clip.

CC's

CC's received on the master MIDI channel that have been mapped to a parameter will change the value of that parameter in the active context (e.g. audio clip or instrument clip).

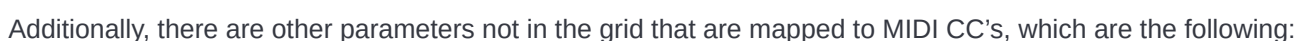
The parameters are controlled only in the current context.

- So if you enter a specific synth clip, it will only control that synths filter. If you are in a kit clip it will either control the entire kit or a specific row in that clip (depending on whether you have **Affect Entire** enabled or not)
- If you are in song view or arranger view and holding down a clip (selecting it), it will only control the parameters for that selected clip.
- If you are in song view and haven't selected a clip, it will control the parameters of the active instrument of the last clip selected.
- In other words it checks what context you're in and controls the parameters of that context.

In **c1.3** the above functionality has been expanded to add specific track control enabling you to have instant mixer control of the parameters of up to 16 tracks.

- ## Default MIDI CC Mappings

The default MIDI CC to parameter mappings, as mapped the to the parameter shortcuts on the Deluge grid are as follows:



- Compressor Threshold: CC 27
- Stutter Rate: CC 20
- New arpeggiator parameters:
 - Rhythm: CC 42
 - Sequence Length: CC 43
 - Chord Polyphony: CC 44
 - Ratchet Amount: CC 45
 - Note Probability: CC 46
 - Bass Probability: CC 47
 - Swap Probability: CC 112
 - Glide Probability: CC 113
 - Chord Probability: CC 48
 - Ratchet Probability: CC 49
 - Spread Octave: CC 39
 - Spread Gate: CC 40

- See Appendix A for detailed listing and description of default CC # to Parameter mappings.

Here are the MIDI CC #'s that have been reserved for other purposes:

Reserved CC name	Reserved CC Number	Used outside of sounds		Reserved for Mod Sources	
Sustain pedal	64	data entry	6	mod wheel (y)	1
Portamento pedal	65	Bank MSB	0	breath	2
Sostenuto pedal	66	Bank LSB	32	expression	4
Legato pedal	68	Data LSB	38		
Send request	69	increment	96		
Unison detune amount	94	decrement	97		
		NRPN LSB	98		
stutter trigger	22	NRPN MSB	99		
		RPN LSB	100		
		RPN MSB	101		
		all off	123		

In **c1.3** additional MIDI's CC's (89 and 90) have been reserved for Specific Track Mute and Solo commands:

- Added new default CC 89 to toggle the mute of the active clip in a specific track.
 - Toggle mute: CC Value > 0 (Send a CC value greater than 0 to toggle mute for the active clip in a specific track)
 - If used together with SHIFT, it will trigger instant mute.
- Added new default CC 90 to toggle solo of the active clip in a specific track.
 - Toggle solo: CC Value > 0 (Send a CC Value greater than 0 to toggle mute for the active clip in a specific track)

Adjust MIDI CC Mappings

MIDI CC mappings for MIDI Follow Mode are saved to the SETTINGS folder in the root of your SD card in an XML file called MIDIFollow.XML

Within MIDIFollow.XML, all Parameters that can be mapped to a MIDI CC are listed. The MIDI CC value is enclosed between a Parameter XML tag - e.g. `<lpfFrequency>74</lpfFrequency>` indicates that MIDI CC 74 is mapped to the LPF Frequency parameter. Conversely when a value of 255 is entered (e.g. `<hpfFrequency>255</hpfFrequency>`) it indicates that no MIDI CC value has been mapped to that parameter.

```
Volumes > DELUGE > MIDIFollow.XML
1  <?xml version="1.0" encoding="UTF-8"?>
2  <defaults>
3      <defaultCCMappings>
4          <oscAVolume>21</oscAVolume>
5          <oscAPitch>12</oscAPitch>
6          <oscAPhaseWidth>23</oscAPhaseWidth>
7          <carrier1Feedback>24</carrier1Feedback>
8          <oscAWavetablePosition>25</oscAWavetablePosition>
```

You can manually edit the MIDIFollow.XML to enter your MIDI CC mappings to each Parameter.

The defaults from MIDIFollow.XML are loaded automatically when you start the Deluge so you can begin controlling the deluge with your MIDI controller right away.

Note: A parameter can only be mapped to one MIDI CC, and viceversa.

Display Parameter Names and Values on Screen

Note: MIDI pop-up's can be disabled in the MIDI Follow Display Param submenu.

For mapped MIDI CC's, a pop up is shown on the display whenever MIDI CC's are received to indicate the name of the parameter that is being controlled by that MIDI CC and the current value being set for that parameter.



Note: if the MIDI CC being received is for a Parameter that cannot be controlled in the current context (e.g. trying to control Attack while in a Kit with `Affect Entire` enabled), the pop-up message will say "Can't Control: Parameter Name".



Re-cap of functionality

1. Added new MIDI submenu for MIDI-Follow where you can:
 - Set up to three MIDI Follow Channels and Devices
 - Set up to sixteen MIDI Follow Channels and Devices for controlling up to 16 Specific Tracks **c1.3**
 - Set the MIDI Follow Root Note for Kits
 - Enable or Disable MIDI Follow Param Pop-up's
 - Enable or Disable MIDI Follow Feedback by setting/unsetting the MIDI Follow Feedback Channel, including paired Track + A/B/C feedback modes
 - Enable or Disable MIDI Follow Feedback for Automated Parameters and set the MIDI Feedback Update Rate
 - Enable or Disable MIDI Follow Feedback Filtering of MIDI CC responses received within 1 second of sending feedback
2. When MIDI Follow Mode is enabled, a MIDI Follow Channel has been set, and you have mapped your MIDI CC's, your external controller's Notes and MIDI CC's will be automatically directed to control the Notes of the Active Instrument (e.g. Synth, Kit, MIDI, CV) and Parameters of the Active Instrument or Selected Clip.
3. By default, the root note for kit's is C1 for the bottom kit row but this can be configured in the MIDI Follow menu.
4. Pop-up's are shown on the display for mapped MIDI CC's to show the name of the parameter being controlled and value being set for the parameter. This can be disabled in the menu.
5. MIDI feedback is sent for mapped CC's when the active context changes, change presets, or you change the value of a mapped parameter on the deluge (e.g. using mod encoders or select encoder if you're in the menu). MIDI feedback can be disabled in the menu by setting the MIDI feedback channel to NONE.
6. MIDI feedback for automated parameters can also be sent and can be enabled or disabled in the MIDI feedback sub menu. When enabled, you choose between 3 speeds at which to send feedback for automated parameters: Low (500 ms), Medium (150 ms), High (40 ms). Sending automated parameter feedback can be taxing on the deluge MIDI output system, so depending on the amount of automation you do, you may want to adjust the speed (e.g. slow it down) to not affect the performance of the Deluge.
7. MIDI feedback can cause an undesirable result with certain applications when the application responds back to the Deluge after the Deluge has sent it an updated value (Loopy Pro and Drambo on iPad are known to do this). This can cause lag in the deluge and potential feedback loops. To handle this, a toggleable filter was added which ignores messages received for the same ccNumber within 1 second of sending a MIDI feedback update. If the application receiving the MIDI feedback update does not send responses back to the Deluge, then this setting should be set to Disabled in the MIDI Feedback Filter Responses sub menu.

- Note: To control the deluge with midi follow while receiving midi automation feedback, MIDI Feedback Filter Responses needs to be disabled. If your device requires filter responses to be enabled to avoid a feedback loop, you cannot use that same device to control the deluge while automation feedback is being received - you will only be able to display the automation on your device.

Troubleshooting

MIDI Follow is unresponsive to MIDI controller input

As of **c1.3** MIDI Follow settings are no longer stored in Flash Memory. They are now saved in the MIDIFollow.XML file found in SD CARD/Settings/MIDIFollow.XML

If you are updating to **c1.3** from an earlier firmware, please delete all existing MIDIFollow.XML files from your SD card so that the file can be re-generated with the new file format.

When using MIDI Follow, you experience MIDI stutter (lag)

If you experience MIDI stutter / lag while using MIDI follow mode, you may need to adjust your MIDI Feedback settings.

Things you can try:

1. Disable MIDI Feedback altogether by setting the MIDI Feedback Channel to NONE in the following sub-menu:
MIDI > MIDI-FOLLOW > FEEDBACK > CHANNEL
2. Disable MIDI Automation Feedback. Set the following menu to Disabled: MIDI > MIDI-FOLLOW > FEEDBACK > AUTOMATION FEEDBACK
3. Slow down MIDI Automation Feedback. Choose a slower Automation Feedback speed (e.g. Low vs High) in the following menu: MIDI > MIDI-FOLLOW > FEEDBACK > AUTOMATION FEEDBACK

When using MIDI Follow, you are unable to record Automation

If you notice that the Deluge's parameter values don't respond to your MIDI controller while trying to record automation when Deluge playback is running, this may be because the Deluge is sending Automation Feedback to your controller and also filtering out (ignoring) the responses received.

To control the Deluge with MIDI Follow with a controller while also receiving Automation Feedback from the Deluge, Filter Responses needs to be disabled in this menu: MIDI > MIDI-FOLLOW > FEEDBACK > FILTER RESPONSES

If your device requires Filter Responses to be enabled to avoid a MIDI Feedback loop (see below), you cannot use that same device to control the Deluge while Automation Feedback is being received. Your device will only be able to display the Automation Feedback.

When using MIDI Follow, you experience a MIDI Feedback loop

If you notice that your MIDI controller's values get stuck while sending MIDI CC's to the Deluge or the Deluge's parameter values get stuck while receiving MIDI CC's from your controller, it is possible that you got stuck in a MIDI feedback loop. This is known to happen with Drambo app for example as this application always respond to the Deluge's MIDI feedback.

In this case, you will need to ensure that MIDI Feedback Filter Responses is set to Enabled in the following menu:

MIDI > MIDI-FOLLOW > FEEDBACK > FILTER RESPONSES

Appendix A - List of Deluge Parameters with

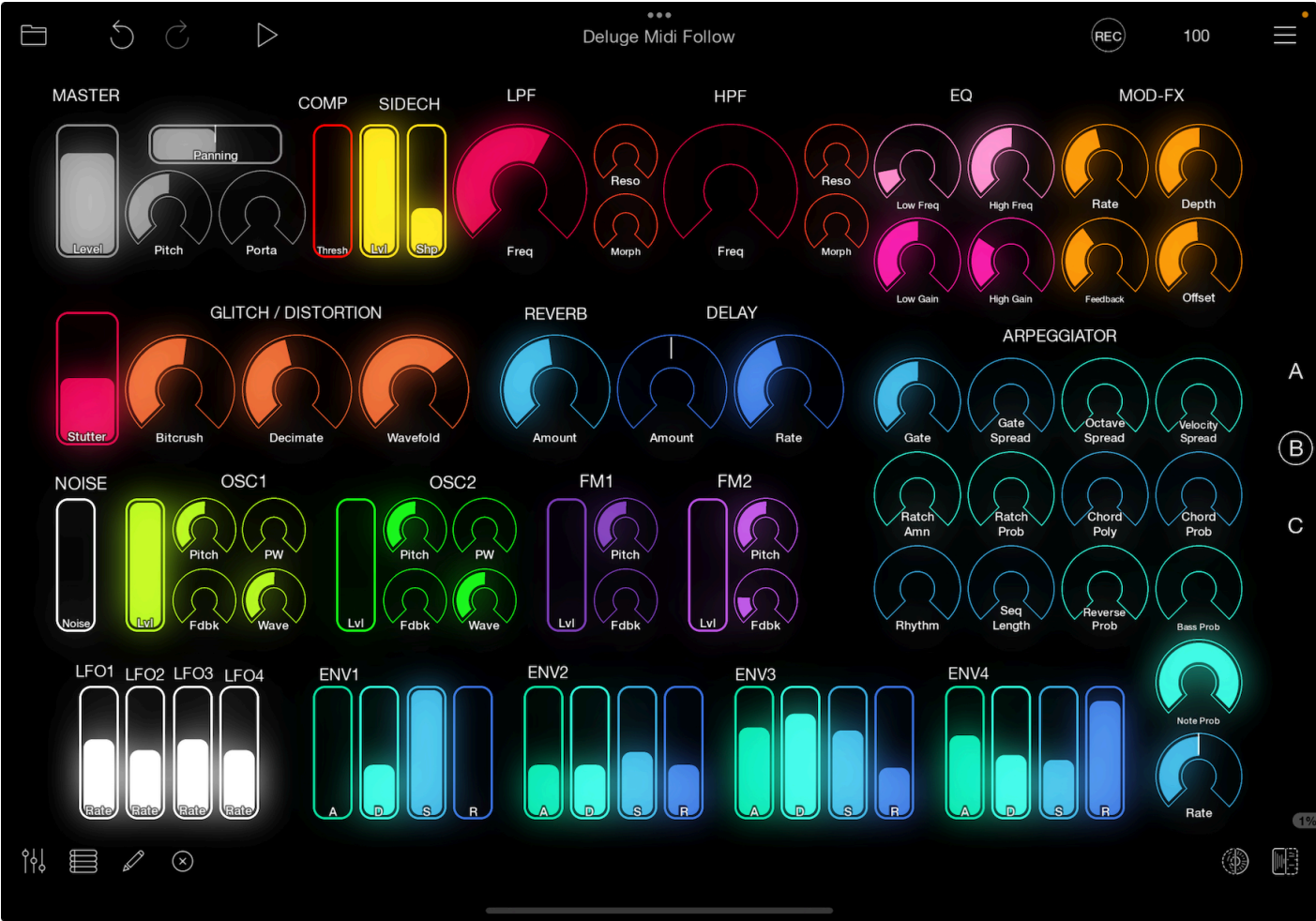
Default Mapped CC's

Param Group	Deluge Parameter Description	MidiFollow.XML Parameter Name	CC#
ARP	Reverse Probability	reverseProbability	36
ARP	Velocity Spread	spreadVelocity	37
ARP	Arpeggiator Octave Spread	spreadOctave	39
ARP	Arpeggiator Gate Spread	spreadGate	40
ARP	Arpeggiator Rhythm	rhythm	42
ARP	Arpeggiator Sequence Length	sequenceLength	43
ARP	Arpeggiator Chord Polyphony	chordPolyphony	44
ARP	Arpeggiator Ratchet Amount	ratchedAmount	45
ARP	Arpeggiator Note Probability	noteProbability	46
ARP	Arpeggiator Bass Probability	bassProbability	47
ARP	Arpeggiator Chord Probability	chordProbability	48
ARP	Arpeggiator Ratchet Probability	ratchetProbability	49
ARP	Arpeggiator Gate	arpGate	50
ARP	Arpeggiator Rate	arpRate	51
COMPRESSOR	Compressor Threshold	compressorThreshold	27
DELAY	Delay Amount	delayFeedback	52
DELAY	Delay Rate	delayRate	53
DISTORTION	Wavefolder	waveFold	19
DISTORTION	Bitcrush	bitcrushAmount	62
DISTORTION	Decimation	sampleRateReduction	63
ENV 1	Envelope 1 Release	env1Release	72
ENV 1	Envelope 1 Attack	env1Attack	73
ENV 1	Envelope 1 Decay	env1Decay	75
ENV 1	Envelope 1 Sustain	env1Sustain	76
ENV 2	Envelope 2 Attack	env2Attack	77
ENV 2	Envelope 2 Decay	env2Decay	78
ENV 2	Envelope 2 Sustain	env2Sustain	79
ENV 2	Envelope 2 Release	env2Release	80
ENV 3	Envelope 3 Attack	env3Attack	102
ENV 3	Envelope 3 Decay	env3Decay	103
ENV 3	Envelope 3 Sustain	env3Sustain	104
ENV 3	Envelope 3 Release	env3Release	105
ENV 4	Envelope 4 Attack	env4Attack	106
ENV 4	Envelope 4 Decay	env4Decay	107
ENV 4	Envelope 4 Sustain	env4Sustain	108
ENV 4	Envelope 4 Release	env4Release	109
EQ	Bass Frequency	bassFreq	84
EQ	Treble Frequency	trebleFreq	85
EQ	Bass	bass	86
EQ	Treble	treble	87
FM 1	FM Modulator 1 Pitch	modulator1Pitch	14
FM 1	FM Modulator 1 Level	modulator1Volume	54
FM 1	FM Modulator 1 Feedback	modulator1Feedback	55
FM 2	FM Modulator 2 Pitch	modulator2Pitch	15
FM 2	FM Modulator 2 Level	modulator2Volume	56
FM 2	FM Modulator 2 Feedback	modulator2Feedback	57
I-IPF	HPF Frequency	hpfFrequency	81
I-IPF	HPF Resonance	hpfResonance	82
I-IPF	HPF Morph	hpfMorph	83
LFO 1	LFO 1 Rate	lfo1Rate	58
LFO 2	LFO 2 Rate	lfo2Rate	59
LFO 3	LFO 3 Rate	lfo3Rate	110
LFO 4	LFO 4 Rate	lfo4Rate	111
LPF	LPF Morph	lpfMorph	70
LPF	LPF Resonance	lpfResonance	71
LPF	LPF Frequency	lpfFrequency	74
MASTER	Master Pitch	pitch	3
MASTER	Master Level	volumePostFX	7
MASTER	Master Pan	pan	10
MOD-FX	Modulation Effect (FX) - Rate	modFXRate	16
MOD-FX	Modulation Effect (FX) - Feedback	modFXFeedback	17
MOD-FX	Modulation Effect (FX) - Offset	modFXOffset	18
MOD-FX	Modulation Effect (FX) - Depth	modFXDepth	93
NOISE	Noise Volume	noiseVolume	41
OSC 1	Oscillator 1 Pitch	oscAPitch	12
OSC 1	Oscillator 1 Level	oscAVolume	21
OSC 1	Oscillator 1 Pulse Width	oscAPhaseWidth	23

OSC 1	Oscillator 1 Feedback	carrier1Feedback	24
OSC 1	Oscillator 1 Wave Position	oscAWavetablePosition	25
OSC 2	Oscillator 2 Pitch	oscBPitch	13
OSC 2	Oscillator 2 Level	oscBVolume	26
OSC 2	Oscillator 2 Pulse Width	oscBPhaseWidth	28
OSC 2	Oscillator 2 Feedback	carrier2Feedback	29
OSC 2	Oscillator 2 Wave Position	oscBWavetablePosition	30
PORTAMENTO	Portamento	portamento	5
REVERB	Reverb Amount	reverbAmount	91
SIDECHAIN	Sidechain Shape	compressorShape	60
SIDECHAIN	Sidechain Level / Volume Duck	volumePostReverbSend / sidechainCompressorVolume	61
STUTTER	Stutter Rate	stutterRate	20

Appendix B - Loopy Pro Template for Deluge MIDI Follow Mode

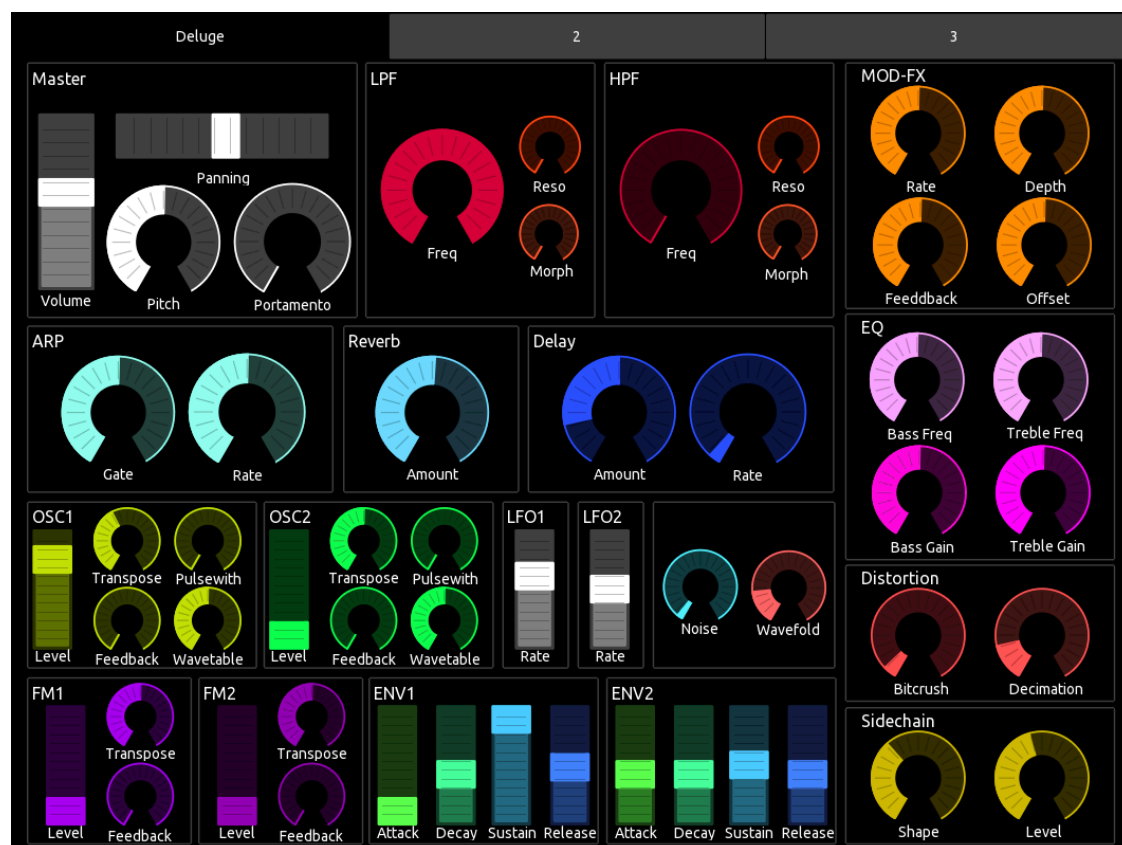
There are premade MIDI Follow templates available for Loopy Pro for community firmware 1.1 and higher. For details, see [MIDI Follow Mode Loopy Pro Template](#).



Appendix C - Touch OSC Template for Deluge MIDI Follow Mode

For users of Touch OSC, you will find a MIDI Follow template in this folder: [MIDI Follow Mode Touch OSC Template](#)

- It is setup to send and receive on Channel 15 when the Deluge is setup in the Touch OSC Connections menu

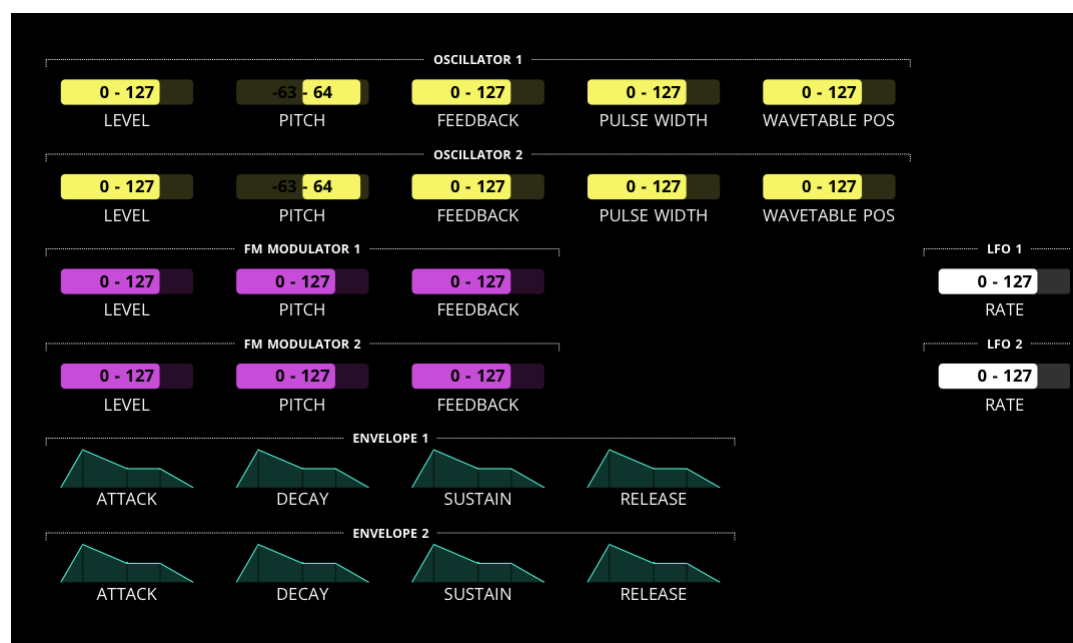
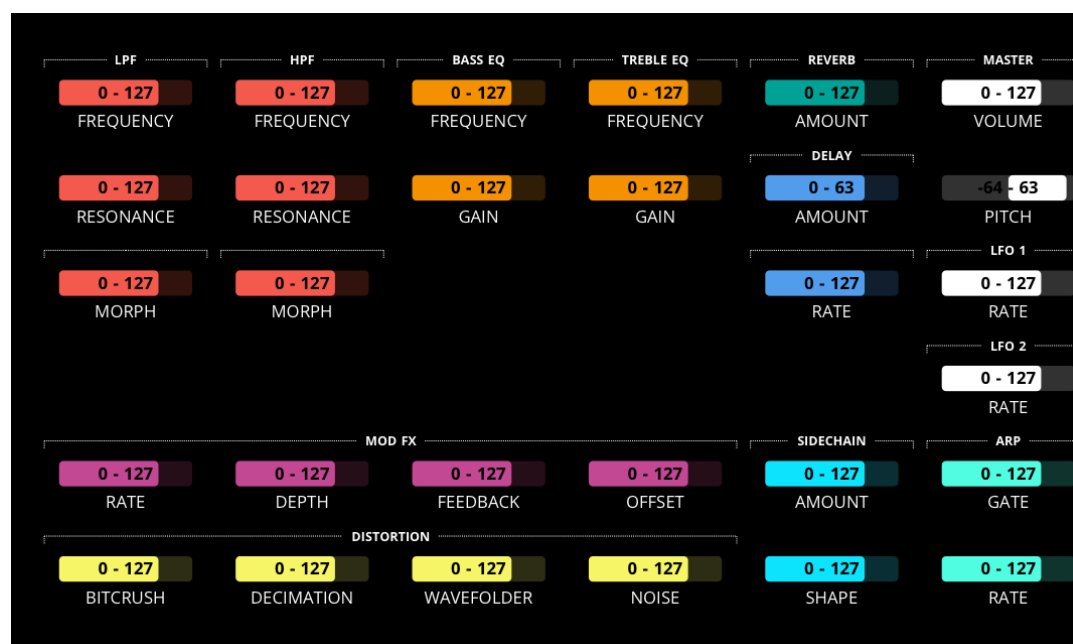


Appendix D - Electra One Template for Deluge MIDI Follow Mode

For users of the Electra One, you will find a MIDI Follow template in the Electra One's preset library on their website:

[MIDI Follow Mode Electra One Preset](#)

- It is setup to send and receive on Channel 15 (MIDI Port 1).



Appendix E - Melbourne Instruments Roto-Control Templates for Deluge MIDI Follow Mode

For users of Melbourne Instruments' Roto-Control, you will find MIDI Follow templates in this folder: [MIDI Follow Mode Roto-Control Templates](#)

Appendix F - Neuzeit Instruments' Drop Templates for Deluge MIDI Follow Mode

For users of Neuzeit Instruments' [Drop MIDI Control Center](#), you will find a MIDI Follow project file in this folder: [MIDI Follow Mode Neuzeit Instruments Drop Project Template](#)

This project assumes each track has been set to the same channel number. (e.g. Track 6 is MIDI channel 6) This project also assumes the Drop is running firmware version 2.01 or later (in order to use eight layers)

- Layer 1 is a mixer layer controlling the first eight tracks of the song
- Layers 2-8 are details controls for each track
- Layer 2 controlling track one is configured for a kit track
- Layers 3-8 controlling tracks 2-7 are configured for synths

Thanks to James Macaulay for the [Drop Editor](#) to allow easy copying parameters and settings between layers.

Note / Note Row Editor

c1.3 Feature

Enhance Note Probability, Iteration and Fill

Enhanced existing note probability, iteration and fill function functionality by enabling you to use each type independently. This means that you can now apply probability to iteration and fill and you can also apply iteration to fill.

To edit probability, hold a note **Pad** / **Audition** and turn **SEL Select left** to display current probability value / set new probability value.

To edit iterance, hold a note **Pad** / **Audition** and turn **SEL Select right** to display current iterance value / set new iterance value.

To edit fill, you need to access the new note and note row editor menu's.

Note Editor Menu

Enter Note Editor Menu

Hold note(s) **Pad** and press **SEL Select** to enter the note editor menu.

The note(s) you were holding will be the note(s) selected when you enter the note editor.

If playback is off, you will hear what the selected note(s) sound like while you press them.

Selecting Note(s)

While in the note editor menu, the selected note(s) will pulse. In addition, notes which have had their probability, iterance or fill settings changed from default will be highlighted yellow to help quickly identify edited notes.

You can select another note by pressing the note (**Pad**) on the grid. You can select one or more notes.

You can vertical scroll (turn **Vertical**), horizontal scroll (turn **Horizontal**), and zoom in / out (press & turn **Horizontal**) to find note(s) you want to edit.

Note Actions

While in the note editing menu with a note selected, you are able to perform other functions as if you were holding that note, including:

- press & turn  Vertical to edit note repeats
- turn  Gold to add parameter step automation at current note zoom level

Exit Note Editor Menu

You can exit the menu by pressing **Back** to back out or you can press the greyed out **Mute** / **Audition** in the Sidebar

Note Row Editor Menu

Enter Note Row Editor Menu

Hold a note row **Audition** and press **SEL Select** to enter the note row editor menu.

The note row you were holding will be the note row selected when you enter the note row editor.

While in the Note Row Editor Menu, the audition pads will not sound. They will function as if you are holding **Shift** to select rows silently.

Selecting A Note Row

While in the note row editor menu, the selected note row audition pad will blink.

You can select other note row's by:

- pressing the note row **Audition**
- vertical scrolling with the vertical encoder (turn  Vertical)

Note Row Actions

While in the note row editing menu with a note row selected, you are able to perform other functions as if you were holding that note row's **Audition**, including:

- press & turn  Vertical to enter euclidean notes
- press & turn  Horizontal to rotate the note row

By physically holding an **Audition** you can:

- edit a note row's length by turn  Horizontal
- zoom in / out by press & turn  Horizontal

Editing Notes

You can also perform note editing actions:

- add / remove **Notes** on the grid
- press and hold one or more notes **Pad** to edit the same parameter selected for the row but for only for the notes you selected
- with a note selected you can edit its velocity by turn  Horizontal
- with a note selected you can nudge it by press & turn  Horizontal
- with a note selected you can edit its repeats by press & turn  Vertical

Exit Note Row Editor Menu

You can exit the menu by pressing **Back** to back out

Performance View

c1.1 Feature

Polyend Play inspired Performance View for the Deluge.



Video Tutorials



[Performance](#) Ron Cavagnaro

[View Basics](#)



[New](#)

[Community](#)

[Firmware](#)

[Features:](#)

[Performance](#)

[View](#)



[Latest](#)

[Community](#)

[Firmware:](#)

[Performance](#)

[View](#)

Description

Each column represents a different “FX” and each pad/row in the column corresponds to a different FX value.

Specifications:

- Perform FX menu to edit Song level parameters and enable/disable editing mode.
- 16 FX columns
 - 1 Param assigned to each column
- 8 FX values per column
 - Long press **Pads** (≥ 100 ms by default) in a column to change the value momentarily and reset it (to the value before the pad was pressed) upon pad release
 - Short press **Pads** (< 100 ms by default) in a column to change the value until you press the pad again (resetting it to the value before the pad was pressed)

- Quickly clear all held values by pressing  Horizontal + Back (resetting FX values back to their previous state)
- Editing mode to edit the FX values assigned to each pad and the parameter assigned to each FX column
- Save defaults as PerformanceView.xml file
 - Adjustable default Values assigned to each FX column via VALUE editing mode or PerformanceView.xml
 - Adjustable default Param assigned to each FX column via PARAM editing mode or PerformanceView.xml
 - Adjustable default “held pad” settings for each FX column via Performance View or PerformanceView.xml (simply change a held pad in Performance View and save the layout to save the layout with the held pads).
- Load defaults from PerformanceView.xml file
- Save and load defaults from Song file

Usage

1) Enter performance view from song / arranger views by pressing

 Keyboard .

2) Short press (< 100ms by default) a in the columns to hold that pad's value (parameter and held value is displayed on the screen)

- Note: If you save the layout while pad's are in a “held” state, the next time you re-load that layout it will re-load the held pad's and change the associated parameter's value based on the previous held state.

3) Long press (>= 100ms by default) a in the columns to play the FX but not hold it (when you let go of the pad it will snap back to previous value).

- Note: The long press / short press time used for Performance View can be configured in the global settings menu under DEFAULTS as HOLD PRESS TIME.

4) Press **Horizontal** + **Back** to clear all “held” FX values.

5) You can edit the default values for each pad in the Performance View by entering a **VALUE EDITING MODE**. Here are the instructions for Value Editing mode:

Enter using **Shift** +  **Keyboard** button

or

Enter using the menu

- Enter **VALUE EDITING MODE** by pressing  **Select** to open up the Perform FX Menu
- In the Perform FX menu, select the **EDITING MODE** sub menu and press down on Select Encoder to enter the menu
- Change Editing Mode to **VALUE** and press  **Select** to enter **VALUE EDITING MODE**

At any time you can Exit out of **VALUE EDITING MODE** using the **Back** button

Value Editing Mode:

- While in the Value Editor, pressing any **Pad** on the grid will display the current value assigned to that pad.
- You can edit that pad's value by turning the select encoder while selecting a single pad (so it's highlighted white) or holding down on that pad. The updated value will be reflected on the display. So either **Pad** > turn  **Select** or **Pad** + turn  **Select**.
- After you have edited a value, the **Save** button will start flashing to indicate that you have “Unsaved” changes. **Save** +  **Keyboard** to save your changes. Once saved, the **Save** button will stop blinking. To avoid being distracting, the **Save** button will only blink when you are in editing mode. If you exit editing mode it will stop blinking and if you re-enter editing mode it will blink again to remind you that you have unsaved changes.
- You can re-load saved changes using **Load** +  **Keyboard**. This will cause you to lose unsaved changes and the **Save** button will stop blinking.
- Defaults are saved in an XML file on your SD card called `PerformanceView.XML` - deleting this file will cause the PerformanceView to revert back to its regular default values for each pad.
- Once you are done with editing mode, press **Back** to exit out to either the **EDITING MODE** sub menu or **PERFORMANCE VIEW** (depending on how you entered the **VALUE EDITING MODE**)

6) You can edit the Parameter assigned to each FX column by entering a **PARAM Editing Mode**. Here are the instructions for Param Editing mode:

Enter using **Shift** +  **Keyboard** button. You will need to cycle passed the Value Editing Mode to enter the Param Editing Mode.

or

Enter using the menu

- Enter PARAM EDITING MODE by pressing down on the **SEL Select** to open up the Perform FX Menu
- In the Perform FX menu, select the EDITING MODE sub menu and press down on Select Encoder to enter the menu
- Change Editing Mode to PARAM

At any time you can Exit out of VALUE EDITING MODE using the **Back** button

Param Editing Mode:

- Param Editing Mode will show you an overview of the parameters that are assignable to the FX columns in Performance View by lighting dimly the shortcut pads for these parameters.
- Parameters that have been assigned to one or more columns will have their shortcut pads lit up bright white.
- Press on a shortcut pad to illuminate the FX columns that that parameter has been assigned to.
- While holding a shortcut pad, press on the FX columns to assign or unassign a parameter to/from a column.
- Press **Horizontal + Back** to clear all existing Parameter assignments.
- When a Parameter has not been assigned to a column, that column will not be lit and will be unusable in Performance View until you assign a Parameter. This applies to editing the values for that FX column as well (assign a Parameter first, then you can edit the values).
- Parameters are saved to PerformanceView.xml. You can manually edit the Parameters in the xml as well, but you must use the exact Parameter names. It is recommended to save a fresh PerformanceView.xml and back it up so you have a record of the Parameter Names.
- Once you are done with editing mode, press **Back** to exit out to either the EDITING MODE sub menu or PERFORMANCE VIEW (depending on how you entered the PARAM EDITING MODE)

7) You can Undo/Redo your changes in Performance View

Default FX and Colour Assignments

- The default Param and Colour Assignments for each FX column in Performance View are as follows
- Note: if you re-arrange the parameters to different FX columns (e.g. using Param Editing Mode), they will bring the colours noted below with them.
- Params marked “Unassigned” below are available to be assigned to a Performance View column with Param Editing Mode.

Column Colour	Column Number	Parameter Name
Red	1	LPF Cutoff
Red	2	LPF Resonance
Red	Unassigned	LPF Morph
Orange	3	HPF Cutoff
Orange	4	HPF Resonance
Orange	Unassigned	HPF Morph
Yellow	5	Bass EQ
Yellow	6	Treble EQ
Yellow	Unassigned	Bass Frequency
Yellow	Unassigned	Treble Frequency
Light Green	7	Reverb Amount
Light Blue	8	Delay Amount
Light Blue	9	Delay Rate
Light Pink	10	MOD-FX Rate
Light Pink	11	MOD-FX Depth
Light Pink	12	MOD-FX Feedback
Light Pink	13	MOD-FX Offset
Dark Pink	14	Decimation
Dark Pink	15	Bitcrush
Dark Blue	16	Stutter Rate + Trigger

8) You can save and load Performance View layouts with your Song

Edit a performance view layout and save song to save performance view layout changes to the song.

The next time your song is loaded it will load the performance view layout changes saved to the song.

Held values are also saved to the song.

Save and Load Patterns

c1.3 Feature

Added ability to save / load Patterns from/to Files. A Pattern represents all notes of the current Deluge screen, including the attributes Velocity, Probability, Lift, Iteration, and Fill. Patterns can be either melodic instruments (Synth, MIDI, CV) or rhythmic instruments (Kit, Drum).

Creating Pattern Files

There are different ways to create Pattern files:

Directly on the Deluge

You can manually enter notes into the Deluge and save them as a Pattern. This works similarly to the standard **Copy/Paste** function, with the key difference that the Pattern is stored on the **SD card** instead of just in the clipboard.

- When you load a Pattern, it is first loaded into the clipboard and pasted once.
- After that, you can paste it onto other screens or even use the **gentle paste** function multiple times.

Converting MIDI Files

Another way to use this feature is by **converting MIDI files** into Deluge Pattern files.

- Two tools for conversion are described in the [Additional Tools](#) section.
- These tools allow you to import simple MIDI files and save them as **Pattern XML files**.
- These XML files can then be copied to the [corresponding folder](#) on your SD card and loaded into the Deluge using the **Pattern Load function**.

Feature Benefits

This feature allows you to build and share your own **Pattern Library** for the Deluge. Here are a few examples of what can be stored as a Pattern:

- A simple Drum-Pattern for a single Drum
- A complex Rhythm-Pattern for a Full Kit
- A simple Melody
- A Chord Progression

- A full Instrument Track

Everything you can think of and what can be copy/pasted can now also be stored and recalled to/from the SD Card.

Folder Structure

You will Find the Pattern Files on the following Structure on the Root of your SD Card:

```
"PATTERNS/RHYTHMIC/DRUM"  
"PATTERNS/RHYTHMIC/KIT"  
"PATTERNS/MELODIC"
```

How To Use it

For Melodic Instruments (Synth, Midi, CV)

- Save Melodic Pattern: **Save** + **Horizontal**
- Load Melodic Pattern: **Load** + **Horizontal**
- Load Melodic Pattern without overwriting existing Notes: **Load** + **Cross Screen** + **Horizontal**
- Load Melodic Pattern without scaling original File: **Load** + **Scale** + **Horizontal**

Remark: If noScaling is set, Pattern will always overwrite existing Notes and start from beginning of the Clip and not at the left Side of the Screen.

Preview of Pattern: Press and hold **Play** while in Pattern-Load Menu

For Rhythmic Instruments (Kit, Drums)

- Save Kit Pattern:
 1. Enable **Affect Entire**
 2. **Save** + **Horizontal**
- Load Kit Pattern:
 1. Enable **Affect Entire**
 2. **Load** + **Horizontal**
- Load Kit Pattern without overwriting existing Notes:
 1. Enable **Affect Entire**

2. Load + Cross Screen + ⬅️Horizontal

- Load Kit Pattern without scaling original File:

1. Enable Affect Entire

2. Load + Scale + ⬅️Horizontal

Remark: If noScaling is set, Pattern will always overwrite existing Notes and start from beginning of the Clip and not at the left Side of the Screen.

- Preview of Pattern: Press and hold Play while in Pattern-Load Menu

- Save Drum Pattern:

1. Disable Affect Entire

2. Select Drum Row to save (Audition)

3. Save + ⬅️Horizontal

- Load Drum Pattern:

1. Disable Affect Entire

2. Select Drum Row to save (Audition)

3. Load + ⬅️Horizontal

- Load Drum Pattern without overwriting existing Notes:

1. Disable Affect Entire

2. Select Drum Row to save (Audition)

3. Load + Cross Screen + ⬅️Horizontal

- Load Drum Pattern without scaling original File:

1. Disable Affect Entire

2. Load + Scale + ⬅️Horizontal

Remark: If noScaling is set, Pattern will always overwrite existing Notes and start from beginning of the Clip and not at the left Side of the Screen.

- Preview of Pattern: Press and hold Play while in Pattern-Load Menu

Hint: After loading a Pattern, the Pattern is also copied into Clipboard and can be pasted (Shift + Learn + ⬅️Horizontal) or gently pasted (Shift + Cross Screen + ⬅️Horizontal) as many Times as needed.

Implemented Features

- save/load of Pattern files for Synths, Midi, CV, Kit and Drums

- Browsing and Preview of patterns (press and hold Play to audition them)
- stretching/compressing of patterns
- paste Gently of Patterns
- Dynamically change Window Size based on original-Pattern size (noScaling)
- supported Note Attributes: velocity, propability, lift, iterance, fill
- If Zoomlevel of the Loading Pattern is not identical to the actual Zoom level, a Popup with the Scaling is shown (Scale-Factor for 7Seg)
- Auto-Creation of Folder Structure

Additional Tools

Under [contrib/midi2deluge](#), you will find two simple Tools - a WebApp and a python Script - that can generate Pattern-Files for the Deluge from simple Midi-Files. Important:The Tools where tested with the [Wikipedia Midifile Sample](#) and may will not work with very complex Midi-Files.

deluge MidiFile to Pattern Converter
COMMUNITY FIRMWARE

Upload MIDI File
Datei auswählen | MIDI_sample.mid
Track Name: Track_2

```
<?xml version="1.0" encoding="UTF-8"?>
<pattern>
  <attributes>
    patternVersion="0.8.1"
    screenWidth="24576"
    scaleType="1"
    yNoteOfBottomRow="40" />
  <noteRow>
    numNotes="5"
    yDisplay="40"
    noteDataWithSplitProb="0x00005D000000001A44401400000000005D300000004A68401400000000005D9000000246D401400000000005D000000001D6D401400000000005EE0000000256840140000000" />
  <noteRow>
    numNotes="23"
    yNote="43"
  </noteRow>
</pattern>
```

Current Zoom: 1/8-Notes
Zoom Out Zoom In
Copy XML Save XML

Track Name: Piano

```
<?xml version="1.0" encoding="UTF-8"?>
<pattern>
  <attributes>
    patternVersion="0.8.1"
    screenWidth="24576"
    scaleType="1"
    yNoteOfBottomRow="33" />
  <noteRow>
    numNotes="1"
    yDisplay="33"
    noteDataWithSplitProb="0x00005FA0000000307C0140000000" />
  <noteRow>
    numNotes="2"
    yNote="38"
  </noteRow>
</pattern>
```

Current Zoom: 1 Bar
Zoom Out Zoom In
Copy XML Save XML

7-Seg Abbreviations

- Save pattern:SAVE
- Load pattern:LOAD
- No Overwrite (aka gently Paste):N00w
- No Scaling:NOSC
- Previwing:PREV

Introduction

The Synthstrom Deluge from [Synthstrom Audible](#) is a compact, all-in-one music workstation with a synthesizer, sampler, and sequencer in a single, portable device. It's designed to let musicians sketch out ideas, create complete songs, and perform live, all without a computer. The grid layout makes it easy to explore melodies, rhythms, and patterns. The Deluge is straightforward to use at a basic level, but also offers incredibly deep features, making it a favourite for both beginner and experienced musicians. With a built-in rechargeable battery, the Deluge is a powerful portable studio.

The Deluge includes an onboard synthesizer engine and a sampler. This means you can create sounds from scratch or sample and manipulate audio. You can layer parts and experiment with textures ranging from punchy drums to atmospheric pads.

Its sequencer is flexible, letting you create complex song arrangements or dynamic jam sessions using the internal synth engine or external gear. You can experiment with Euclidean sequences, conditional note triggers, polyrhythms, and unusual time signatures. The Deluge lets you launch pattern groups, mute sections, and adjust parameters on the fly, so it's great for live performances.

The optional community-driven firmware dramatically expands the Deluge's capabilities with additional synthesis modes, powerful new views and control schemes. Whether you're focused on recording, sound design, or performance, the Deluge provides a unique approach to music-making that can grow with you over time.

Sketching song ideas

The Deluge is ideal for quickly sketching song ideas. You can start with a beat using a drum kit, then layer additional parts, such as a lead, bassline, or chords. You can use the built-in microphone to record vocal ideas in the moment, or sample sounds and textures from your surroundings. You can do all of this from the comfort of your couch or while sitting at a park.

Writing and arranging complete songs

When you have a song that starts to come together, you can build up your song by creating variations for each layer and experimenting with different combinations. When you're ready, group clips into sections to play live or arrange the clips on a timeline to create a complete song structure.

Add a variety of effects to certain layers or your whole song, such as delay, reverb, saturation, and more. Polish your song by adding automatic parameter changes, such as filter sweeps or volume fades. Add "ear candy" to the arrangement using samples for downsweeps, impacts, or any other sound you import.

Live looping

Jam in realtime by recording and looping layers. You can play the synths and samples in the Deluge or record live guitar, vocals, or other gear through the line-in input or built-in microphone. Loop a section while you capture your performance, introduce layers, and change out parts.

Controlling and sequencing external gear

The Deluge can control the other synthesizers, drum machines, effects units, and other devices in your studio using MIDI DIN, USB MIDI, or CV. Sketch out a song using the internal synth engine while on the go, then connect to your home setup and change the layers to use your external instruments instead. Automate program changes to restore the state of your other hardware when you load a song, and sequence control changes to create a dynamic performance. The Deluge can control 16 or more external devices, making it a powerful control centre for your whole studio.

You can also use your external gear to control the Deluge. Connect your full-size MPE keyboard or favourite MIDI controller to play and control the onboard Deluge instruments and any gear the Deluge is connected to using custom-defined MIDI CC mappings for any parameter.

Getting Oriented

Songs are the project files for the Deluge. Songs contain all the file references and settings to make the sounds (internally or externally) you want to play and perform. Only one song can be played or edited at a time so loading a new song will remove access to any previous song information. (Make sure you save your work before loading a song. The Deluge does not auto-save.)

If the song is the container for your audio project then clips are the primary things that you create, edit, and align to fill that container. Clips define the sounds that can be made through audio files (samples) and using the synth engines in the Deluge and can send commands via MIDI or CV (control voltage) to external sound devices. Clips also define the timing of those sounds and commands through sequencing.

Clips on the Deluge can be any length of beats and bars (including fractional beats). Multiple clips can play at the same time but only one clip per track or instrument can play. Layering clips and timing their launch and repeating is the primary method of arranging or performing a sound experience.

This diagram provides an overview of the various components of a Song.

stateDiagram-v2

```
Song --> SongSettings
Song --> SongFX
Song --> Track
Song --> SongFile
Track --> AudioTrack
AudioTrack --> AudioClip
AudioClip --> AudioClipFX
AudioClip --> AudioClipAudioFile
Track --> InstrumentTrack
InstrumentTrack --> SynthTrack
InstrumentTrack --> KitTrack
InstrumentTrack --> MIDITrack
InstrumentTrack --> CVTrack
SynthTrack --> SynthClip
SynthTrack --> SynthTrackPresetFile
SynthClip --> SynthClipFX
SynthClip --> SynthClipAudioFile
KitTrack --> KitClip
KitTrack --> KitTrackPresetFile
KitClip --> KitClipFX
KitClip --> Drum
Drum --> SoundDrum
SoundDrum --> SoundDrumFX
SoundDrum --> SoundDrumAudioFile
Drum --> MIDIDrum
Drum --> GateDrum
MIDITrack --> MIDIClip
MIDITrack --> MIDITrackPresetFile
MIDITrack --> MIDITrackDeviceDefinitionFile
CVTrack --> CVClip
```

SongSettings: Song settings

SongFX: Song FX

SongFile: Song file

AudioTrack: Audio track

AudioClip: Audio clip

AudioClipFX: Audio clip FX

AudioClipAudioFile: Audio clip audio file

```
InstrumentTrack: Instrument track
SynthTrack: Synth track
SynthTrackPresetFile: Synth track preset file
SynthClip: Synth clip
SynthClipFX: Synth clip FX
SynthClipAudioFile: Synth clip audio file
KitTrack: Kit track
KitTrackPresetFile: Kit track preset file
KitClip: Kit clip
KitClipFX: Kit clip FX
SoundDrum: Sound drum
SoundDrumFX: Sound drum FX
SoundDrumAudioFile: Sound drum audio file
MIDIDrum: MIDI drum
GateDrum: Gate drum
MIDITrack: MIDI track
MIDITrackPresetFile: MIDI track preset file
MIDITrackDeviceDefinitionFile: MIDI track device definition file
MIDIClip: MIDI clip
CVTrack: CV track
CVClip: CV clip
```

Song Modes and Workflow

Like many Digital Audio Workstations (DAWs) the Deluge provides two modes to manage clips in the song. The Session mode provides two clip launcher workflows that are oriented towards performance and experimentation. The Arranger mode provides a view that manages the tracks and execution of clips along a strict timeline which is a workflow more oriented towards creating a repeatable project.

stateDiagram-v2

Song --> SessionMode

Song --> Tracks

Tracks --> Clips

Song --> ArrangerMode

Clips --> SessionMode

Clips --> ArrangerMode

SessionMode: Session mode

ArrangerMode: Arranger mode

A song can use both Session and Arranger modes and views to continue to refine a project and there's interaction and sharing of information between the two, but only one mode can be played or performed at a time.

An example high level workflow for working with Songs on the Deluge:

stateDiagram-v2

```
Start --> NewSong: New song <br> [SHIFT] + [LOAD], [LOAD]
Start --> ExistingSong: Load song <br> [LOAD], turn (SELECT)
NewSong --> SessionMode
ExistingSong --> SessionMode
SessionMode --> RowView: Default
SessionMode --> GridView: Optional <br> Hold [SONG] + Turn (SELECT)
SessionMode --> SessionPerformanceView: Perform session <br> Press
[KEYBOARD] to enter
RowView --> EditSong
GridView --> EditSong
SessionPerformanceView --> EditSong
EditSong --> EditClip: Select the clip to edit <br> Hold [PAD] or the row
to edit or select a clip
EditClip --> ClipParameters: Edit clip parameters while in session mode
<br> Hold clip [PAD] and adjust
EditClip --> ClipView: Edit clips <br> Press [CLIP] or [PAD]
ClipView --> EditSong: Continue building a song <br> Option to arrange <br>
Press [SONG]
ClipView --> ClipAutomationView: Edit clip parameter automation <br> Press
[CLIP] to enter
EditSong --> SongFX: Tweak the song FX in session mode <br> Enable [AFFECT
ENTIRE]
EditSong --> ArrangerMode: Capture a full arrangement by recording from
session Mode to arranger mode <br> Press [RECORD] + [SONG]
SongFX --> EditArrangement
ArrangerMode --> EditArrangement
EditArrangement --> ArrangerView: Edit arrangement <br> Press [SONG] to
enter
ArrangerView --> ArrangerAutomationView: Edit arrangement parameter
automation <br> Press [CLIP] to enter
ArrangerView --> ArrangerPerformanceView: Perform arrangement <br> Press
[KEYBOARD] to enter
EditSong --> Save: Save project <br> [SAVE] to save the song.
EditSong --> AudioExport: Export Audio <br> Press [SAVE] + [RECORD]
Save --> End

NewSong: New song
ExistingSong: Existing song
```

```
SessionMode: Session mode
RowView: Session 'Row' view
GridView: Session 'Grid' view
SessionPerformanceView: Session 'Performance' view
EditSong: Edit song
EditClip: Edit clip
ClipParameters: Clip 'Affect Entire' controls
ClipView: Clip view
ClipAutomationView: Clip 'Automation' view
SongFX: Song FX
ArrangerMode: Arranger mode
EditArrangement: Edit arrangement
ArrangerView: Arranger view
ArrangerAutomationView: Arranger 'Automation' view
ArrangerPerformanceView: Arranger 'Performance' view
AudioExport: Audio export
Save: Save
```

Clip Types

There are five types of clips in the Deluge: three that generate sounds using the Deluge's internal synth, sampling, and recording capabilities and two that send synchronized commands to external sound generators.

stateDiagram-v2

```
Song --> Track
Track --> AudioTrack
AudioTrack --> AudioClip
Track --> SynthTrack
SynthTrack --> SynthClip
Track --> KitTrack
KitTrack --> KitClip
Track --> MIDITrack
MIDITrack --> MIDIClip
Track --> CVTrack
CVTrack --> CVClip
```

AudioTrack: Audio track

AudioClip: Audio clip

SynthTrack: Synth track

SynthClip: Synth clip

KitTrack: Kit track

KitClip: Kit clip

MIDITrack: MIDI track

MIDIClip: MIDI clip

CVTrack: CV track

CVClip: CV clip

The two command clip types are MIDI and CV clips. These clips are used to define signals that send note and control voltage signals in addition to timing synchronization (i.e. clock) commands to sound notes on the external equipment. There's also the ability to send non-note commands to the external gear to change parameters and edit the sound while performing.

The three sound generating clip types are Synth, Kit, and Audio clips. Synth clips focus on the sound synthesis engines within the Deluge to create melodic sounds. Kit clips coordinate multiple samples focused on rhythmic sounds and effects. Audio clips focus on playing sampled recorded sounds and resampled internally generated sounds.

Concepts

Song

A discrete creative endeavour, such as an arrangement, sketch, 8-bar loop, jam, live recording template, or musical experiment. A song is always associated with at least one song file on the Deluge.

```
stateDiagram-v2
```

```
Song --> SongSettings
```

```
Song --> SongFX
```

```
SongFX --> SongFXSequence
```

```
Song --> Track
```

```
Song --> Mode
```

```
Mode --> Session
```

```
Mode --> Arranger
```

```
Track --> Clip
```

```
Clip --> ClipFX
```

```
Clip --> ClipAudioFile
```

```
Clip --> ClipNoteSequence
```

```
ClipFX --> ClipFXSequence
```

```
Clip --> Drum
```

```
Drum --> DrumFX
```

```
DrumFX --> DrumFXSequence
```

```
Track --> TrackPresetFile
```

```
Song --> SongFile
```

```
SongSettings: Song settings
```

```
SongFX: Song FX <br> (Song parameter)
```

```
SongFXSequence: Parameter sequence <br> (Arranger Mode)
```

```
SongFile: Song file
```

```
TrackPresetFile: Preset file
```

```
ClipFX: Clip FX <br> (Clip parameter)
```

```
ClipAudioFile: Audio file
```

```
ClipNoteSequence: Note sequence
```

```
ClipFXSequence: Parameter sequence
```

```
DrumFX: Drum FX <br> (Drum parameter)
```

```
DrumFXSequence: Parameter sequence
```

Song settings

User configurable settings that dictate how a song should operate

```
stateDiagram-v2
    Song --> SongSettings
    SongSettings --> Tempo
    SongSettings --> Swing
    SongSettings --> SongScale
    SongSettings --> Macros
    SongSettings --> ClipSettings
    SongSettings --> SectionSettings
    SongSettings --> MIDILearn
    SongSettings --> ThresholdRecording
    SongSettings --> AudioExport

    SongSettings: Song <br> settings
    ClipSettings: Clip <br> settings
    SectionSettings: Section <br> settings
    SongScale: Scale
    AudioExport: Audio <br> export
    ThresholdRecording: Threshold <br> recording
    MIDILearn: MIDI <br> learn
```

Song FX (Master Parameters)

The name of an adjustable value, such as LPF Frequency, that can be manipulated and saved as part the Song and which adjust the output generated by each song component (e.g. clip).

Song file

A file on the SD card that stores all of the information about a song.

Track

A single instrument or layer in a song.

- Each track is either an audio track or an instrument track.

- An instrument track is either a kit instrument track or a melodic instrument track (synth, MIDI, CV).
- All instrument tracks (except for CV) can be saved as an instrument preset file.
- A MIDI track can also be associated with a MIDI device definition file.
- Tracks contain one or more clips.
- Only one clip can be active (playing) in a track at a time.

```
stateDiagram-v2
```

```
Song --> AudioTrack
```

```
Song --> MelodicTrack
```

```
MelodicTrack --> SynthTrack
```

```
MelodicTrack --> MIDITrack
```

```
MelodicTrack --> CVTrack
```

```
Song --> KitTrack
```

```
AudioTrack: Audio track
```

```
MelodicTrack: Melodic track
```

```
SynthTrack: Synth track
```

```
KitTrack: Kit track
```

```
MIDITrack: MIDI track
```

```
CVTrack: CV track
```

Instrument preset file

A preset file can be saved for synth, kit and MIDI instrument tracks.

- A preset file contains track information configured in a clip (such as base parameter values, synth engine settings, kit drum information, samples used), but not all track information.
 - For example, note sequences and parameter automation sequences are not saved in the track preset file (that information is only saved as part of the song file).
 - New in **c1.3** : Note sequence patterns can be saved to and loaded from a pattern file.

```
stateDiagram-v2
    Song --> SynthTrack
    SynthTrack --> SynthTrackPresetFile
    Song --> KitTrack
    KitTrack --> KitTrackPresetFile
    Song --> MIDITrack
    MIDITrack --> MIDITrackPresetFile

    SynthTrack: Synth track
    SynthTrackPresetFile: Synth preset file
    KitTrack: Kit track
    KitTrackPresetFile: Kit preset file
    MIDITrack: MIDI track
    MIDITrackPresetFile: MIDI preset file
```

Synth preset file

Saving a synth preset only saves the synth setting data and sample links. No patterns are stored with synth presets.

Kit preset file

Saving a kit preset only saves the kit setting data and sample links. No patterns are stored with kit presets.

MIDI preset file

Saving a MIDI preset only saves the MIDI track setting data and MIDI device definition file link. No patterns are stored with MIDI presets.

MIDI device definition file

A MIDI device definition file can be saved for a MIDI instrument track.

- A MIDI device definition file includes labels for CC's used to control a specific MIDI device.
- A MIDI device definition file can be linked in a song file and/or MIDI instrument preset file so that the MIDI device definition file can be updated separately but changes are loaded with the Song / MIDI instrument preset files.

```
stateDiagram-v2
```

```
Song --> MIDITrack
```

```
MIDITrack --> MIDITrackDeviceDefinitionFile
```

```
MIDITrack: MIDI track
```

```
MIDITrackDeviceDefinitionFile: MIDI device definition file
```

Clip

A unique instance of a track that stores information required to generate an output (for example, samples, note sequences, parameter automation sequences, and other track settings).

- Each clip is either an audio clip or an instrument clip.
 - Each instrument clip is either a melodic instrument clip (synth, MIDI, CV) or a kit instrument clip.
- Each clip is assigned to a section and clips from different tracks can be grouped by / assigned to the same section.

stateDiagram-v2

```
Song --> AudioTrack
AudioTrack --> AudioClip
Song --> SynthTrack
SynthTrack --> SynthClip
Song --> KitTrack
KitTrack --> KitClip
Song --> MIDITrack
MIDITrack --> MIDIClip
Song --> CVTrack
CVTrack --> CVClip
```

```
AudioTrack: Audio track
AudioClip: Audio clip
SynthTrack: Synth track
SynthClip: Synth clip
KitTrack: Kit track
KitClip: Kit clip
MIDITrack: MIDI track
MIDIClip: MIDI clip
CVTrack: CV track
CVClip: CV clip
```

Audio clip

Audio clips can be used to playback audio samples and/or to process and/or record the audio from external input or internal tracks.

```
stateDiagram-v2
    Song --> AudioClip
    Song --> OtherAudioTrack
    Monitoring --> AudioClip
    AudioFile --> AudioClip
    OtherAudioTrack --> Monitoring: Audio thru / <br> FX processing
    OtherAudioTrack --> AudioFile: Record
    ExternalAudio --> Monitoring: Audio thru / <br> FX processing
    ExternalAudio --> AudioFile: Record

    AudioClip: Audio clip
    OtherAudioTrack: Other internal track
    ExternalAudio: External audio
    AudioFile: Audio file
```

Instrument clip

Instrument clips enable you to sequence patterns by entering events in the sequencer. Without these events, an instrument clip does not generate an output.

Row

- A unique sequencer instance that is associated with a specific drum (for kit instrument clips) or note pitch (for melodic instrument clips).
- The instrument clip row contains information on the notes programmed into the sequencer.
- The instrument clip row also contains information on sequence length and the direction that the sequence should playback.

Note

- The name of an event that can be programmed in an instrument clip row in order to generate audio (for example, a synthesized sound or sample) or non-audio (for example, MIDI, CV, Gate) output.
- Each note has specific parameters that determine when and how a note is to be triggered (e.g. note position, note velocity, note probability, note iterance, note fill, note lift).

Synth instrument clip

The Deluge synth engine allows sound design by configuration of subtractive or FM synthesis, or the playback and manipulation of samples.

- Synth clips are typically used to create a melody for both lead and bass-style instruments.
- Notes are populated across the pad grid with the pitch affected by the up / down position on the grid rows.
- A colour is indicated for the notes on a synth clip and set by pitch.
 - Colour can be edited.

Kit instrument clip

Kits consist of unique outputs per row. Typically based on samples but also may be synthesized sounds, or MIDI or Gate outputs.

- While the obvious and common use of kits is to trigger drum sounds such as a kick or snare, longer loops and non-percussive samples can also be used within kits.
- Kit sounds are mapped across rows of the sequencer - each individual sound is represented on its own row.
- Each row of the clip is coloured independently.
 - Colour can be edited.

Drum

A unique instance of a kit instrument clip row that is associated with a sequence to generate an output. A drum is either an audio drum (synthesizer or sample) or non-audio drum (MIDI, Gate).

MIDI instrument clip

- Placeholder to add information about MIDI instrument clips

CV instrument clip

- Placeholder to add information about CV instrument clips

Section

A clip can only belong to one section. Sections have settings that dictate the number of times a section should playback before stopping or moving to the next section.

- Each section has a distinct colour.
- In session mode, a section groups clips from separate tracks together so that they can be launched together.

- In arranger mode, section colours are used to identify the different clip instances of a track.

```
stateDiagram-v2
    Song --> Section1
    Song --> Section2
    Song --> Section3
    Song --> Section4
    Song --> Section5
    Section1 --> AudioClip
    Section2 --> SynthClip
    Section3 --> KitClip
    Section4 --> MIDIClip
    Section5 --> CVClip

    Section1: Section
    Section2: Section
    Section3: Section
    Section4: Section
    Section5: Section

    AudioClip: Audio clip
    SynthClip: Synth clip
    KitClip: Kit clip
    MIDIClip: MIDI clip
    CVClip: CV clip
```

Clip FX (Parameter)

The name of an adjustable value, such as LPF Frequency, Reverb Room Size, or OSC1 Level, that can be manipulated and saved as part of a clip and which influence the output generated by that clip.

- With exception for MIDI and CV clips, parameters do not generate an output on their own. A trigger, such as the playback of a sample (in an audio clip) and a note event in an instrument clip, is required in order for parameters to impact the output of a clip.
 - Exception: MIDI clips can send MIDI CC parameters, and CV clips can send CV monophonic expression without any note triggers.
- For a Kit, there are two layers of FX:
 1. at the clip level (after all kit sound drum's have been processed); and
 2. at the sound drum level;

- Some parameters can be modulated and automated.
 - Audio clip, MIDI clip, and CV clip parameters cannot be modulated.

stateDiagram-v2

```
Song --> AudioClipFX
Song --> SynthClipFX
Song --> KitClipFX
Song --> MIDIClipFX
Song --> CVClipFX
AudioClipFX --> AudioClip
SynthClipFX --> SynthClip
KitClipFX --> KitClip
KitClip --> KitClipSoundDrumFX
KitClipSoundDrumFX --> KitClipSoundDrum
MIDIClipFX --> MIDIClip
CVClipFX --> CVClip
```

```
AudioClipFX: Audio clip FX
SynthClipFX: Synth clip FX
KitClipFX: Kit clip FX
KitClipSoundDrumFX: Sound drum FX
MIDIClipFX: MIDI clip FX
CVClipFX: CV clip FX
```

```
AudioClip: Audio clip
SynthClip: Synth clip
KitClip: Kit clip
KitClipSoundDrum: Sound drum
MIDIClip: MIDI clip
CVClip: CV clip
```

Audio file / sample

An audio file that can be played back as part of an audio clip or sequenced as part of an instrument clip (excl. MIDI and CV)

```
stateDiagram-v2
    Song --> AudioClip
    AudioClip --> AudioClipAudioFile
    Song --> SynthClip
    SynthClip --> SynthClipAudioFile
    Song --> KitClip
    KitClip --> KitClipSoundDrum
    KitClipSoundDrum --> KitClipSoundDrumAudioFile

    AudioClip: Audio clip
    AudioClipAudioFile: Audio file
    SynthClip: Synth clip
    SynthClipAudioFile: Audio file
    KitClip: Kit clip
    KitClipSoundDrum: Sound drum
    KitClipSoundDrumAudioFile: Audio file
```

Output

The information stored in a clip (samples, notes, parameters) generates an output for a track. An output either generates audio (synthesizer sound or sample) or non-audio (MIDI, CV, Gate).

Modes

Modes provide different ways of working with tracks and clips and contain the configuration settings for which tracks and clips are playing at any given time. They are mutually exclusive, meaning only one mode can be played at a time. Each mode is associated with a View which is the user interface for configuring the mode.

```
stateDiagram-v2
    Song --> SessionMode
    Song --> ArrangerMode

    SessionMode: Session mode
    ArrangerMode: Arranger mode
```

Arranger mode

Allows you to arrange a song chronologically from beginning to end using Arranger View. Each track is represented by a single row on a timeline. The clips for a given track are placed in sequence from left to right.

Session mode

Allows you to work with tracks and clips using two main Session View layouts: Rows and Grid.

Views

Arranger mode

```
stateDiagram-v2
    Song --> ArrangerMode
    ArrangerMode --> ArrangerView
    ArrangerMode --> ArrangerAutomationView
    ArrangerMode --> ArrangerPerformanceView
    Song --> SongFX
    SongFX --> ArrangerAutomationView
    SongFX --> ArrangerPerformanceView

    SongFX: Song FX
    ArrangerMode: Arranger mode
    ArrangerView: Arranger view
    ArrangerAutomationView: Arranger parameter automation view
    ArrangerPerformanceView: Arranger performance view
```

Arranger view

The user interface for interacting with Arranger mode.

Arranger parameter automation view

The user interface for interacting with the automatable song parameters of Arranger mode.

Arranger performance view

The user interface for interacting with the song parameters of Arranger Mode and for muting / unmuteing Arranger tracks.

- Song parameter changes can be recorded as automation in Arranger mode.

Session mode

```
stateDiagram-v2
    Song --> SessionMode
    SessionMode --> SessionRowView
    SessionMode --> SessionGridView
    SessionMode --> SessionPerformanceView
    Song --> SongFX
    SongFX --> SessionPerformanceView

    SongFX: Song FX
    SessionMode: Session mode
    SessionRowView: Session row view
    SessionGridView: Session grid view
    SessionPerformanceView: Session performance view
```

Session Rows / Grid views

The user interfaces for interacting with Session mode.

- You can record a session to Arranger mode.

Session Performance view

The user interface for interacting with the song parameters of Session mode and for launching / stopping session sections.

- You can record as performance to Arranger mode.

Audio clip

```
stateDiagram-v2
    Song --> AudioTrack
    AudioTrack --> AudioTrackInputSource
    AudioTrack --> AudioClip
    AudioClip --> AudioClipView
    AudioClip --> AudioClipFX
    AudioClipFX --> AudioClipAutomationView
    AudioClip --> AudioClipAudioFile
    AudioClipAudioFile --> AudioClipWaveformView
```

```
AudioTrack: Audio track
AudioTrackInputSource: Audio input source
AudioClip: Audio clip
AudioClipView: Audio clip view
AudioClipFX: Audio clip FX
AudioClipAutomationView: Audio clip parameter automation view
AudioClipAudioFile: Audio clip audio file
AudioClipWaveformView: Audio clip audio file waveform view
```

Audio clip view

The user interface for interacting with an Audio clip.

Audio clip parameter automation view

The user interface for interacting with the automatable parameter's of an Audio clip.

Audio clip audio file waveform view

The user interface for interacting with the Audio File loaded into an Audio clip.

Synth clip

```
stateDiagram-v2
    Song --> SynthTrack
    SynthTrack --> SynthClip
    SynthClip --> SynthClipView
    SynthClip --> SynthClipFX
    SynthClipFX --> SynthClipAutomationView
    SynthClip --> SynthClipAudioFile
    SynthClipAudioFile --> SynthClipAudioFileWaveformView
    SynthClip --> SynthClipKeyboardView
    SynthClip --> SynthClipNote
    SynthClipNote --> SynthClipNoteVelocityAutomationView

    SynthTrack: Synth track
    SynthClip: Synth clip
    SynthClipFX: Synth clip FX
    SynthClipView: Synth clip view
    SynthClipAutomationView: Synth clip parameter automation view
    SynthClipAudioFile: Synth clip audio file
    SynthClipAudioFileWaveformView: Synth clip audio file waveform view
    SynthClipKeyboardView: Synth clip keyboard view
    SynthClipNote: Synth clip note
    SynthClipNoteVelocityAutomationView: Synth clip note velocity automation view
```

Synth clip view

The user interface for interacting with a Synth clip.

Synth clip keyboard view

The user interface for interacting with the Melodic Instrument Keyboard Layouts for a Synth clip.

Includes several layouts: isomorphic, in-key, norms, chord, chord library, piano.

Synth clip parameter automation view

The user interface for interacting with the automatable parameter's of a Synth clip.

Synth clip audio file waveform view

The user interface for interacting with the Audio File(s) loaded into a Synth clip.

Synth clip note velocity automation view

The user interface for interacting with the note velocities of a note row in a Synth clip.

Kit clip

```
stateDiagram-v2
    Song --> KitTrack
    KitTrack --> KitClip
    KitClip --> KitClipView
    KitClip --> KitClipFX
    KitClipFX --> KitClipAutomationView
    KitClip --> KitClipDrum
    KitClipDrum --> KitClipSoundDrum
    KitClipSoundDrum --> KitClipSoundDrumFX
    KitClipSoundDrumFX --> KitClipSoundDrumAutomationView
    KitClipSoundDrum --> KitClipSoundDrumAudioFile
    KitClipSoundDrumAudioFile --> KitClipSoundDrumWaveformView
    KitClipDrum --> KitClipDrumNote
    KitClipDrumNote --> KitClipDrumNoteVelocityAutomationView
    KitClip --> KitClipKeyboardView

    KitTrack: Kit track
    KitClip: Kit clip
    KitClipView: Kit clip view
    KitClipFX: Kit clip FX
    KitClipAutomationView: Kit clip parameter automation view
    KitClipDrum: Kit clip drum
    KitClipSoundDrum: Kit clip sound drum
    KitClipSoundDrumFX: Kit clip sound drum FX
    KitClipSoundDrumAutomationView: Kit clip sound drum parameter automation view
    KitClipSoundDrumAudioFile: Kit clip sound drum audio file
    KitClipSoundDrumWaveformView: Kit clip sound drum audio file waveform view
    KitClipDrumNote: Kit clip drum note
    KitClipDrumNoteVelocityAutomationView: Kit clip drum note velocity automation
view
    KitClipKeyboardView: Kit clip keyboard view
```

Kit clip view

The user interface for interacting with a Kit clip.

Kit clip keyboard view

The user interface for interacting with Kit Instrument Keyboard Layouts.

Includes the Drum Velocity layout.

Kit clip parameter automation view

The user interface for interacting with the automatable parameter's of a Kit clip.

Kit clip sound drum parameter automation view

The user interface for interacting with the automatable parameter's of a sound drum row in a Kit clip.

Kit clip sound drum audio file waveform view

The user interface for interacting with the Audio File loaded into a sound drum row in a Kit clip.

Kit clip drum note velocity automation view

The user interface for interacting with the note velocities of a drum row in a Kit clip.

MIDI clip

```
stateDiagram-v2
    Song --> MIDITrack
    MIDITrack --> MIDIClip
    MIDIClip --> MIDIClipView
    MIDIClip --> MIDIClipCC
    MIDIClipCC --> MIDIClipAutomationView
    MIDIClip --> MIDIClipNote
    MIDIClipNote --> MIDIClipNoteVelocityAutomationView
    MIDIClip --> MIDIClipKeyboardView

    MIDITrack: MIDI track
    MIDIClip: MIDI clip
    MIDIClipView: MIDI clip view
    MIDIClipCC: MIDI clip CC
    MIDIClipAutomationView: MIDI clip parameter automation view
    MIDIClipNote: MIDI clip note
    MIDIClipNoteVelocityAutomationView: MIDI clip note velocity automation view
    MIDIClipKeyboardView: MIDI clip keyboard view
```

MIDI clip view

The user interface for interacting with a MIDI clip.

MIDI clip keyboard view

The user interface for interacting with the Melodic Instrument Keyboard Layouts for a MIDI clip.

Includes several layouts: isomorphic, in-key, norms, chord, chord library, piano.

MIDI clip parameter automation view

The user interface for interacting with the automatable parameter's of a MIDI clip.

MIDI clip note velocity automation view

The user interface for interacting with the note velocities of a note row in a MIDI clip.

CV clip

```
stateDiagram-v2
    Song --> CVTrack
    CVTrack --> CVClip
    CVClip --> CVClipView
    CVClip --> CVClipExpression
    CVClipExpression --> CVClipAutomationView
    CVClip --> CVClipNote
    CVClipNote --> CVClipNoteVelocityAutomationView
    CVClip --> CVClipKeyboardView

    CVTrack: CV track
    CVClip: CV clip
    CVClipView: CV clip view
    CVClipExpression: CV clip monophonic expression
    CVClipAutomationView: CV clip parameter automation view
    CVClipNote: CV clip note
    CVClipNoteVelocityAutomationView: CV clip note velocity automation view
    CVClipKeyboardView: CV clip keyboard view
```

CV clip view

The user interface for interacting with a CV clip.

CV clip keyboard view

The user interface for interacting with the Melodic Instrument Keyboard Layouts for a CV clip.

Includes several layouts: isomorphic, in-key, norms, chord, chord library, piano.

CV clip parameter automation view

The user interface for interacting with the automatable parameter's of a CV clip.

CV clip note velocity automation view

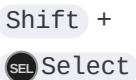
The user interface for interacting with the note velocities of a note row in a CV clip.

Menus

The user interface for interacting with various project settings. More information on the menu's and their structures can be found on the [Menu Hierarchies](#) page.

Menu's are opened on top of a specific view and can sometimes interact with the underlying view.

Here is a summary of the menu's that exist on the Deluge, the view(s) they can be opened from, and whether they can interact with the underlying view.

Menu	Shortcut to Open	Opened from view(s)	Can interact with view(s)?
Settings		Any view	No
Song		Arranger, Session	Only in Configure Macros and Midi Learn submenu's
...	...	...	...

File Browser

The user interface for loading and saving compatible files (e.g. project file, preset file, midi device definition file).

stateDiagram-v2

```
FileBrowser --> SongFile
FileBrowser --> SynthTrackPresetFile
FileBrowser --> KitTrackPresetFile
FileBrowser --> MIDITrackPresetFile
FileBrowser --> MIDITrackDeviceDefinitionFile
FileBrowser --> NotePatternFile
```

FileBrowser: File browser

SongFile: Song
 project file

SynthTrackPresetFile: Synth track
 preset file

KitTrackPresetFile: Kit track
 preset file

MIDITrackPresetFile: MIDI track
 preset file

MIDITrackDeviceDefinitionFile: MIDI track
 device definition file

NotePatternFile: Note
 pattern file

Hardware controls

The controls built into the Deluge hardware that enable a user to interact with the Deluge device. Controls include: Buttons, Pads, and Encoders.

stateDiagram-v2

```
DelugeHardware --> Controls
Controls --> Buttons
Controls --> Pads
Controls --> Encoders
Buttons --> DelugeFirmware
Pads --> DelugeFirmware
Encoders --> DelugeFirmware
DelugeFirmware --> Song
```

DelugeHardware: Deluge hardware

DelugeFirmware: Deluge firmware

MIDI controls

Control commands received from external MIDI hardware that enable a user to interact with the Deluge device.

```
stateDiagram-v2
```

```
    MIDIHardware --> DelugeHardware
```

```
    DelugeHardware --> DelugeFirmware
```

```
    MIDIHardware: MIDI hardware
```

```
    DelugeHardware: Deluge hardware
```

```
    DelugeFirmware: Deluge firmware
```

Diagram

This page provides information on the Deluge's architecture which is used to process inputs and generate outputs.

Community Firmware 1.1

Diagram v0.6 - work in progress, may contain errors

stateDiagram-v2

```
state Voice {
    OscillatorNoise --> Wavefolder
    Wavefolder --> FiltersVoice
    FiltersVoice --> AmplifierVoice
    DefaultModulatorsVoice --> AmplifierVoice: Velocity <br> Envelope 1
    AmplifierVoice --> Saturation
    Saturation --> PanVoice
    PanVoice --> PanClipKitRow: Voice to Clip / Kit Row
}
```

OscillatorNoise: Oscillators & Noise

FiltersVoice: Filters

AmplifierVoice: Amplifier

DefaultModulatorsVoice: Default Modulators

PanVoice: Pan

```
state ClipKitRow {
```

```
    PanClipKitRow --> DecimationBitCrushClipKitRow
```

```
    DecimationBitCrushClipKitRow --> ModFXClipKitRow
```

```
    ModFXClipKitRow --> DelayClipKitRow
```

```
    DelayClipKitRow --> StutterClipKitRow
```

```
    StutterClipKitRow --> AmplifierClipKitRow
```

```
    DefaultModulatorsClipKitRow --> AmplifierClipKitRow: Velocity <br>
```

Envelope 1

```
    AmplifierClipKitRow --> ReverbSendClipKitRow
```

```
    ReverbSendClipKitRow --> CompressorClipKitRow
```

```
    CompressorClipKitRow --> PanClipKitRow: Kit Row to Kit Clip
```

```
    CompressorClipKitRow --> PreFXMix: Clip to Song
```

```
}
```

ClipKitRow: Clip / Kit Row

PanClipKitRow: Pan

DecimationBitCrushClipKitRow: Decimation & Bitcrush

ModFXClipKitRow: Mod FX

DelayClipKitRow: Delay

StutterClipKitRow: Stutter

AmplifierClipKitRow: Amplifier

DefaultModulatorsClipKitRow: Default Modulators

ReverbSendClipKitRow: Reverb Send

CompressorClipKitRow: Compressor

```
state Song {
    PreFXMix --> ModFXSong
    ModFXSong --> DelaySong
    DelaySong --> AmplifierSong
    AmplifierSong --> ReverbSendSong
    Reverb --> FiltersSong
    ReverbSendSong --> FiltersSong
    FiltersSong --> DecimationBitCrushSong
    DecimationBitCrushSong --> StutterSong
    StutterSong --> PanSong
    PanSong --> CompressorSong
    CompressorSong --> PostFXOutput
}
PreFXMix: Pre-FX Mix
ModFXSong: Mod FX
DelaySong: Delay
AmplifierSong: Amplifier
ReverbSendSong: Reverb Send
FiltersSong: Filters
DecimationBitCrushSong: Decimation & Bitcrush
StutterSong: Stutter
PanSong: Pan
CompressorSong: Compressor
PostFXOutput: Post-FX Output
```

Power

You can power the Deluge through the USB port or DC power socket.

The Deluge has an internal battery that can last for over six hours.



Battery shipped with low charge

The internal battery is shipped with a low charge. When you use the Deluge for the first time, connect to a power source to charge the battery.

Turning on the Deluge

- 1 Connect a power source to the USB port or DC power socket.
- 2 Install the SD card with the metal contacts facing up.
- 3 Switch the power switch on the rear of the device to **On**.

Power Sources

USB port

Using the USB port, you can power and charge the Deluge with any USB power source that outputs at least 500mA, such as a computer, USB wall adapter, or powered USB hub. A USB-B to USB-A cable is included.

DC power socket

Using the DC power socket, you can power and charge the Deluge with any centre-negative 9-12V DC power supply that outputs at least 500mA. This type of power supply isn't included, but you can buy one from a variety of manufacturers and shops.



Warning

The 9-12V DC power supply **MUST** be centre-negative (not centre-positive). Using the wrong type of power supply can damage the Deluge.

If the power supply provides enough current, you can connect the Deluge in series with other devices. Internal circuitry minimizes most ground loop noise, but some noise is possible.

If power is connected to the USB port and DC power socket at the same time, the Deluge draws power from the DC power socket.

Battery

Charging the battery

The Deluge has an internal Li-ion battery, providing 6+ hours of life.

The battery charges any time a power source is connected to the USB or DC power socket, whether the Deluge is on or off.

The battery status LED illuminates yellow for charging, green for charge-complete, or red for low-battery.

Please note that your Deluge will be shipped with very little charge in the battery. You will need to plug it into a power source to use it and begin charging the battery.

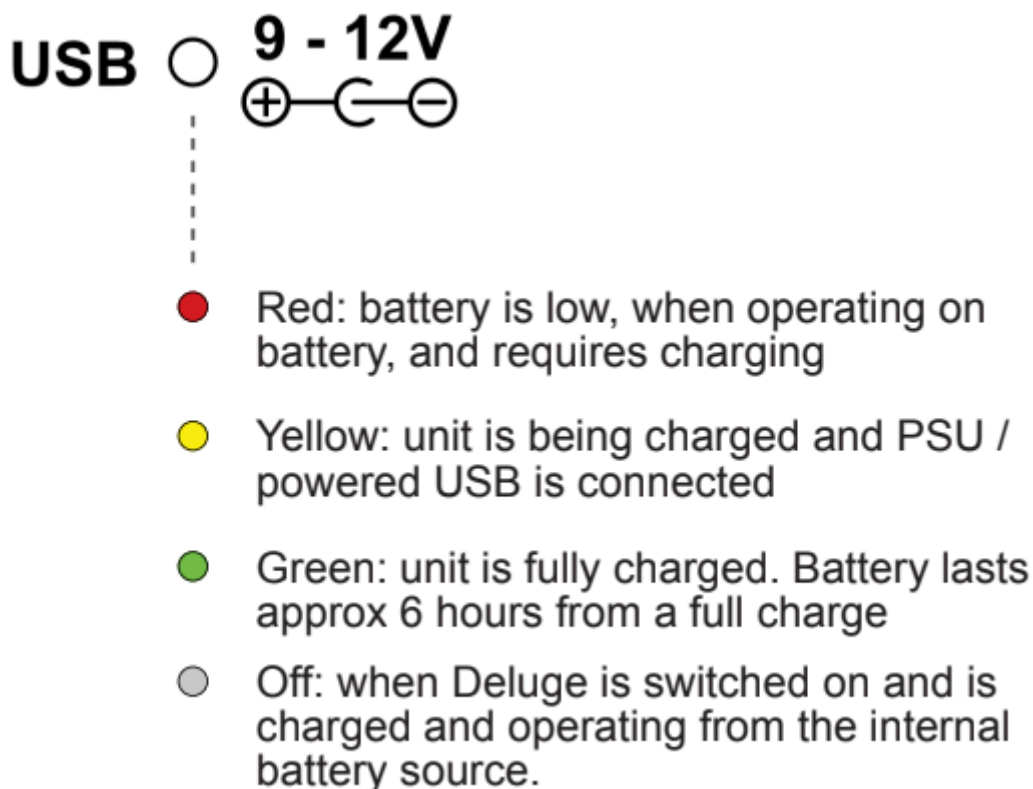


Diagram credit: [SynthDawg](#)

Replacing the battery

The Deluge's battery is an "18650" 3.7V Li-ion, and may be replaced by the user. No special tools or skills are needed.

These batteries are readily available from stores everywhere. A "protected" or "unprotected" type may be used. A battery of any mAh rating may be used - higher mAh ratings simply mean longer battery life.

The original battery is 3000mAh, but you can use batteries of any capacity (mAh rating). Higher mAh ratings simply mean longer battery life.

CPU and Memory

Processing power and CPU management

Deluge does not enforce firm limits on how many tracks or voices may sound at once thus allowing the user as many as they wish. The ultimate limitation will inevitably be based on Deluge's CPU loading especially from concurrent voices or effects. Under conditions of high CPU loading, Deluge will switch off a synth or sample voice to lower its load. Deluge will attempt to do this in the most subtle way possible, preferring to switch off voices which are "releasing", and those which have been sounding for the longest time.

Unaffected sample voices are very light on the CPU. This has been tested with a measure of up to 110 sounding at once. For synth voices, the most simple ones are light enough to allow around 64 to play.

The Deluge's analog-modelled oscillator types and drive filter consume a little more CPU than the other types, but not enormously more.

Considerations for CPU power:

- Analog-simulated delay, time stretching, and pitch shifting (where pitch and time are treated independently - including live audio input) are the highest CPU users.
- All other effects and synth features, though lighter, will add to the CPU's load as well.
- Synths with unison switched on will multiply the amount of processing power that that synth consumes.
- Arpeggiation can generate a lot of CPU-eating voices very rapidly, which can add up if polyphony is on (is set to POLY) and if the release time is long. Try changing these parameters if you notice voices cutting out on your song.
- There is a slight CPU overhead for each sound present in the Deluge's currently loaded song - even if it is not sounding at a given moment. This may begin to affect CPU performance if you have more than 50 to 100 sounds loaded. For this reason, you may wish to refrain from importing large folders of samples as kits where these are not in-fact used. Multi-sampled instruments, count as just one sound regardless of how many separate samples they contain.
- Voice priority can be manually set for a sound, to tell the Deluge which voices to consider (or not) dropping first - see sound editor .
- .aiff and 32-bit floating point audio files have a slight processing overhead, so are less recommended in CPU-heavy projects.
- See sample interpolation / pitch for some additional notes on CPU usage.

Sample Interpolation / Pitch

Whether or not actual "pitch shifting", the process of treating pitch and speed independently, is applied, another process called interpolation is needed anytime a sample needs to be played back at a different pitch, or if its sample

rate is different to the Deluge's native 44.1kHz.

Since firmware V2.1, Deluge utilises 16-point windowed-sinc interpolation for high-quality sample pitch adjustment with minimal aliasing. If you prefer the more "bitcrushed" sound of linear interpolation, which was used prior to V2.1, see the **INTERpolation** setting in the sound editor.

Songs and presets created with pre-V2.1 firmware which include sample pitch adjustment will continue to default to linear interpolation, to keep your older projects sounding the same.

The 16-point windowed-sinc interpolation uses a little more CPU power than the lower-quality linear interpolation, but not very much more, thanks to the hardware acceleration features of the Deluge's CPU. If the Deluge's CPU becomes overloaded, it may revert to using linear interpolation in some cases. It is not recommended that you manually switch to linear interpolation purely for the purpose of saving CPU power - it won't have this effect in all cases.

Sample and RAM management

The Deluge streams audio samples directly off the SD card, meaning there is no practical limit on the amount of sample content that may be used per song, and the user does not have to wait for all sample data to be read when loading a song.

You may eject the SD card at any time, the only adverse effect being that if the Deluge is playing any sample, it may stop, and samples may not play correctly until the card is reinserted.

The Deluge has 64MB of working RAM, which is mostly available to hold the currently loaded song's synths, parameters, and sequenced notes. It's unlikely that the 64MB limit would ever be reached - this would be enough to hold over 2 million notes.

There may be cases, when switching songs, that if both songs contain a lot of samples (i.e. near to the Deluge's 64MB RAM limit), where the newly loaded song may fail to play some sounds for the first couple of seconds. However, the Deluge does everything it can to avoid such a case, by first discarding any not-currently-playing samples in the old song, and if necessary delay the loading of any not-currently-playing samples in the new song until the old song has been discarded completely.

Synth voices vs Samples

The Deluge can handle much fewer samples than synth voices.

Here are some approximate numbers:

- 100 voices for FM and Subtractive based synths without filters
- 60 voices for normal synths

-
- 30 voices for DX7 synths
 - 30 voices for wavetable / very short sample based synths
 - 24 mono (12 stereo) samples streaming at once with a good SD card
 - With regard to samples, the Deluge is limited by how many samples can be read from the SD card at once. For suggestions on the types of SD card's to use, please refer to the SD Card page.

There are also other factors that can lead to reduce synth voice and sample performance:

- Heavy automation use
- Heavy modulation use
- Heavy filter use
- Long sustains
- High polyphony, with lots of note on's triggering at the same time
- Higher bitrate samples (e.g. 32 bit instead of 16 bit)
- Stereo samples (instead of Mono samples)

SD Card

The Deluge uses SD (or SDHC) card storage to load and record audio samples, store presets and save songs. Typically a 16GB or 32GB is recommended, but any size can be used, formatted to FAT32. The Deluge's firmware can also be updated via the SD card.

Updating Firmware

The Deluge's firmware may also be updated via an SD card.

Firmware updates are distributed in the form of a .bin file.

To update the firmware installed on your Deluge:

- 1 Place one of the firmware .bin file in the top-level directory of your SD card (also remove any other .bin file you put there previously)
- 2 Insert the card into the Deluge
- 3 Hold down the shift button while powering on the Deluge.
- 4 The Deluge will display the text "UPDA", followed by a spinning animation which may last up to half a minute or so.
- 5 The Deluge will then display the text "DONE", before booting up on the new firmware, which will now be permanently installed.



Info

There is no risk of damaging your Deluge even if power is lost during a firmware update. You will still be able to perform the process again by repeating the above steps.

File structure

The Deluge's SD card contains the presets for kits and synths in XML format which stores the parameter settings and for kits points to the specific samples used.

Factory library

The Deluge is supplied with a formatted SD card loaded with the factory library. Samples are streamed directly from the SD card when in use, making it an integral part of the device. Ensure the card is inserted in the Deluge when in

use.

Slot

The SD card is used for presets, streaming samples, firmware updates and storage. Any size, formatted to FAT32. Insert pins-up.



Warning

Be careful to slide the SD card in straight and not angled, otherwise the SD card can fall inside the Deluge.

Formatting

For best results format the card with 32kB cluster size.

Card selection

Most consumer SD cards are intended for cameras and video cameras, and the speeds advertised are for reading and writing a single large continuous file. For Deluge what matters is random access speed. This is often not mentioned at all. A1/A2 class is an indication of a card intended for “application use”, and should mean good random access speed. (A2 is not supported by Deluge: the card will work, but isn't going to be any faster.)

While specific testing for Deluge is still in early steps, in addition to the information below you may want to refer to the [recommendations for the Dirtywave M8 tracker](#).

Good cards

- [Kingston Canvas Go! Plus microSD card](#). Tested size 64GB. Note: microSD, not full size! Achieved 9-12 simultaneous streams.
- [Kingston Canvas Go! Plus SD card](#). Achieved 12 simultaneous streams with no dropouts

Decent cards

- Sandisk Extreme Pro. Achieved 6-8 simultaneous streams.

Poor cards

- Verbatim Premium (stock card that comes with the Deluge). Achieved 3-7 simultaneous streams.

Test Procedure

- 1 Export arranger stems for a song
- 2 Load the stems into a kit
- 3 Watch for dropouts (e.g. samples stop playing / get cut).



Info

Doing this test with a Kit is important as audio clips will paper over the dropouts and attempt to resume sample playback, while kit rows will stop playing.

The song must have enough tracks for the total audio size to exceed available memory, 12 stereo tracks at around 1 minute should do it.

Display

There are two dynamic displays for the Deluge. The original Deluge included a seven-segment LED display, but since 2023, the Deluge has shipped with an OLED display.

The display doesn't change what your Deluge can do, but it does affect the way you interact with menus and display information. This documentation supports both displays.

7-segment

Often shortened to "7seg", this display uses red LEDs to show up to four characters at once, as well as a dot indicator (.). Each character has seven segments, similar to an early digital alarm clock.

Display items are often abbreviated to four characters.

On the 7seg display, it's not possible to represent every letter normally. Learning to read the 7seg version of the English alphabet can take some practice, but you can get used to it quickly.

OLED

The OLED display uses white pixels to form letters, numbers, and other information. This allows it to show complete words, multiple rows of information, and indicators (such as your current selection) at the same time.

The OLED display is available as an upgrade for any Deluge with a 7seg display. For more information, see [Deluge OLED](#) on the Synthstrom website.

Ports

This page provides information on the Deluge's physical hardware inputs and outputs used to transmit audio and non-audio data (e.g. MIDI, CV, Gate, Trigger Clock).

Audio

Inputs

Line

For monitoring and recording from another device's line output use the line input TRS 1/4" / 6.35mm connector, which may accept a single-ended / unbalanced signal, a differential / balanced signal, or a stereo signal.

Input impedance: 4k.

Microphone

For monitoring and recording from an external microphone use the 3.5mm / 1/8" jack. Gain is set via the "mic gain" switch, which also affects the internal microphone. Stereo and mono microphones are supported. 4.5V plug-in power is supplied on the tip and ring of the connector, each through a 3.9k resistor.

Outputs

L / MONO and R balanced

The Deluge's main audio outputs are two quasi-balanced (that is, resistor-balanced but not differential) 1/4" connectors. They will work with non-balanced cables too. For best noise rejection, use balanced cables when connecting the Deluge's outputs to balanced / differential inputs.

Output impedance: 47 ohms.

The Deluge will detect if only the "L / MONO" output has a cable inserted (but not the "R" output or headphone output), and will output all sound in mono.

- In this case all panning and ping-pong delay will be deactivated, and stereo samples will be condensed to mono. This allows you to work on your music on a stereo setup, but not necessarily need to change anything if you are faced with a mono setup.

Headphone

This can drive headphones, or can be used to connect other equipment with a 3.5mm / 1/8" connector - perhaps computer speakers or a car stereo.

Non-audio

MIDI

Many functions on the Deluge can be controlled externally via MIDI commands. Common applications of this are:

- Using a MIDI footswitch to control functions such as stopping or launching a clip, or stopping or starting playback, by sending in particular a MIDI note / channel combination.
- Using an external MIDI keyboard to control (play through) one of the Deluge's synths or kits live, or to record notes into a sequence.
- Using an external controller with knobs or faders to control parameters of one of the Deluge's synths or kits, or things like volume (covered separately).

Some MIDI commands are song-specific. With them, you can:



Song-specific MIDI commands

- Launch a given clip or section
- Mute / unmute a row belonging to a clip in clip view
- Play one sound in a kit clip
- Play a synth belonging to a clip.
 - For this, an entire MIDI channel is assigned, rather than just one note in that channel. This allows the synth to be played with a MIDI keyboard. The same function is available for MIDI and CV clips.

Other MIDI commands are "global" - controlling core Deluge features like playback and recording. Of these, some can only be set via the settings menu, but those functions with a dedicated button may be set up more intuitively, as described in this section. These are:



Global MIDI commands

- Play
- Record

- Tap tempo
- Restart
- Loop record
- Undo
- Redo

The process for assigning an external control (the type which will send a MIDI note-on) to a function for which you can see a button / pad is as follows:

- 1 Ensure that your MIDI controller device is appropriately connected to the Deluge - either by physically connecting its MIDI output to the Deluge's hardware MIDI input, or by using software to route the MIDI to the Deluge via its USB connection, or by having the Deluge host a USB MIDI controller.
- 2 Hold down the **Learn** button on the Deluge, and then also hold down the button or pad on the Deluge for the function that you wish to assign MIDI control to - for instance, a "launch" pad (second from right; green or red) belonging to a clip in song view. The button / pad will begin to blink, indicating that you have the option to assign MIDI control to it.
- 3 While holding these two buttons / pads on the Deluge, press the button or key on your MIDI controller that you wish to assign to this function on the Deluge. The button / pad that you are holding on the Deluge should begin blinking pink to indicate that MIDI control is assigned. (In the case of non-pad buttons, they are not capable of flashing pink, but see the next step to verify that MIDI control is correctly assigned to a given button.)

Now that MIDI control is assigned, anytime that you hold down the **Learn** button, whatever buttons or pads that MIDI control is assigned to will blink pink - or just blink their normal colour in the case of non-pad buttons. To un-assign MIDI control from a button or pad, just press it while holding down the MIDI **Learn** button.

And, you can now use the button or key on your MIDI controller to enact whatever function you assigned it to on the Deluge.

An individual sound within a kit clip may be set to be played via a MIDI controller (e.g. a keyboard) by assigning an individual key or button on the MIDI controller to that sound (i.e. row)'s audition pad.

Setting up a MIDI keyboard to play a synth clip the way one would normally play a keyboard, i.e. with each key corresponding to a different note, is a similar process: while in clip view for the track, hold down the learn button, then hold down any audition pad, and then press any key on the MIDI keyboard.

This same process can be used on a CV clip to cause incoming MIDI to control a CV / gate output, effectively turning the Deluge into a MIDI-to-CV/gate converter.

Song-specific MIDI commands are saved along with the song. Global ones, once set, remain the same no matter what song you are working on.

MIDI controllers with knobs that send CC messages can also be set up to control synth and sound parameters in the Deluge.

DIN

The Deluge has two 5 DIN MIDI ports for MIDI Input and Output.

USB

The Deluge's USB type-B connection can be used as a connection to your computer as a USB MIDI device, for use in any software that supports MIDI.

USB host

The Deluge can use its USB type-B connection to act as a USB Host. This requires the Deluge to be DC powered and a USB device connected before the Deluge is powered up.

MIDI implementation chart

Message type	Message description	Transmitted	Recognised
Velocity	Note ON	YES	YES
Velocity	Note OFF	NO	NO
Aftertouch / Pressure	Polyphonic	YES	YES
Aftertouch / Pressure	Channel	YES	YES
Pitch bend	-	YES	YES
CC, general	-	YES (Where numbers assigned by user - see MIDI CC control and sequencing)	YES (Parameter must be "learned" by user - see Assigning knobs to parameters)
Bank select	CC 0	YES	NO
Bank select	CC 32	YES	NO
PGM change	-	YES	NO

Message type	Message description	Transmitted	Recognised
Channel mode	All sound off	NO	NO
Channel mode	Reset all controllers	NO	NO
Channel mode	Local control	NO	NO
Channel mode	All notes off	NO	YES
System common	System exclusive	NO	NO
System common	MIDI Time Code Quarter Frame	NO	NO
System common	Song position pointer	YES	YES
System common	Song select	NO	NO
System common	Tune request	NO	NO
System real-time	Clock	YES*	YES
System real-time	Start	YES*	YES
System real-time	Continue	YES*	YES
System real-time	Stop	YES*	YES
System real-time	Stop	YES*	YES

Message type	Message description	Transmitted	Recognised
System real-time	Active sensing	NO	NO
System real-time	Reset	NO	NO

* Only if MIDI clock output is enabled. See the settings menu.

Outputting MIDI in a Kit

As well as audio sounds, rows in a kit may be set to output a set MIDI note. This makes it convenient to sequence MIDI notes together which might be far apart or even on different channels.

To set a selected kit row to output midi:

- 1 In clip view for a kit clip
- 2 Hold down a row's audition pad
- 3 Press the MIDI button

Once that is set, holding down the row's audition pad will show the MIDI output's info on the display.

Turning the two gold knobs (while still holding the audition pad) will change the channel and note respectively for that row.

CV, gate, and trigger clock ("CLK IN") connectors

For interfacing with analog hardware, the Deluge includes 2 CV outputs, 4 gate outputs (which may also be set individually to output a trigger clock and / or "run" signal), and a trigger clock input.

These all have the signal on their "tip", ground on their "sleeve", and their "ring" connected to ground via a 10k resistor.

CV and gate, to describe them briefly, are an analog means of transmitting monophonic note information between devices. They were common before the advent of MIDI, and are still used on some modern analog hardware, particularly that of modular or boutique varieties. CV (control voltage) represents pitch as an analog DC voltage, and gate (sometimes known as "trigger") indicates whether the note is currently "on" or "off". A CV-gate pair is commonly used together.



Disclaimer

Every effort has been made to research adequately the compatibility and safety of connecting the Deluge's CV and gate outputs to as many varieties of other equipment as possible. However, due to the nonstandard nature of CV and gate and the limitless ways in which users may choose to use these signals, Synthstrom Audible takes no responsibility for any ill effect caused by your use of these outputs. It is up to the user to, for instance, verify whether a given connected piece of equipment will operate correctly and safely given the range of voltages that the Deluge may output.

In particular, if you intend to use one of the gate outputs as a trigger clock, see the warning about output voltage in the trigger clock section below.

CV / gate compatibility and settings

CV and gate are notoriously nonstandard. Different synthesizers expect to see pitch represented with voltage (CV) according to different standards, and their gate / trigger inputs may be either polarity.

The Deluge has been designed to support the widest range of CV / gate standards possible. A number of settings are available in the settings menu.

Each CV output may be set, in 0.01V increments, to any value between 0.01V and 2.00V per octave, or to "Hz per volt".

Analog synthesizer manufacturers typically adopt one of several standards here:

Standard	Used by
Hz per volt	Yamaha and Korg
1V per octave	Moog, Roland, ARP and Doepfer
1.2V per octave	Buchla and EML
0.32V per octave	EMS
0.26V per octave	Used on oscillator 3 of the EMS VCS3

And each gate output may be set to either of:

Gate output type	Description	Used by
V-trig	represents a note being on by outputting a positive voltage (12V or 5V selectable), and outputs 0V the rest of the time.	Roland, Sequential Circuits and ARP
S-trig	represents a note being on by “shorting” out the output to ground. When the note is off, the the Deluge “pulls up” the output’s voltage to 12V or 5V (selectable) with a 10K resistor: this is not a strict part of the S-trig standard but many devices do this and it is believed to be fully compatible and safe (see disclaimer above), and is in fact necessary (*) for Yamaha synthesizers.	Yamaha, Korg and Moog



Switching Gate Output Voltage

The Deluge’s gate output voltage may be switched between 5V and 12V via the small toggle switch located on the Deluge’s top panel by the gate outputs.

The Deluge’s CV outputs’ range is 0V to 10V.

Trigger clock

The Deluge has a “trigger clock” input, allowing it to play as a slave to hardware which outputs a clock signal containing any number of “pulses per quarter-note” (PPQN). It can accept any voltage between 3.3V and 12V. Clock steps are read on the rising edge of the pulses. A device which has a DIN SYNC output could have pin 3 of this connector routed to the tip of the Deluge’s trigger clock input. PPQN can be set, along with an auto-start setting, in the settings menu. For more information about having the Deluge play as a slave to an external clock source (which could also be a MIDI beat clock), see Tempo and syncing.

If you wish to use the Deluge as a syncing master to send a trigger clock signal to other devices, gate output 4 can be set to output a trigger clock signal, and / or gate 3 can be set to output a “run” signal (goes high while playback is occurring; low otherwise). These output assignments are accessible via the settings menu, as is the trigger clock output PPQN setting.



IMPORTANT

Many devices which receive a trigger clock signal, particularly those whose input is a DIN SYNC, aren't happy to receive any more than 5V on these inputs.

- If you wish to interface with such a device, you need to set the Deluge's gate outputs to 5V rather than 12V.
 - See the previous section for instructions on this.

Outputting CV / gate

CV clip

To set a clip to output CV / gate:

- 1 Enter clip view for the selected clip.
- 2 Press the CV button.

It will now be a CV track, as opposed to a synth, kit or MIDI track. Its notes' pitch will be output as a voltage on whichever CV output channel you have selected (turn the select knob to change), and the gate output of the same number will convey whether a note is currently "on" or not.

MIDI-to-CV/gate converter

The Deluge can also act as a MIDI-to-CV/gate converter. To do this, create a CV clip, and then "learn" a MIDI channel to it.

Gate kit drum

Gate outputs (including outputs 3 and 4) can be controlled independently of the CV outputs.

As well as audio sounds, rows in a kit may be set to output on a set gate channel.

This gives access to gate channels 3 and 4, which don't have a corresponding CV output.

To set a selected kit row to output gate:

- 1 In clip view for a kit clip
- 2 Hold down a row's audition pad
- 3 Press the CV button

Once that is set, holding down the row's audition pad will show the gate output's info on the display.



Available gate outputs

- Gate 1 (GAT1)
- Gate 2 (GAT2)
- Gate 3 (GAT3)
- Gate 4 (GAT4)

Note: Gate outputs 3 and 4 will not output notes if their mode is set to either RUN or CLOCK - see the settings menu for instructions on setting gate outputs' modes.

Controls

This page provides information on the physical hardware controls used to interact with the Deluge's firmware user interface. This includes:

- Knobs (Encoders)
- Buttons
- Pads

Knobs

Volume

Adjusting the main volume level

- 1 In any view, turn the (OUTPUT LEVEL) gold coloured rotary control.
- 2 This control adjusts the main output audio and headphone output levels. Care should be taken when adjusting as there is no display or indicator of the current level.

Tempo

Display the song tempo

- 1 In any view, press the  **Tempo** black coloured rotary control.
- 2 The display will indicate the current tempo BPM.

Adjusting the song tempo

- 1 In any view, turn the  **Tempo** black coloured rotary control.
- 2 Tempo changes in incremental +/- 1 BPM Steps. For larger resolution increments press & turn (TEMPO) control. This behaviour can be reversed in the settings under the community features, 'fine tempo knob' parameter.
- 3 The display will indicate the tempo change in BPM (beats per minute).

Adjusting song swing

The Deluge supports swing rhythms, and you can dial in the exact amount of swing that you want.

- 1 Press **Shift** + turn  **Tempo** black coloured rotary control.
- 2 Swing amount is adjusted as a percentage between 1 and 99.



Swing values

- 50 means no swing.
- Values greater than 50 cause every second 16th-note (by default) to be swung late.
- Values less than 50 cause every second 16th-note (by default) to be swung early.
- The swing “interval” is 16th-notes by default, but there is an editable setting for this - see the Settings menu.

Adjusting song sync

The Deluge can be synchronised with other music equipment or software by sending or receiving a MIDI beat clock (via either hardware or USB MIDI) or a trigger clock signal.

The Deluge will begin playing as a slave as soon as it begins to receive a MIDI beat clock or trigger clock (if trigger clock auto-start is enabled - see the Settings menu). While playing as a slave, the tempo cannot be changed, as this is determined by the master device (the device sending the MIDI beat clock).

By default, the Deluge itself outputs a MIDI beat clock on both its hardware MIDI output and USB port whenever it is playing (except when it is playing as a slave). This means that any other connected equipment or software may be configured to play as a slave, treating the Deluge as a master. See the Settings menu for instructions on turning this off if you wish.

If your Deluge somehow ends up out of sync with your other device(s) while playing, you can “nudge” the sync forward or backward in time.

- 1 Hold down  **Horizontal** + turn  **Tempo** .
- 2 One “click” of the tempo knob corresponds to one MIDI “clock” message, which is one 96th-note.
- 3 The Deluge will blink the word “NUDGe” to indicate that the action has been performed.



Sync slave vs. Sync master

- If the Deluge is the syncing slave, then it is its timing that will be nudged in either direction relative to the syncing master.
- If the Deluge is the syncing master, then it will adjust the MIDI beat clock that it is sending so that it is the syncing slave's time which is nudged relative to the Deluge's.
- See Tempo magnitude matching below for additional steps on adjusting tempo sync for master/slave scenarios

The Deluge is also capable of outputting a trigger clock signal - see CV, gate and trigger clock for instructions.

Tempo magnitude matching

When playing as a slave via MIDI beat clock (but not via trigger clock), if the incoming clock is around half or around double the tempo that the user had previously set the song to, then the Deluge will accordingly multiply or divide the tempo of the incoming clock so that the tempo at which the song on the Deluge plays is as close as possible to the tempo that the user had it set to.

This is useful in a couple of scenarios:

- Perhaps the user doesn't understand, or doesn't like to think in terms of, the labelling of time divisions (8th-notes, 16th-notes, etc.) and nonetheless wants to sync the Deluge as a slave without worrying about whether their song will play at the intended tempo rather than twice as fast or half as fast, etc.
- Some loop pedals (though it is a rare feature) have the ability to act as a syncing master by outputting a MIDI beat clock whose exact tempo is determined on the fly according to the length of the loop that the user creates. The user may wish, for example, to record a guitar loop with their loop pedal (with no kind of metronome or anything determining the tempo in advance), and then have the Deluge play a drum beat along to it, perfectly in sync. With a compatible loop pedal, this works. However, the loop pedal would not necessarily know the difference, say, between a loop that the user intended to be at 160bpm, and one intended to be at 80bpm (160 being double 80), and may pick the wrong option. The Deluge, knowing what tempo to approximately expect, can automatically correct the incoming MIDI beat clock if it is around double or half the tempo expected, making it a certainty that the Deluge will begin playback at somewhere near the expected tempo.

If you wish to deactivate tempo magnitude matching, instructions can be found in the chapter on the Settings menu.

Adjust relative speed of Deluge

If the Deluge got it wrong and you find your song playing too fast or too slow relative to the syncing master, then the relative speed of the Deluge can be manually halved or doubled by:

- 1 Hold down **Learn** + turn  **Tempo** anti-clockwise or clockwise, respectively.

Adjust relative speed of Sync Slave

For further flexibility, if the Deluge is the syncing master and some other piece of hardware or software is playing as a slave to it, and you find that the slave is playing at half or double the speed you would have liked relative to the Deluge, the speed of the MIDI beat clock or trigger clock that the Deluge outputs can be changed by:

- 1 Hold down **Learn** + turn **BPM** **Tempo** anti-clockwise or clockwise, respectively.

Select

The **SEL Select** encoder is primarily used to scroll the menu's and to scroll between presets.

Scrolling faster in the menu

While in the menu, you can speed up scrolling by holding **Shift** + turn **SEL Select** knob

Horizontal

Being limited to a 16x8 working area would be quite constrictive.

The Deluge allows the user to scroll and zoom horizontally to allow for longer sequences and / or finer time divisions.

Zooming

By default, each column of pads represents a 16th-note step. Pressing down on the  knob will cause the Deluge to indicate this "zoom-level" on its numeric display: "16th".

Suppose you wish to instead edit "finer" detail in our sequence - 32nd-notes. By holding down the  knob and turning it clockwise at the same time, you zoom in: the notes which had previously occupied the left-hand half of the 16x8 pad grid now expand to take up the whole grid. And the notes which had occupied the right-hand half of the grid are now "offscreen" to the right.

If you wish to see those notes, offscreen to the right, you may scroll horizontally to them (see below).

You may zoom in multiple times in order to access finer and finer detail, all the way to 64th-notes. And you may zoom back out by turning the  knob anti-clockwise - remembering to first press down on the knob.

After zooming back out, you will not be able to see all of the fine "detail" that you created while zoomed in. Pads which "contain" detail which is too fine to see will appear an almost-white colour. Simply zoom back in to expose the detail. Tapping such a pad will delete everything it "contains".

Scrolling

Horizontal scrolling is achieved by turning the ◀▶ knob, but without pressing down on it as with zooming.

Whenever you scroll horizontally, your scroll position is shown momentarily on the Deluge's display as two or three numbers, depending on your zoom level.

- The first is the bar number.
- The second is the beat number within the current bar.
- The third, if visible, is the 16th-note within the current beat.

Playback from Scroll Position

To begin playback from your current scroll position rather than the beginning of the clip, hold down the ◀▶ knob and press play.

Editing clip length

The length of a clip may also be altered. If made longer than the default 1 bar, the clip will extend beyond the length of the "display" even at 16th-notes zoom level, meaning that you will now be able to scroll horizontally at this zoom level too, or even zoom out another zoom level (8th-notes would be next), to see the entirety of the clip.

Editing clip length is achieved by holding the shift button and turning the ◀▶ knob. At each click of the knob, the clip's new length will blink momentarily on the Deluge's numeric display, formatted as three numbers (bars, beats, then 16th-notes). Clips may be any length, including unusual ones - e.g. 15 16th-notes long (which would display as "0.3.3", meaning 3 quarter-notes plus 3 16th-notes).

The clip's length will also be indicated visually: columns of pads which are beyond the clip's end will appear dim and grey. If you extend a clip's length beyond the right-hand side of the current grid, you will be scrolled right automatically to see the new "space" you have created. Or if you reduce a clip's length to half or less of the grid, the Deluge will automatically zoom in to display the remaining area in more detail.

Sometimes you may wish to "multiply" an existing clip's length - that is, to make a copy of the clip's existing sequence of notes, and place that copy after the original. To do this, hold down the shift button and press down on the ◀▶ knob. The Deluge will then automatically zoom out to reveal the entirety of the multiplied clip. When multiplying a clip containing notes with iteration dependence set, the resulting notes automatically have their iteration dependence modified, or are left out entirely, in order to keep the resulting composition sounding the same as the unmultiplied clip wherever possible.

Shifting clips contents horizontally

If you wish to shift all notes and automation in a clip sideways (in the "time" dimension), hold down the ▼▲ knob and turn the ◀▶ knob. Your clip's contents will be moved sideways in steps of one square at your current zoom level. If

the contents move past either end of the clip, they will wrap around and appear at the other end.

Vertical

Being limited to a 16x8 working area would be quite constrictive.

The Deluge allows the user to scroll vertically to allow for more than eight different notes' pitches or sounds

To scroll vertically, turn the ▼ ▲ knob. For synth, MIDI and CV clips, scrolling up will give you access to new “rows” of higher pitches, and scrolling down will give you lower pitches. For kit clips, scrolling vertically will expose additional sounds. Any notes already created which fall offscreen as a result of scrolling will still exist, will still sound when in play-mode, and will reappear when their row is scrolled back to.

Gold

The parameter knobs (the two gold knobs) control parameters of the synthesizer or sampler engine. Each has a level-meter to its left, indicating the current value of the parameter it controls.

Three of the parameter functions are labeled “custom” (1, 2 and 3). The function of these depends on the sound preset.

Custom 1 typically controls pitch for sample-based sounds, or portamento for synth sounds.

Custom 2 and 3 control sample rate reduction and bitcrushing respectively for kits or songs in “affect entire” mode, and for most sample-based sounds.

More parameters are available for editing than just the 16 that you have access to with the parameter knobs. See the chapter on the sound editor for instructions on editing further parameters or remapping the parameter knobs or external MIDI knobs to control different parameters.

Several parameter knob functions have an additional function which can be enacted by pressing down on the knob. Most of these toggle related parameters, notifying the user of the new value via the Deluge's text display.

Parameter knob function / label	Press-down function
Cutoff	Toggles the function of the “cutoff” and “res” function to affect the LPF (default), HPF, or to become treble and bass controls (“EQ”)
Res (resonance)	Toggles the dB/octave slope of the filter between 24dB and 12dB (LPF only)
Delay time	Toggles ping-pong delay (a stereo effect) on (default) and off

Parameter knob function / label	Press-down function
Delay amount	Toggles analog simulation on and off (default) for delay. Note that analog simulation consumes a relatively high amount of CPU power, lowering the number of voices that may sound at once
Sidechain	Toggles sidechain speed between fast (syncd to 32nd-notes) and slow (syncd to 8th-notes)
Reverb	Toggles reverb presets - “small”, “medium”, and “large”. These apply to all reverb in the whole song - not just to the current sound
Mod rate	(Only for “affect-entire” mode for songs and kit clips.) Where mod rate and depth are controlling a modulation effect (chorus, flanger or phaser), the effect switches to the next in that list
Mod depth	(Only for “affect-entire” mode for songs and kit clips.) Where mod rate and depth are controlling a modulation effect (chorus, flanger or phaser), the “mod depth” function toggles between controlling depth, feedback, and offset, depending on the active effect
Stutter	Pressing down on the knob enacts the stutter effect. Releasing it stops the effect. Turning the knob controls the length and speed of stuttering. You can also turn it while held down to speed the short stuttering loop up and down. The stutter effect exists only as a parameter knob function, not in the sound editor menu.

Synth parameter control

For synth clips, the parameter knobs affect the sound of the synth.

Kit parameter control

For kit clips, by default the parameter knobs affect just the sound of the currently selected row. To select a sound, tap the audition pad (far-right) for that row. If you don’t wish for the sound to in fact be sounded audibly while you press it’s audition pad, hold down the shift button first. The currently selected sound is indicated with its audition pad dimly illuminated.

If you wish to instead affect the sound of the entire kit clip, press the “affect entire” button so that it is illuminated. The parameter knobs will now affect the output of all sounds within the kit.

MIDI parameter control

For MIDI clips, the parameter knobs can control parameters on external equipment via MIDI CC

upper  **Gold****lower**  **Gold**

Buttons

... Add Content ...

Play

Playing and stopping a song

- 1 In any view, press [PLAY] the button illuminates green when playing.
- 2 To stop the sequencer press [PLAY] while its running. The button will be unlit and the sequencer resets to the beginning when play is resumed.

Tap Tempo

Setting the Tempo

- 1 Tap the **Tap Tempo** button two or more taps. The button will flash green while tapping.
- 2 Tempo will adjust automatically and more accurately as more taps are captured.
- 3 The display will show tempo settings when tapping.

Toggling the Metronome

- 1 Press **Shift** + **Tap Tempo** . The button will illuminate green to signify that the metronome is turned on.
- 2 The metronome will sound out when the sequence is in play and running. A higher pitch at each bar start and lower pitch on the beat.
- 3 (OUTPUT LEVEL) will adjust the entire volume output and headphone output. This will also affect the metronome volume. The metronome volume level with respect to the main output audio level can be set in the global setting defaults.

- 4 Press **Shift + Tap Tempo** when metronome is on to turn it off. The button will be unlit to signify that the metronome is turned off.

Gold **Param**

Which parameters the gold knobs control (their function) can be quickly switched by the row of 8 buttons indicating options such as volume/pan, attack/release, etc.

Affect Entire

Song

Clip

Keyboard

Synth

Kit

MIDI

CV

Scale

By default, all new synth, MIDI and CV clips are put into scale mode - locked to a major scale. There are many other options, however.

The first alternative worth mentioning is to exit scale mode entirely, by pressing the “scale” button so that it is no longer illuminated. Neighbouring rows of pads will now be only a semitone apart, giving you access to a chromatic scale. Any notes that you previously created, while in scale mode, will still exist, but you will likely see some of them move to a different pad-row as you exit scale mode to make room for a newly-accessible semitone’s row. Remember that you can scroll up and down - this may be even more necessary now that the “working area” has expanded vertically. You can press the “scale” button again at any time to re-enter scale mode.

To change to a different scale, press shift+scale. The Deluge will cycle through the 7 Western-music “modes”, displaying the name of each on the text display: major (ionian), minor (aeolian), dorian, phrygian, lydian, mixolydian,

and locrian. If the Deluge instead displays the error message "CAN'T", this is because the current scale has more than 7 notes. See below for how to create a custom scale - perhaps you did so accidentally.

When re-entering scale mode (pressing the "scale" button when it was not previously illuminated), the Deluge will examine the notes that are present, and make an educated guess as to their scale and the scale's root note / key. For instance, if the Deluge detects the presence of a minor third note relative to the root note, it will be likely to conclude that the scale is minor. Scales on the Deluge will usually contain seven different notes (eight if you count the octave - the same as most Western scales). However, sometimes there will be more notes - for instance, if both a major 3rd and a minor 3rd are present when entering scale mode, both will be added to the scale.

The root note (at every octave) is indicated, anytime that a clip is in scale mode, with its audition pad permanently illuminated. If you wish to change the root note (e.g. if the Deluge guessed incorrectly what root note you intended), simply hold down the "scale" button and press the audition pad (or note on the keyboard if in keyboard view) for the note that you intend. You may do this whether or not you were already in scale mode.

The other way that the scale may be altered and customized is by sharpening or flattening the notes present in an existing scale. So long as you are already in scale mode, you may do this as follows: Hold down the audition pad for a given row / note. The note will sound, and the text display will indicate the name of the note (a dot (.) means "sharp"). While holding the audition pad, additionally hold down the select knob and turn it to sharpen or flatten the note. Most times, you can move a note just one semitone in either direction - any further and it would become the same as the next note in the scale, which is not allowed. If you wish to perform this function without the note sounding as you press the audition pad (e.g. because you're in the middle of a performance), this can be achieved by holding down the shift button before pressing the audition pad.

For songs with multiple clips, all clips that are in scale mode are always locked to the same scale, for convenience. Any change that you make to the scale while editing one clip will affect all others that are also in scale mode. Correspondingly, when the Deluge guesses the scale and root note when re-entering scale mode, the contents of all scale clips will be considered. So if you're wondering why the Deluge threw some extra notes into your scale that you didn't expect, it's likely because you have a different clip which contains those notes!

If you wish to transpose a clip up or down, this can be achieved by holding down the ▼ ▲ knob and turning it. Doing this alone will transpose a whole octave at a time. If you wish to transpose by scale degrees instead, then hold down the shift button as well while turning.

To transpose just the current screen, hold down the ◀ ▶ knob and turn the ▼ ▲ knob. If you additionally hold down the ▼ ▲ knob while turning it, notes will be locked into their current octave for a voice leading style effect.

Transpose will be in scale degrees if scale mode is active and semitones otherwise

Cross Screen

Sync Scaling

For users syncing the Deluge as a slave and wanting to make use of unusual time signatures, sync-scaling is a fun feature. A clip of an unusual time signature may be created by setting its length to an unusual number of beats - e.g. seven 8th-notes. Using sync-scaling, the Deluge, when synced as a slave, can make those seven 8th-notes take up the same amount of time that the incoming MIDI beat clock says that eight 8th-notes are meant to take up.

There are a couple of applications for this:

- The user may wish to create polyrhythms by e.g. having an external device (the syncing master) playing a sequence in 4:4 timing, while the Deluge (the slave) squeezes 7 notes into a bar instead of 8.
- As mentioned above, some loop pedals may act as a syncing master. However, they are likely to assume that any loop created (e.g. with a guitar) is in 4:4 timing. If the user had in fact played a guitar loop in 7:8 timing, the loop pedal would still be outputting a 4:4 MIDI beat clock - dividing the entire loop into, say, fours rather than sevens. The solution is to tell the Deluge to scale the incoming 4:4 MIDI beat clock into a 7:8 one, so that a 7:8 sequence created on the Deluge would play perfectly synced to the 7:8 guitar loop, despite the incorrect 4:4 MIDI beat clock passing between the two devices.

Sync-scaling is tied to the length of one clip in a song, and tells the Deluge that that clip's length should be squeezed into 1 bar of incoming MIDI beat clock (or 2 bars, or 4 or 8 bars, depending on how long the clip is; the Deluge will use whatever magnitude of sync-scaling causes the smallest change in tempo).

To enable sync-scaling:

- 1 Enter clip view for the clip that you wish to tie sync-scaling to.
- 2 Press the sync-scaling button to set this clip as the sync-scaling clip.
- 3 The button will blink continuously, indicating that this is the sync-scaling clip.
- 4 If you leave clip view for this clip, the button will remain illuminated, but will cease to blink, indicating that sync-scaling is active, but not for this clip.
- 5 Sync-scaling may be switched off at any time by pressing the sync-scaling button.

Even while the gDeluge is playing synced as a slave, sync-scaling may be switched on or off, and the sync-scaling clip may have its length changed. Despite any such changes, the Deluge will keep the sync-scaling clip playing in time to the syncing master. It will also attempt to keep all other clips in time; this works best if the other clips are of the same time signature as the sync-scaling clip (that is, their lengths are the same, or half our double, or 4 times shorter or longer, etc.)

Triplets View

Triplets view is activated by pressing the “triplets view” button, and basically changes the pad grid’s function to divide time into threes rather than fours, allowing you to create triplets.

Your zoom level when you enter triplets view makes a difference. Let’s say you were zoomed to be viewing 16th notes (press down on the ◀▶ knob to be reminded of your zoom level). After entering triplets view, rather than each quarter of the 16x8 pad grid giving you 4 columns of 16th-notes, each quarter is instead divided into 3, with the fourth column greyed out and not used in this view. These 3 divisions will total the same amount of time that the 4 divisions previously did, despite looking slightly different.

Or, if you had been zoomed to be viewing 8th notes, the same effect would have been applied to them. Once in triplets view, even if you change your zoom level, same time-division which had previously been divided into 4 remains now divided into 3. If you wish to create triplets for a different time-division (e.g. 8th-notes if you’d previously created triplets for 16th-notes), you may exit and then re-enter triplets view.

Record

Shift

Undo

In the Deluge’s four main views (clip, song, arranger and keyboard), you can undo your most recent editing action by pressing the back button. You may step backward through as many past actions as you like, subject to the Deluge’s RAM capacity. You may also redo by pressing shift+back.

Most actions involving the editing of notes (in clip view), clip-instances (in arranger view), and the recording of notes and automation may be undone and redone. So may the recording of clips and overdubs in song view.

There are also global MIDI commands for undo and redo - particularly useful for foot-control during live looping.

If you enter the sound editor, or otherwise perform an action which can’t be undone (e.g. changing a preset), your undo history will be deleted.

Save

Songs are stored on the SD card. To save a song, press the save button. By default, a new song will be given a number, and you may turn the select knob to change that number. Numbers shown with a dot next to them already have a song saved.

Alternatively, you may begin typing on the Deluge’s alphanumeric keyboard, to give your song a text-based name.

While in this save song mode, you may press the back button at any time to exit.

When a song is saved a subsequent time, its name or number will default to a higher variant.

For numbered songs it will get a letter-based suffix appended - e.g. song 3A. Or for songs with text-based names, a number will be appended to the end - e.g. SONGNAME 2.

Press the save button a second time to save your song with its selected name or number. The song will be saved, and you will be returned to either clip view, song view or arranger view, whichever you were in. Or, if you will be overwriting an existing song, the Deluge will prompt "OVER" on its display - press the save button again to confirm, or the back button to cancel the overwrite.

If you have saved a lot of songs with lettered sub-slots and wish to skip past these when scrolling songs, simply hold down the shift button as you turn the select knob to skip the sub-slots.

Saving may be performed while the Deluge is playing, without interruption to playback.

Collect-media tool

This tool collects together all contents and sample files which a song file uses, allowing you to transfer the song to another SD card, or give it to another Deluge user.

When saving your song, after selecting the slot number, long-press the save button. A context menu will appear with just one option, COLlect. Select that by pressing the save button again. Now, as the song is saved, a new folder is created with the same name as your song file (inside the SONGS folder on your card), containing copies of all your song's samples.

To transfer the song to another card or user, both the song file (e.g. "SONG100.XML") and the song folder ("SONG100") need to be placed in the SONGS folder on the destination card. The song can now be loaded from that card with all its samples.

As soon as a song loaded in such a way (that is, imported from another card) is then re-saved by the Deluge on its new card, the samples are all copied into that card's normal SAMPLES folder - into the same subfolder locations that they had originally been referenced from.

When collecting media in this way, the Deluge automatically adds a string of random characters onto the ends of Deluge-recorded samples, so there won't be confusion / overwriting between Deluge users who all have a different e.g. "REC00001.wav" file present.

Load

Very similarly to saving a song, loading a song is achieved by pressing the load button, which takes you into load song mode, which is also exit-able by pressing the back button. A song number / name is selected by turning the select

encoder, and numbers / names can be navigated and searched using the keyboard. While browsing existing songs, you can see a “preview” of each song on the pad grid. To load the selected song, press the load button again.

Loading may be performed while the Deluge is playing, without interruption to playback. Loading during playback will cause the song to switch perfectly at the end of a loop.

To delete a song, enter load song mode and browse to it with the select knob and/or alphanumeric keyboard. Then press shift+save to access the delete song function. The Deluge will blink the text “DELE”. Press the save button again to delete the song, or the back button to cancel the delete song function.

To create a new, empty song, as if the Deluge had just been switched on, activate the new song function by holding the shift button and pressing the load button. You may do this from song view, clip view or arranger view. The Deluge will blink the text “NEW”, warning that whatever song is currently in memory will be cleared. Press the load button again to clear the song and begin a new one, or the back button to cancel the new song function.

Switching song during playback

The Deluge can switch songs while playing, perfectly on the beat. In fact, this is the default behaviour - simply enter load song mode during playback, select the song you wish to switch to, press load again, and after your new song has loaded, it will become armed to begin playing immediately when the old song completes a loop (when the longest playing clip loops).

As your new song may take up to a few seconds to load if it contains a lot of samples, there is a way to more precisely specify its launch-time, too. After selecting the song you wish to switch to, hold down the load button rather than pressing it momentarily. While holding the button down, the Deluge will load the song, indicating “DONE” when loading is complete. Then only when you release your press on the load button will the Deluge become armed to switch the song at the completion of the current loop.

Just like the arming of clip and sections, the arming of a new song causes the number of remaining complete or partial loops remaining before the launch event to blink fast on the Deluge’s numeric display. For songs, this will be 1 by default, but you can increase it by turning the select knob.

If you wish to maintain the tempo of the old song into the new one, press down on the tempo knob while you press the load button. And if tempo magnitude matching is enabled, then a multiple of the old song’s tempo may be used if it means a less drastic change to the new song’s tempo.

Or, if the Deluge is playing synced as a slave, the tempo will remain the same regardless, with the tempo magnitude matching setting taking effect if enabled.

Pads

... Add Content ...

Main Grid

Mute Sidebar

Audition Sidebar

MPE

MPE overview

MPE is essentially a hack on top of normal midi channels to allow per note pitch bend, aftertouch, and timbre control (cc74). It works by dividing the 16 midi channels into two zones - upper and lower - which can each have 0 to 15 channels in them. This allows a single zone with 15 member channels, two zones with 7 member channels each, or any combination in between. If not all the channels are in use for MPE zones then the remaining channels will function as normal midi channels. This allows configurations like using channel 10 for drums while all other channels are in the upper or lower mpe zone.

An example config might look like this - Lower zone of 7 and an upper zone of 6, leaving channel 9 as a normal midi channel

```
16. Upper Zone Master
15. Upper Zone Member |
14. Upper Zone Member |
13. Upper Zone Member |
12. Upper Zone Member | 6 member channels
11. Upper Zone Member |
10. Upper Zone Member | (last upper zone member)
9.  MIDI Channel 9
8.  Lower Zone Member | (last lower zone member)
7.  Lower Zone Member |
6.  Lower Zone Member |
5.  Lower Zone Member | 7 member channels
4.  Lower Zone Member |
3.  Lower Zone Member |
2.  Lower Zone Member |
1.  Lower Zone Master
```

Configuration

MIDI device

In the deluge MPE is configured per device in the midi menu, at settings->midi->devices->device name->mpe

Zones

The lower option configures the number of channels in the lower zone, and the upper option configures the number of channels in the upper zone. The zones cannot overlap, and any channel between the zones will be normal midi.

Setting a zone to 0 disables it.

This is controlled separately for inputs and outputs. Input settings control whether incoming midi is treated as MPE, and output settings control whether MPE or normal midi get sent to the device

MPE clip settings

Deluge offers some settings to help match external devices. Access these settings by clicking select while in a midi clip

Bend Range

The bend range can be set separately for the master channel and for the member channels. This allows using a pitch wheel alongside MPE. Typical settings are 2 for normal and 48 for mpe. If using a controller with full pitch bend such as the linnstrument or the seaboard this setting must match the controller in order for bends to be in tune

MPE output conversion settings

Deluge offers some output settings to help send MPE to synthesizers that don't implement the full MPE standard

Convert y to CC1

A common partial implementation of MPE receives y axis on mod wheel. Enable this toggle to send y axis as mod wheel (cc1) instead of cc74. This is needed for the dreadbox nymphes, the Sequential 6 series, and the audiothingies micromonsta (and probably more)

Convert to monophonic expression

Deluge can also convert incoming mpe to non-mpe output as best as possible. Settings for this are available in the midi clip menu under poly expression to mono (7seg:POLY). You can choose to convert MPE aftertouch to either channel or poly aftertouch, and choose to convert y axis to mod wheel (will be added to any incoming mod wheel from your mpe zone)

Troubleshooting

Some notes are being missed

The most likely cause is mismatched mpe settings. If the device is sending on more channels than deluge thinks are in the MPE zone then the notes won't sound

Timbre control isn't recognized by my external synth

Some synths need to receive CC1 instead of CC74. In the midi clip setting you can enable Send Y as CC1 (7seg: y->m)

Aftertouch/timbre sometimes applies to all notes

This indicates that the deluge is receiving some notes on its mpe master channel. Make sure your device and deluge agree on what mpe zone is being used

User Interfaces

The Deluge has a number of user interfaces which have been designed to allow the user to interact with the Deluge's various functionality.

What UI you can open / switch to depends on the UI context that a user is currently interacting with. For example, Audio Clip Menu can only be opened when you have are in Audio Clip View.

These user interfaces include:

User Interface	Description
File Browser	For browsing, saving, and loading files on the SD card. Can also be used to create folders and delete files.
Menu	For viewing and changing existing settings, including system defaults and instrument parameters. Also used to launch other UI's and execute UI based actions.
Session View	For interacting with Session Mode. There are two Session View layouts which change the manner of interaction with Session Mode: Row and Grid
Arranger View	For interacting with Arranger Mode.
Performance View	For interacting with Session Mode or Arranger Mode based on the current Active Playback Mode and whether it was opened from Session View or Arranger View.
Audio Clip View	For interacting with Audio Clips.
Synth Instrument Clip View	For interacting with Synth Instrument Clips.
Kit Instrument Clip View	For interacting with Kit Instrument Clips.
MIDI Instrument Clip View	For interacting with MIDI Instrument Clips.
CV Instrument Clip View	For interacting with CV Instrument Clips.
Keyboard View	For interacting with the Sounds of the Active Context from which Keyboard View was opened - e.g. Synth presets if opened from Synth Instrument Clip View, Kit presets if opened from Kit Instrument Clip View. There are different layouts that can be selected to change the manner of interaction.

User Interface	Description
Automation View	For interacting with the Parameters of the Active Context from which Automation View was opened - e.g. Song Parameters if opened from Arranger View, Audio Clip Parameters if opened from Audio Clip View, etc.

Device Files

This page provides an overview of the various device files that are saved on the SD card and contain settings which are loaded automatically or manually by a user using the File Browser.

Some files have a fixed name and file path while others can be renamed and moved around by the user within specified folders based on the file type.

Files saved on the SD card include:

- MIDIFollow.xml
- PerformanceView.xml
- CommunityFeatures.xml
- Song project XML files
- Synth preset XML files
- Kit preset XML files
- MIDI presets XML files
- MIDI device definition XML files
- Pattern XML files

Audio Files

The Deluge supports .wav and .aiff files up to 32-bit / 96kHz.

Its native sample rate is 44.1kHz, so audio files at this rate will play most optimally. .aiff files, and also 32-bit floating point files, have a slight processing overhead, so are less recommended in CPU-heavy projects.

Audio files can be loaded from the SD card for use in two different contexts:

- as audio clips, which play back perfectly synced and time-stretched if necessary to all other clips in the song;
- as samples, which can be sequenced rhythmically or sounded as a live instrument.
 - This option will often involve a kit, made up of many sample-based sounds, or may also take the form of a melodic synth instrument with samples in place of its oscillators - possibly even multisamples..

Audio files are loaded using the file browser (insert link) which allows you to browse the folder structure of the “SAMPLES” folder on the SD card.

- turning the select knob flips through the files in the current folder (playing each one for you to hear);
- pressing down on the select knob:
 - loads the selected audio file into memory; or
 - if a folder is selected then it is entered;
- pressing the back button:
 - goes up a level to the parent folder; or
 - if no higher levels remain, the file browser is exited.
- pressing one of the mute pads:
 - the file browser is exited.
- shift + save:
 - deletes the selected audio file from the SD card;

Audio file tags

Loop points

Some .wav and .aiff files contain tags specifying sample loop points. The Deluge will read these if they are present. See waveform view for further info.

Pitch detection

Some .wav and .aiff files contain tags explicitly stating what note the file contains a sample of. Where these tags are present, they will override the Deluge's own pitch detection. (See sample pitch detection below)

Loading into Audio clip

Much like instrument clips, which play sequenced notes in sync and as part of the currently loaded song on the Deluge, audio clips allow an audio recording to be consistently played or looped, or even recorded, in sync with the Deluge's other functions.

Audio clips will always be time-stretched (or pitch-adjusted if set to link pitch and speed) if needed to keep them in-sync with the song.

Common uses of audio clips on the Deluge include live looping, simple playback of pre-recorded beats or loops as an alternative to sequencing individual notes, or multitrack audio recording.

Audio clips can either be created or recorded in song view (suitable for looping), or created or recorded in arranger view (for multitrack "DAW-like" recording).

Blank Audio clip

If you have opted to create a blank audio clip as opposed to recording audio into one, you are likely to want to load an audio file into it.

From audio clip view, you may enter the file browser by using the "browse" shortcut, or by pressing the select knob to enter the sound editor and navigating to FILE.

Loading into Kit clip

A common way to make use of samples on the Deluge is in a kit clip.

New Kit

If you are in clip view (e.g. immediately after powering on the Deluge), you can create a new, blank kit for your clip by pressing shift+kit. Upon doing this, the file browser is immediately entered, so that you can load your first sample for this new kit.

After loading the first sample for your kit, you will be returned to clip view, where the loaded sample will have been assigned a row of pads, indicated by its green-illuminated "mute" pad.

- You can audition the sample by pressing the row's "audition" pad (far-right).

Samples shorter than 2 seconds will by default have their "MODE" set to "ONCE", to behave as a one-shot sample: any time the sample is triggered, the whole sample will play. Samples longer than 2 seconds will instead be set to

“CUT” mode, to play only as long as the user is holding down the row’s “audition” pad - or as long as a sequenced note is sounding on that row.

Existing Kit

To load further samples into an existing kit (such as the one you created in the step above), hold down the audition pad on an unoccupied (or occupied if you wish) row and press the kit button again. The file browser will be re-entered, and an additional sample may be selected. This process may be repeated as many times as desired.

The file browser may also be manually entered via the sound editor, including the BROWSE shortcut, for a particular existing sound, allowing the user to change its sample but retain all other settings or fx set for it.

Import entire folder of samples

To quickly import all audio files within a folder, create a new kit as above, but when selecting your file, press and hold down on the select knob. You can do this either while “looking at” one of the files within the folder, or the folder’s name itself. A context menu will appear, with options you may select from by turning the select knob. Select the “ALL” option by pressing down on the select knob again. Each audio file within the folder will automatically be placed on a “row” of pads. (You will have to scroll vertically to see them all if there are more than 8.)

Slicer

The Deluge has a basic slicer function, to allow you to create a kit whose sounds are the various evenly-sized slices of one audio file.

To do this, create a new kit as above, but when selecting your file, press and hold down on the select knob. A context menu will appear, with options you may select from by turning the select knob. Select the “SLICer” option and press down on the select knob again. The Deluge will then prompt you to select a number of slices. The default is 16, and you may change this by turning the select knob. Then press down on the select knob again, and your new kit will be created, containing the selected number of slices from your audio file.

Loading into Synth clip

Samples may also be used as the basis for a melodic instrument which, just like any other synth on the Deluge, may have a melody sequenced for it in clip view, or may be played in keyboard view.

Create Single Sample based synth

The most basic case of this would be the use of a single sample - say a note played on a piano - whose pitch the Deluge will then adjust to allow the sounding of any note which the user might play or might appear in the entered sequence.

To create a “synth” instrument on the Deluge which is based on a single sample:

- 1 first ensure you are in clip view or keyboard view;
- 2 then create a new synth by pressing shift+synth. By default this new synth will have just one, square-wave oscillator, and no other filters or effects applied.
- 3 Now hold down any of the audition pads and press the load button.
- 4 Before entering the file browser, the Deluge will ask what “range” of notes we wish to apply this sample to - see multisampling below. The default range is displayed as “BOT-TOP”, or bottom-to-top, meaning applying to all notes. Let's go with this option initially - by pressing down on the select knob.
- 5 The file browser (described above) will then be entered, and you may select an audio file to replace the synth's square-wave oscillator. This is the simpler case of having just one sample - instructions for importing multisamples are below. Once that is done, you will be returned to clip view or keyboard view. When you play a note now, you will hear your selected sample, with its pitch adjusted up or down to sound whichever notes you choose to play. It will be automatically tuned so that a “C” note played on the Deluge truly comes out as a “C” note - see sample pitch detection, below.

Create Multi Sample based synth

When adjusting pitch by more than a few semitones, most acoustic instrument samples will cease to sound like an authentic replication of that instrument, so a common approach is to sample various notes played on that instrument (a piano in our example) - either sampling every single key, or perhaps at some other interval like two keys per octave and having playback of a given note derived by adjusting the pitch of the closest-by sampled note.

- This approach is called multisampling, and is supported flexibly on the Deluge.

To set up an instrument based on multisamples, the easiest way is by importing a whole folder containing your various samples of one instrument.

- 1 first ensure you are in clip view or keyboard view;
- 2 then create a new synth by pressing shift+synth. By default this new synth will have just one, square-wave oscillator, and no other filters or effects applied.
- 3 Now hold down any of the audition pads and press the load button.
- 4 Before entering the file browser, the Deluge will ask what “range” of notes we wish to apply this sample to. The default range is displayed as “BOT-TOP”, or bottom-to-top, meaning applying to all notes. Let's go with this

option initially - by pressing down on the select knob.

- 5 The file browser (described above) will then be entered.
- 6 Press and hold the select encoder for half a second.
- 7 A context menu will appear, blinking several options which you can navigate through by turning the select knob.
- 8 The first option is MULTIsamples. Select this by pressing down on the select knob.
- 9 The Deluge will proceed to import all the samples in the folder, automatically detecting their pitch and setting up their corresponding note-ranges for you. This will work whether you have a separate sample for every single note, or a smaller selection of samples and notes, in which case the Deluge will set up ranges with bounds halfway between neighbouring samples' pitches.

You can also manually edit and set up multisample note ranges.

- 1 When selecting a range (e.g. after pressing the "browse" shortcut), the existing ranges may be flicked through by turning the select knob. They will display in the format of "A2-D2", meaning that the range covers the notes A2 to D2, inclusive of those notes. Sharps are represented with a ".", and "BOT" and "TOP" are used to mean that the range applies all the way to the bottom or the top.
- 2 To edit a note range's bounds, turn the ◀▶ knob to select either the lower or upper bound (it will blink). Then turn the select knob to edit it. The corresponding boundary of the neighbouring range will be moved as well to accommodate the change.
- 3 To insert a new range, hold the shift button and turn the select knob clockwise or anticlockwise to create a new range above or below the currently selected one, respectively. And to delete the currently selected range, press the save/delete button.

Sample pitch detection

The Deluge automatically detects the pitch of all samples loaded into "synth" instruments, using this information to set up multisample note-ranges and adjust transpose so that the correct pitches are played.

The Deluge's pitch detection algorithm gets good results on its own, but will then also compare its results to the sample files' names. If it realises that its pitch detection has got the samples in the wrong order, it will re-evaluate the pitches. For this reason, it's a good idea to have your samples named alphabetically from low notes to high notes. Numbers and note names are taken into account when looking at the order - e.g. the Deluge knows that "B#2" comes before "A3", and that "Eb comes before "E". Only the ordering of the files is important though - the

Deluge does not read the actual note names - just looks at the files' ordering and then uses its pitch detection for the rest.

Some .wav and .aiff files contain tags explicitly stating what note the file contains a sample of. Where these tags are present, they will override the Deluge's own pitch detection.

Single-cycle waveforms

Single-cycle waveforms are very short audio files which represent just one cycle of a waveform.

These are available for all kinds of interesting waveforms which couldn't otherwise be synthesized easily, and are intended to be played back looping as an instrument's oscillator, with pitch (or playback speed) adjusted to sound different pitches.

The Deluge will interpret any audio file loaded into a synth instrument which is less than 20mS in length as a single-cycle waveform, and will set it to loop. It will also look at the waveform's length, adjusting oscillator transpose accordingly so that a "C" note will be played back as one.

You can also manually force the loading of a sample (perhaps a longer one) as a single-cycle waveform.

- To do this, when selecting the audio file, long-press the select knob to bring up a context menu for the file. Select the "SINGle" option. The other options (at least within a synth instrument) are "MULTIsamples", covered above, and "BASic", which loads the sample in the most basic way possible with no pitch detection or single-cycle setup.

Deleting audio files

While in the file browser, you can hold shift and press the save button to delete the selected audio file - it'll prompt you "DELE" first, after which press the save button again to complete the deletion. Take care not to delete an audio file that you have used in other songs.

Sequencer

The Deluge sequencer is used for triggering clip / section launch events and the Deluge's Engine for recording input and generating audio and non audio output when playback is active at the current position of the Deluge playhead.

The sequencer functions differently depending on the context:

- For audio clips, the sequencer triggers the playback of the sample loaded / audio previously recorded, and applies FX (including automation) to the sample and any other audio being monitored through the audio clip (eg internal routing from another clip, or externally from another device).
- For instrument clips (eg synth, kit, MIDI, CV) the sequencer triggers notes placed on / recorded into the sequencer grid. Based on the type of clip and the Deluge Engine's configuration, the Deluge will generate audio and/or non audio output, after applying FX (including automation).

The sequencer can also be configured by the user, affecting its behaviour. The following sequencer configuration options are available:



Sequencer configuration options

- Playhead direction
- Note parameters:
 - position
 - length
 - velocity
 - probability
 - iteration
 - fill
 - repeat
- Randomizer
- Arpeggiator
- Automation parameters:
 - position
 - length
 - value

Playhead direction

You can set the playhead direction for all rows in a clip or independently for specific rows in a clip.

The available sequencer playhead direction options are:

- **FORWARD.** Will play the sequencer from the start - left to right. This is the normally expected playback behaviour.
- **REVERSE.** Will play the sequencer in reverse where the start will be the end of the sequence - right to left.
- **PING-PONG.** Will play the sequencer firstly from the start - left to right, then at the end will reverse back right to left.
- **NONE.** This sets the current row direction to operate based on the global clip direction setting.

Setting the sequencer playhead direction for all rows in a clip

- 1 Press [CLIP] to select clip view. This is indicated by the clip button illuminated blue.
- 2 Press [SHIFT] + [DIRECTION] to open the setup menu options. The button will flash and the display will indicate the current play direction. The default is Forward.
- 3 Turn (SELECT) to choose the desired direction from the available options.
- 4 Once the direction is selected, press [PLAY] to start playback. Button is lit green. Press [PLAY] again to stop the sequence. Button is off.

Setting the sequencer playhead direction for a specific row in a clip

- 1 Press [CLIP] to select clip view. This is indicated by the clip button illuminated blue.
- 2 Hold [AUDITION] + [DIRECTION] to open the setup menu options. The button will flash and the display will indicate the current play direction. The default is Forward.
- 3 Turn (SELECT) to choose the desired direction from the available options.
- 4 Once the direction is selected, press [PLAY] to start playback. Button is lit green. Press [PLAY] again to stop the sequence. Button is off.



Note regarding Kits

Kit rows can be set to have independent direction control settings. Independent direction for rows are set in a KIT and when [AFFECT ENTIRE] is set to OFF. To set the global direction for all rows

in a kit clip, set the direction setting while the [AFFECT ENTIRE] option is set to ON. This will therefore apply the direction to all rows.

Note sequence

Editing

Powering on the Deluge automatically creates a blank song with one blank clip with a synth assigned to it, and puts the device into clip view for this clip.

In this view, the main 16x8 grid of pads represents a piano-roll-style view of the sequence of notes that the track contains.

The leftmost column of pads represents the first beat in the sequence, while the columns further to the right represent increasingly later points (steps) in time.

Vertically, pitch is represented (except for kit clips) - the bottom row of pads represents the lowest note on display, and higher rows represent increasingly higher notes.

Pressing the Deluge's play button plays the entered sequence.

With each row representing a different pitch, the user may wish to audition any of the available pitches before actually placing those notes in the sequence.

This can be achieved by pressing the very rightmost pad (the "audition" pad) for a given row.

Notes in the sequence itself may be created by pressing a pad in the main 16x8 group corresponding to a pitch and a moment in time. The pad will light up to indicate the presence of a note. If the Deluge is not in play-mode, the note will sound immediately, as an aid to the user. This will not happen if the Deluge is in play-mode, when the user might be in the middle of a performance and would likely prefer for their editing to be allowed without additional audible aids.

Editing notes in this way may be undone or redone by pressing back or shift+back respectively - see undo / redo.

The colour of the notes on display is arbitrary, and may be changed by the user. This is handy when the user has created multiple clips and wishes for them to appear as different colours in song view.

Simply hold down the shift button and turn the ▼ ▲ knob to change the colour of a clip.

To adjust the brightness of the Deluge's LEDs, hold down the shift button and the learn button and turn the ▼ ▲ knob.

Editing cross-screen

Suppose you have a simple drum beat, 1 bar long. Perhaps you want to add a couple of extra snare hits at the end of each 4-bar phrase. The way to achieve this is to “multiply” the sequence (twice) so that it is 4 bars long (see Editing track length), and then make whatever changes you wish to the final bar. However, you have now ended up with 4 duplicates of almost the same beat, and this could cause problems: what if you want to change, say, the hi-hat pattern - do you have to go and do it 4 times?

This is the situation in which the Deluge’s cross-screen edit mode is helpful. At any given zoom level, if you enter cross-screen edit mode, then any editing you do will apply not only to the part of the sequence that you are currently scrolled to, but also to all other “screens” which could be scrolled to by turning the ◀▶ knob.

So, continuing the above example where you have 1 bar copied 4 times to make 4 bars total, you would zoom so that 1 bar occupies the entire 16x8 grid (that’s the 16th-note zoom level), then enter cross-screen edit mode. Any changes you subsequently make to your 1 bar will then be applied to all 4 bars.

Cross-screen edit mode always remains functionally locked to the zoom level you were at when it was activated. Continuing the example, even if, while in cross-screen edit mode, you zoomed in so that just half a bar now occupied the 16x8 grid, your edits would still be applied on a per-bar basis, not a per-half-bar basis.

Clips individually remember whether, and at what zoom level, they have cross-screen edit mode applied - if you enter the mode for one track, it will not automatically be active for any other track that you then edit.

Recording

See recording (insert link)

Deleting

Tapping a pad for which a note is already present will delete the note.

A clip may have all its notes cleared by holding down the ◀▶ knob and pressing the back button.

Copying and pasting

The Deluge allows you to copy and paste the notes in the time-region occupied by its pads (the “current view / screen”) at your current scroll and zoom position.

To copy notes, hold the learn button and press down on the ◀▶ knob.

To paste notes, hold learn and shift, and press down on the ◀▶ knob.

You can copy and paste between different clips or even song files. The part which is copied and pasted is the horizontal “length” of your “view”, or the time-region that your view makes up. This will also include notes which are “offscreen” above or below what you can see, because these are in the same time-region. Your vertical scroll position is taken into account. You could “transpose” a part by copying it, scrolling up or down, then pasting it.

You can even change your zoom level after copying and before pasting: if your zoom level is different when you paste, the notes will be stretched out or squeezed in to fit your new zoom level.

Note parameters

Several basic parameters of notes can be changed. Some can be changed in settings, others can be changed in the sequencer. Parameters include: position (quantization), length, velocity, probability, iterance, fill, and repeat.

Position

Nudging individual note horizontally

- 1 Hold [PAD] + Press and turn (SCROLL ◀ ▶) to nudge the selected [PAD] note event forward or backwards, indicated by +/- values.
- 2 This will nudge at the song's minimum resolution, default is 384th notes.

Adjusting the position of all notes in a clip horizontally

- 1 Press (SCROLL ▼ ▲) + Turn (SCROLL ◀ ▶) control to adjust the clip note events i.e. notes and automation move horizontally across the grid.
 - The note events will move 1 step incrementally across the horizontal grid. The steps are based on the zoom level.
 - Note events which scroll off the edge left or right will wrap back onto the grid from the opposite side.
 - Placeholder: talk about how you can disable moving automation in clip view.

Adjusting the position of all notes in a note row horizontally

- 1 Hold [AUDITION PAD] + Press and turn (SCROLL ◀ ▶) to adjust the note row events i.e. notes in a specific row move horizontally across the grid.

Quantizing / Humanizing Instrument Clip Rows

This is a destructive process and the option is set ON by default in the Settings > Community Features.

- 1 Select [CLIP] view, button lit blue.
- 2 Hold the [AUDITION] + Turn (TEMPO) clockwise to quantize the selected row or counter clockwise to humanize the selected row.
- 3 Hold any [AUDITION] Pad + Press & Turn (TEMPO) clockwise to quantize the all rows or counter clockwise to humanize all rows.

Length

At any zoom level, in most cases, a note created on a given pad lasts up until the “start” of the next pad to the right. Or in other words, if you are zoomed such that you are looking at 16th notes (press down on the ◀ ▶ knob to be reminded of your zoom level), then the pads are spaced apart by 16th notes and all notes created will be a 16th note long.

(It should be pointed out that for longer samples such as many of those provided in the Deluge’s supplied kits, notes longer than one pad will automatically be created - see Kit clips.)

To manually create a note which is longer, hold down on the note’s pad, and then press some other pad further to the right on the same row. The note will extend to occupy all pads in between. You will notice that only the leftmost pad occupied by the note is brightly coloured - the other pads are dimmer. This is to indicate that they are the extension of an existing note, rather than representing a new note beginning on that pad.

A long note may be shortened by “deleting” the portion of it that falls beyond a certain pad which it currently occupies, by simply pressing that pad.

Note that some sound presets do not allow notes’ length to be altered. Those consisting of short, percussive sounds (e.g. drums), are intended to always sound the same, without note-length as an option. In these cases, notes will always appear to occupy just one pad at all zoom levels.

Since the Clip view edits a sequence which will play repeatedly, it is foreseeable that you may wish to create a note which begins toward the end of the sequence, and extends so that it continues back into the beginning of the sequence - to continue sounding even after the sequence has restarted. To do this, create the note at the point in time where you wish it to begin, and then (even after scrolling or zooming if you wish) hold down on the ◀ ▶ knob and press the final pad that you wish the note to occupy (this will presumably be to the left of where the note started).

For a “drone” note which stays on permanently, simply create a note which occupies the entire length of the clip (enter a note at the first, leftmost column, then hold ◀ ▶ while pressing the last pad at the rightmost column). The Deluge treats such notes as a special case, and will keep the note permanently sounding rather than restarting it each time the clip’s sequence loops.

Set length when entering notes

- 1 Press the note START [PAD] + END [PAD] on the same row.



Note

For kits, samples will automatically map across the pads matching the sample length.

Reduce note length

- 1 Reduce the note length by pressing one of the extension [PAD]'s to shorten it.

Extend note length across multiple sequencer grid pages

- 1 Press the [PAD] for the note start.
- 2 Scroll to the next grid view 'page' using (SCROLL ◀ ▶). This would be further in time from the original note.
- 3 On the same row, press (SCROLL ◀ ▶) + [PAD] at the end position.
- 4 The note will be extended across the 'page'.

Create a 'drone' note / note equal to clip length

- 1 Press the [PAD] for the note start on the first column (left position) of the clip.
- 2 On the same row, press (SCROLL ◀ ▶) + [PAD] at the last column (right position).
- 3 The note will be extended across the full clip.
- 4 Deluge will ensure that these type of notes play continuously through the clip and will loop. This is handled as a special case and the note does not restart.

Velocity

The Deluge's pads are not velocity-sensitive, but notes created as part of a sequence may have their velocity manually edited. To do this, hold down the pad corresponding to a note and turn the ◀ ▶ encoder. The velocity value will show on the Deluge's numeric display. Velocity values range between 1 and 127.

Newly created notes, and notes sounded with the audition pads, will default to the same velocity as the last sequence-note touched on that clip - with 64 being the initial default.

For those not familiar with the concept of note velocity, it is intended as an electronic representation of the physical force with which a note is played (e.g. how hard a guitar string is plucked). With electronic music equipment in general, the resulting effect is most commonly a difference in volume. This is how most of the Deluge's included synth and kit presets are set up to respond to velocity. However, velocity can in fact be patched to almost any parameter in the

Deluge's synthesis- and sampling engine, making it simply a tool with which you can make different notes sound different, in any way you care to configure. See the modulation section in the chapter on the sound editor

You can hold multiple notes simultaneously to edit their velocity together.

Any notes recorded via MIDI will have their velocity recorded.

Editing

Hold a note

- 1 After a pattern has been recorded, notes will be at a default velocity level.
- 2 Press & hold one or more [PAD]'s for the note to change and turn (SCROLL ◀ ▶).
- 3 The system default velocity is 64, however the velocity used on the last note entry / edited will be applied to the next note entered.
- 4 Velocity will be displayed and its value.

Note editor

Velocity can also be changed in the Note Editor.

placeholder for more info

Velocity view

Velocity can also be changed in Velocity View.

placeholder for more info

Probability, Iteration Dependence, and Fill

The Deluge allows each sequenced note to have a condition set to decide, at each playback iteration (i.e. repeat), whether that note plays or not. These may be based on an element of randomness, ("probability"), dependent on how many times the clip has played through (e.g. "play only on the third of every four iterations") and/or whether a fill-condition is met.

To set a probability or iteration dependence for a note, hold down its pad and turn the select knob. (Anti-clockwise for a probability, which will display as a numeric percentage, or clockwise for an iteration dependence, which will display in the form of "3of4" which would mean the 3rd out of every 4 repeats).

For notes at the same time (horizontal) position, if their given probabilities add up to 100, then a special function is performed: always exactly one of the notes will play, as opposed to the notes' probabilities being treated independently.

This allows you to have a point in your sequence where, at random at each iteration, one of several different potential notes will sound - but never more than one of them.

There is another special function, for notes at the same time (horizontal) position that have the same probability number: they will always either all play together, or all not play - so you could have a whole chord which either all plays, or all doesn't play. (Make sure that the note's probabilities don't add up to 100, otherwise the previous paragraph's logic will apply instead.)

Notes' triggering may be set to depend on an earlier note in the sequence being triggered. Let's say you've set a note's probability to 70%. If you make another note at a different time-position and set its probability to 70% also, you'll notice that you're offered an additional option - a 70 with a dot (.) after it. This means "trigger me only if the previous 70% note was successfully triggered". There will additionally be an extra option of 30% with a dot after it, which in this case will mean "play me only if the previous 70% note was not triggered". (30% being 100% minus 70%.)

As a shortcut to automatically set up the above for you, you can hold multiple notes simultaneously (even at different time-positions) and turn the select knob to set them to always play together.

In addition to setting a note's probability and iteration dependence, you can also set a note's fill condition to "FILL" or "NOT-FILL". When a Note is set with a "FILL" condition, it will only play if the FILL command is active. Conversely, if a note is set with a "NOT-FILL" condition, it will only play if the FILL command is inactive.

Prior to c1.3, probability, iteration dependence, and fill conditions were mutually exclusively meaning that only one condition could be set for a note at a time.

As of c1.3, a note may have multiple conditions set for probability, iteration dependence, and fill.

Probability

- placeholder *

Iteration

- placeholder *

Fill

- placeholder *

Repeat

- 1 After a pattern has been recorded, notes will be trigger individually
- 2 Hold [PAD] + Press & turn (SCROLL ▼ ▲). [PAD] is the note to repeat.

- 3 The value selected will determine the number of repeats to assign to the selected note, positioned equally in the time interval of the pad.

Randomizer

- placeholder *

Arpeggiator

- placeholder *

Automation sequence

Above, we looked at how to affect sound parameters using the gold parameter knobs. These are useful to play with live, to achieve effects like sweeping a filter's frequency up and down.

But you can also automate changes to any parameters (within clips and also in arranger) that the parameter knobs may control (except stutter), so that their values change automatically. (And the parameter knobs can be set to control almost any of the Deluge's internal sound parameters, or parameters on external equipment via MIDI CC messages.)

When the clip is then played back (or when it loops back to its start - potentially very soon), you will hear the automated parameter movement play back and see the level-meter for the corresponding parameter knob move automatically.

Once a parameter has automation applied in some region of a clip, the Deluge considers the parameter to be automated entirely, with its previous unautomated value applying in all other regions. It is also worth noting that all parameter automation, once created, exists independently of any notes, meaning that even if notes are deleted, or more notes added, the parameter automation will still exist in its region.

Automation edits and recording can be undone or redone by pressing back or shift+back respectively - see undo / redo.

Editing

Hold a Note

Automation can be manually set for a time-region based on a note which is present in the sequence. Simply hold down the note's pad in clip view, and turn a parameter knob. The parameter value will be set just for the region of time beginning at that note and ending at the start of the next note. Having the region extended to the start of the next note

in this way is helpful in many cases, preventing a return to the original parameter value from cutting in suddenly as the note's sound releases.

Automation can also be manually set using an external MIDI controller, if a parameter is set up to be controlled in this way.

Automation View

- placeholder *

Recording

See recording (insert link)

Deleting

To delete all automation for a given parameter, hold down the “shift” button and press down on the parameter knob for that parameter. Or, if the parameter was instead controlled via a knob on an external MIDI controller, automation may be deleted by putting the Deluge into record mode with playback on, holding down “shift”, and turning the knob on the MIDI controller.

A clip may have all its automation cleared by holding down the ◀▶ knob and pressing the back button.

** add note about automation view **

Copying and pasting

Parameter automation may be copied and pasted in a similar way to notes (see above).

Automation is copied one parameter at a time, and just for the time-region occupied by the Deluge's pads (the “current view”) at your current scroll and zoom position.

To copy an automated parameter, hold the learn button and press down on the gold parameter knob belonging to the parameter.

To paste automation to a parameter, hold learn and shift, and press down on the parameter knob.

You can copy and paste between different parameters, different tracks, and even different song files. The part which is copied and pasted is the horizontal “length” of your “view”, or the time-region that your view makes up.

You can even change your zoom level after copying and before pasting: if your zoom level is different when you paste, the automation will be stretched out or squeezed in to fit your new zoom level.

Automation parameters

Engines

This page provides an overview Deluge Engines which generates Audio and Non-Audio Output. This includes:

- Synth / Sample Engine
- MIDI Engine
- CV / Gate Engine

Playback

The Deluge has two mutually-exclusive playback modes which decide how the Deluge's sequencer should operate, including what clips exist and are playing at any given moment when playback is active.

Only one playback mode can be active at a time.

The Deluge's two playback modes are:

Mode	Description	View
Session	Session mode consolidates all clips into a compressed view, with each clip shown as a row (row view) or as a single pad in a track column (grid view).	Session (Row) View, Session (Grid) View
Arranger	Arranger mode allows the chaining of clip instances into a longer more linear arrangements. each row represents a track (which has one synth or kit instrument or MIDI or CV channel, or is an audio track). Many clips may share that same track, and instances of any of these clips may be placed along that same track's row.	Arranger View

Each playback mode has an accompanying View, which is the User Interface for configuring each mode, including creating new clips and editing / deleting / launching / stopping / arming existing clips.

Session Mode

To enter the Session playback Mode:

- 1 Open Session (Row) View or Session (Grid) View
- 2 If playback is not already running, start playback.
- 3 If playback is already running and the current playback mode is Arranger Mode, restart playback.

Arranger Mode

To enter the Arranger playback Mode:

- 1 Open Arranger View
- 2 If playback is not already running, start playback.

-
- 3 If playback is already running and the current playback mode is Session Mode, restart playback.

Recording

The Deluge supports several Audio and Non-Audio recording workflows:

Audio / Non-Audio	Workflow	Description
Audio	Live	Record internal/external Audio directly into Audio clip and save to SAMPLES/AUDIO folder on SD card
Audio	Sampling	Record external Audio directly into Synth/Kit clip and save to SAMPLES/RECORD folder on SD card
Audio	Resampling	Resampling the Deluge's output to SAMPLES/RESAMPLE folder on SD card
Audio	Exporting	Live and offline export of audio for tracks and clips to SAMPLES/EXPORTS folder on SD card
Non-Audio	Live	Used to record notes / automation into the sequencer

Resampling / recording the Deluge's output

The Deluge can record its audio output to a file on the SD card. This is useful both as a sonic tool, where the user may create interesting sounds on the Deluge and “resample” them for further use, or to allow the user to make high-quality recordings of compositions or performances.

This is not to be confused, though, with live looping, one use of which allows the Deluge's output to be recorded into an audio clip.

There are three ways to begin output-recording, during which the record button will blink fast:

- Pressing shift+record begins output-recording instantly.
- To begin output-recording at the exact same instant that playback is begun, press record+play.
- To begin output-recording at the exact same instant that a voice is sounded, hold down record and press an audition pad (or one of the main pads if you're in keyboard view).

To stop output-recording, simply press record again. Or, if you wish for it to stop at the exact instant that a loop finishes playing, press record+play (again - if you began output-recording with this combination).

Recorded WAV files will appear in the SAMPLES/RESAMPLE folder of the SD card. Also, after you've made a recording in this way, the next time you are taken to the file browser, you will be defaulted to your new file, allowing you to easily add it to a kit or as an audio clip.

Count-in

A recording count-in may be enabled in the settings menu. With it enabled, then anytime you begin playback (with Deluge as “master”) with the record button illuminated, the Deluge will do an audible 4-beat count-in first.

Arming to Record

Session View

All clips are armed by default to record when they are empty (meaning no audio file for an audio clip).

You can view and set a clip’s record-arming status by holding down the record button in session view.

An armed clips’ “launch” pad will be either:

- Red, meaning armed to record and any overdubs will be created on the same audio track, meaning only one overdub will be audible at a time.
- Purple, meaning armed to record and overdubs will have their own audio track created, meaning they will all be audible simultaneously.

Tap the clip’s launch pad, while still holding down the record button, to arm or disarm a clip for recording, or to switch between the red and purple options.

Arranger View

Track’s in arranger are disarmed by default.

You can view and set a track’s record-arming status by holding down the record button in arranger view.

- An armed track’s “mute” pad will blink red if it is armed to record to the arrangement.

Tap the track’s mute pad, while still holding record button, to arm or disarm a track for recording.

Audio Track Input Source

An audio input source may be selected for an Audio Track. The default is LEFT, which is suitable for a mono input or the Deluge’s internal microphone.

The available audio input sources for an Audio track are:

Source	Description
LEFT (default)	the left or mono channel of the Deluge's line or mic input. Use this if using the Deluge's internal mic, or recording a mono source with an unbalanced cable.
RIGHT	you'd most likely use this if you're using the Deluge's stereo line input as two separate mono inputs.
STEReo	use for a stereo line or mic input.
BALAnced	for if you're running a mono signal via a TRS cable from a balanced output into the Deluge's line input socket.
MIX	sources audio from the Deluge's output - i.e. the other tracks which are playing - but grabs the audio pre master FX and level adjustment, and without reverb applied. This is usually the best option for "resampling" or "bouncing" existing instrument clips down to a single new audio clip. (Not to be confused with the Deluge's resampling function for recording its output straight to a file.)
OUTPut	Deluge audio output post FX and with reverb - same as resampling. Normally not the best option for recording audio clips though - use MIX instead.
OFF	no audio input; recording disabled.

The first four of these options each has a second option of the same name but with a dot at the end - e.g. "LEFT."

- These options with the dot enable audio "thru" or "monitoring" on that input channel - echoing the audio that's fed in.

Session View

- 1 Enter Session View
- 2 Hold down the "learn / input" button and press one of the main 16 pads on the audio clip.
- 3 The Deluge's display will blink the currently selected audio input source - LEFT by default. (The input source here is in fact being set for the audio track which the clip exists on - not for the clip per se. This distinction is something many users won't need to worry about though.)

Arranger View

- 1 Enter Arranger View
- 2 Hold down the "learn / input" button and press the audition pad for the track.
- 3 The Deluge's display will blink the currently selected audio input source - LEFT by default

Live recording basics

Recording a first loop of undetermined length

Once a clip is created, armed (it will be armed by default - see above), and has its MIDI or audio input set (audio input is set to LEFT by default), it will be ready to begin recording as soon as playback is begun with the record button illuminated.

Clips which are currently recording will have a red play-cursor visible in session view and clip view. (There is a different, but similar, method for recording into an arrangement (see below)).

Once a clip is recording in such a way, it will continue to record, and the recording will grow in length, until you tell it to stop. To do this, tap the clip's launch pad - this will arm it to stop recording at the end of the current "loop" of the clip's original length. It will then immediately begin playing back from its start.

Recording an overdub - regular

You can quickly and easily create an "overdub" for an existing clip - in the form of a new clip which will appear directly below it. This will often be preferable to creating a new clip from scratch to record to because it requires only one button-combination-press to begin recording an overdub with no additional setting up - and this function may also be performed via a global MIDI command (e.g. from a foot controller).

To create a regular overdub:

- 1 playback must be active.
- 2 Hold down the record button and press any of the main 16 pads on the row where you want the overdub to be created - which will be the row directly below the existing clip upon which you want to base the overdub.
- 3 The new overdub (which as mentioned above is also its own clip), will be created and armed to begin recording at the next opportunity to do so in time with the clip it was created from, or the other clips playing. For the brief time before it begins recording, it will display as a solid red row of pads - and during this time, you may tap any of these if you decide you wish to delete it and not begin recording after all. If the overdub was created from an existing clip which was itself still recording at the time, the existing clip will become armed to stop recording at the same time as the new overdub begins.
- 4 Once recording begins on the new overdub, the process is just like for any other clip being recorded to - you will need to tell it when to stop recording (unless it's a continuous layering one - see below).

Recording an overdub - continuous layering

You may wish to continuously build up many layered overdubs without having to manually create a new one each time.

To create a continuous layering overdub:

- 1 playback must be active.
- 2 Hold down the record button and press the “audition / section” pad for the row on which you wish to create the overdub (the row below the existing clip you’re creating the overdub from).
- 3 The overdub will be created as normal - however as soon as it begins recording, it will arm itself to stop recording at its end (the length of the clip from which it was created), and will create yet another overdub armed to take over recording at that point.
- 4 This process will continue for any number of overdubs.
- 5 When you wish to stop recording them, press one of the main 16 pads on a “pending”, all-red overdub (as described above) to delete it and stop any more being created.

Further notes on overdubs

Since each overdub exists as its own clip, the user is free to mute, delete, or apply FX to each one individually.

Also, the recording of each clip / overdub counts as a separate step which may be undone and redone by pressing back or shift+back respectively - or via MIDI commands - see undo / redo.

MIDI control of looping

Looping can also be controlled via global MIDI commands - particularly useful for foot control. In addition to UNDO and REDO, whose use is noted above, there are two main looping-related commands - LOOP and LAYEr.

The LOOP and LAYEr commands are very similar - the only difference being that LAYEr does “continuous layering” overdubs - so you may end up preferring to use just one or the other on your external MIDI controller / pedal.

The LOOP (and LAYEr) command is intended as a single command which will always perform the next logical step in the process of recording loops and overdubs. It will:

- If playback was not previously active, start playback and begin recording on any clip(s).
- Finish recording of a clip (or overdub) if one is currently recording - either arming it to stop recording soon, or immediately “closing” a tempo-determining initial loop.
- Create an overdub from (so, below) the last clip / overdub that was recorded to, if playback active but no recording happening currently. If the LAYEr command, this will be a continuous layering overdub. If you wish to manually select which clip the overdub will be created from, hold down one of its main 16 pads in song view and then send the LOOP / LAYEr command.
- Delete an overdub if one is pending to begin recording (displaying as an all-red row of pads in song view).

There is also a PLAY global MIDI command, which can be used to stop or start playback without triggering further recording.

Live recording into Audio clip

Recording audio clips in song view is the means by which the Deluge can be used as a looper for audio - both live looping as part of a performance, and as a means of recording audio clips as part of a music creation workflow.

Setting the tempo with the first-recorded loop

A familiar feature of live looping with a classic “loop pedal” is that the length of the first loop the musician records ultimately determines the tempo of the entire layered composition. This can be achieved on the Deluge too - accompanied by the ability to then also create sequenced parts or beats perfectly in sync with the tempo of that first recorded loop.

This tempo-determining recording will happen automatically anytime you record an audio clip loop in session view if you have no other clips playing, the metronome is off, and the Deluge is the syncing master.

The feature is not currently available for instrument clips.

Recording will finish when the user hits the newly recording audio clip's launch pad, or launches any other clip, or creates an overdub, or stops playback. Then (so long as playback wasn't stopped) the newly recorded clip will begin to loop back. At that same instant, the song tempo will have been recalculated and will blink on the Deluge's numeric display - determined by the length of the clip just recorded, and appropriately doubled or halved to be as close to the previously set tempo as possible.

Also, at the same instant, any clocks being output by the Deluge (MIDI beat clock or trigger clock) will begin sending; they will not have been sent during the initial tempo-determining record while the tempo had not yet been determined.

On a related note, you also may at any time manually “grab” the tempo from an existing audio clip, with the same logic applied (see tempo controls for “Grabbing tempo from an audio clip”).

Recording with extra “margins”

A common problem when looping an audio recording is that unless the start and end of the waveform align perfectly, and particularly noticeably on low-frequency sounds, an audible click will result at the loop-point. The Deluge gets around this problem by doing a very short crossfade, beginning just before the loop-point on audio clips. Or if the audio clip is being time-stretched or pitch-shifted, a similar effect is applied in conjunction with that algorithm to maximise sound quality.

However this can only happen if the waveform extends slightly further back in time than the loop's start-point - and ideally extends slightly further forward than its end-point too.

If the “margins” feature is enabled in the settings menu (as it is by default), then all audio clips recorded from external input sources (i.e. not MIX or OUTPut), will have these extra short “margins” of audio recorded. The Deluge will even

retrieve a few milliseconds of audio data from a buffer in order to have the waveform extend further back in time than the point at which the user pressed the button to begin the recording.

This extra audio is simply written into the WAV file as part of the main waveform, along with tags indicating the intended actual start and end points - meaning that the file will be treated correctly if later loaded into another Deluge project. Other software / hardware may or may not know what to do with these tags; if you're intending to use your Deluge-recorded audio clips in other devices with maximum ease, you have the option of disabling the "margins" feature - but then of course the benefits described above would be lost.

The click-avoiding crossfade described above isn't applicable when an audio clip is played for the first time though, with no previous iteration to crossfade from - so a click may occur at its very start if the waveform doesn't have a zero-crossing right at that point. To help with this, audio clips have an attack setting which controls a short fade-in - defaulting to slightly on when margins are in use for a given recording, or off otherwise.

Sampling audio into Kit clip

Here we describe the process of recording samples "offline", to then be sequenced or played. This is less likely to be done live as part of a performance than looping with audio clips.

The easiest way to arrange recorded samples is in a kit clip.

- 1 Create a new, blank kit clip by pressing shift+kit (provided you were in clip view already).
- 2 A new kit is created, and the user is placed in the file browser.
- 3 To record a new sound rather than select a file, simply press the record button at this stage.
- 4 The sound recorder is entered, and recording begins immediately, indicated by the word "REC" blinking on the Deluge's display.
- 5 Press the record button again to end recording. You will be returned to clip view, where the recorded sample will have been assigned a row of pads, indicated by its green-illuminated "mute" pad.
- 6 You can audition the sample by pressing the row's "audition" pad (far-right).

The "mic gain" switch sets gain in the analog domain for samples recorded via the internal microphone or an external microphone (but not via line-input).

Additionally, after recording, the Deluge digitally normalizes the volume of a recorded sample to make it as loud as possible without clipping (it does not do this for audio clips).

During recording, the input may be monitored. Three modes are available, and may be selected in the settings menu.

- "Smart" mode is the default, and with it, if you're recording with a microphone (internal or external), monitoring will only occur if you also have headphones plugged into the Deluge;
- if you're recording from the line input, monitoring will always occur.

- Monitoring may alternatively be switched to always-on, or always-off.

Recording additional samples into an existing kit

To record further samples into an existing kit:

- 1 hold down the “audition” pad on an unoccupied row, and press the record button.
- 2 The sound recorder will be re-entered, and an additional sample may be recorded.
- 3 This process may be repeated as many times as desired.
- 4 The sound recorder may also be entered via the sound editor for a particular sound.

Live recording Notes and Automation

Recording notes

As well as manually entering notes into the pad grid, the Deluge allows you to record notes played on the audition pads, or in keyboard view, or on an external keyboard connected via MIDI.

Pressing the “record” button makes recording active whenever the Deluge is playing. Now, every time you press a row’s audition pad, a note will also be recorded into the current sequence - meaning it will appear in the 16x8 pad grid (unless you are scrolled so that you can’t see it).

Notes played in keyboard view or on a connected MIDI keyboard will be recorded also.

If your clip does not yet contain any notes, a mode will be engaged in which the clip’s length will continuously extent until you tell it to stop recording, e.g. by pressing the record button so that it is no longer illuminated. In this mode, the play-position cursor will be red. This mode is detailed under “recording into clips, and live looping”

Or, if your clip already contains notes, or you have manually disarmed it from recording, the clip at its pre-existing length will loop continuously, allowing recorded notes to be added with each iteration through it. In this mode, the play-position cursor will be white.

Recorded notes are quantized to 32nd-notes by default. See the settings menu for instructions on how to change this.

You can undo your most recent recording by pressing the back button - see undo / redo.

If you are recording and your song doesn’t contain an audible beat to help you keep time, you may wish to enable the Deluge’s metronome, which can be done by holding the shift button and pressing the “tap tempo” button.

Recording automation

The simplest way to automate a parameter is to “record” knob movement. While the Deluge is in record mode (press the “record” button), any movement of a parameter knob is recorded for that parameter. Recording begins when you begin to turn the knob, and ceases when the knob has been left alone for a second or so (a smooth transition back to the original value is then applied).

You can overwrite the automation by simply turning the parameter knob some more while still in record mode.

Once out of record mode (press the “record” button so that it is no longer illuminated), the parameter will continue to be automated while play mode is active. You may still take manual control of the parameter at any time by turning the corresponding parameter knob. Then, after leaving the knob alone for a second or so, the parameter value will smoothly transition back to follow its automated movement.

Automation can also be recorded using an external MIDI controller, if a parameter is set up to be controlled in this way.

Live recording Audio / Notes / Automation into Arranger tracks

When a track is armed for arrangement recording, and record mode is active (i.e. the record button is illuminated), then when playback is begun, provided there is not already a clip-instance at that position on that track, a new clip-instance is created there and will record audio, notes, and/or automation. Audio is recorded into audio tracks and Notes are recorded into instrument tracks.

File Browser

This page provides an overview of the Deluge File Browser system which allows you to browse the actual folder structure of the SD card for loading and saving files.

Depending on the type of file you are loading / saving, the file browser will open a specific folder on the SD card.

Type of file	SD card folder opened
Song	SONG
Synth preset	SYNTHS
Kit preset	KITS
MIDI preset	MIDI
MIDI device definition	MIDI_DEVICES/DEFINITION
Audio file	SAMPLES

The file browser can be quickly exited without needing to press back multiple times by instead pressing one of the mute pads.

Folders can be created by long pressing select. On OLED they show a distinct icon, on 7seg folders are marked with a dot in the right corner instead.

Menu

This page provides an overview of the Deluge Menu system.

View

This page provides an overview of the Deluge View system.

Synth / Sample Engine

This page provides an overview Deluge Synth Engine.

Sounds on the Deluge may be based on synthesis, samples, or a combination of the two. Basic waveforms can be used, without the need for any pre-recorded wave data. Or, samples can be used and manipulated in much the same way that basic waveforms can.

Placeholder: Break-down and explain the components of the synthesis / sample engine.

- Synth modes (subtractive vs ring mod)
- Types of oscillators
- Creation of voices which trigger oscillator to generate sound
- Envelopes which dictate how long a voice continues to be active
- FM Modulators
- Modulation of synth engine parameters
- Etc
- The signal path

MIDI Engine

This page provides an overview Deluge MIDI Engine.

MIDI can be used to:

- control external gear via Commands sent from MIDI clips or MIDI drums within Kit clips.
- control the Deluge via Commands received from external MIDI gear;
- control the Deluge via Commands routed internally;

Controlling external gear with the Deluge

MIDI clip

MIDI Kit clip drum

Controlling the Deluge with external gear

Global MIDI Commands

MIDI Learn

Controlling the Deluge with the Deluge

Routing MIDI out to MIDI in

MIDI clip internal transpose command

CV / Gate Engine

This page provides an overview of the Deluge CV / Gate Engine, which converts notes from the sequencer into analog voltages on the Deluge’s two CV outputs and four gate outputs.

For information on the physical connectors, the CV and gate standards supported, and the related safety notes, see [Ports](#). For the full list of CV and gate settings, see [Menu Hierarchies](#).

Outputs

The Deluge has two CV outputs and four gate outputs. CV outputs 1 and 2 are paired with gate outputs 1 and 2 respectively, and are driven by CV clips. Gate outputs 3 and 4 have no corresponding CV output and are driven by gate kit rows, or may be assigned to output a [“run” signal](#) (gate 3) or a [trigger clock](#) (gate 4).

Output	Driven by
CV 1	Pitch of a CV clip on channel 1 (or “1 and 2”)
CV 2	Pitch of a CV clip on channel 2, or a second signal in “1 and 2” mode
Gate 1	Notes of a CV clip on channel 1 (or “1 and 2”), or a gate kit row
Gate 2	Notes of a CV clip on channel 2, or a gate kit row
Gate 3	A gate kit row, or the “run” signal
Gate 4	A gate kit row, or the trigger clock



Run and clock take priority

Once a gate output has been assigned to the run signal or the trigger clock in the settings menu, any notes sent to it by a kit row are ignored, so that the clock is never interrupted.

CV clips

To output CV / gate from a clip:

- 1
- Enter clip view for the selected clip.

- 2 Press **CV**.
- 3 Turn **SEL Select** to choose the channel: 1, 2, or "1 and 2".

Only outputs 1 and 2 are offered here, as they are the only outputs with a CV voltage to carry the pitch.



Gates from kit clips

CV clips are not the only way to drive the gate outputs. Any row in a regular kit clip can be set to fire a gate output (1 to 4) instead of playing a sound, which is the only way to use gate outputs 3 and 4 for notes. See [Gate kit rows](#) below.

The channel can also be changed from song view: hold any pad in the clip's row (rows layout) or the clip's pad (grid layout) and turn **SEL Select**. The CV button flashes and the display shows the current channel while the pad is held.

A CV clip has no sound parameters, but pressing **SEL Select** in clip view opens its menu, which includes the arpeggiator, play direction and (in "1 and 2" mode) the CV 2 Source setting. See the CV Instrument Menu on [Menu Hierarchies](#) for the full list.

Each CV channel is monophonic. A new note replaces the note currently playing, and the gate stays high until the new note ends.

"1 and 2" mode

c1.3 Feature

With the channel set to "1 and 2", pitch goes to CV output 1 and notes to gate output 1 as usual, and CV output 2 carries a second signal for the playing note. Press **SEL Select** to open the clip's menu and choose the signal under **CV 2 Source**:

- **Off** - CV 2 is not used.
- **Y** - MPE Y (slide / timbre). Negative values are output as 0V.
- **Aftertouch** - channel or polyphonic aftertouch. This is the default.
- **Velocity** - the velocity of each note, set as the note begins.

Both Y and Aftertouch are accessible in automation view for CV clips so they can be used to send a modulation signal out to your connected synth.

Gate output 2 is not used by the clip in this mode, and remains available to gate kit rows.

MIDI-to-CV/gate converter

A CV clip which has had a MIDI channel learned to it will output the incoming notes as CV / gate. To learn a channel, hold **Learn**, hold any audition pad in the CV clip, and play a key on the MIDI keyboard. See [MIDI](#) on the Ports page for the full MIDI learn process.

Pitch to voltage

Each CV output has its own **Volts per Octave** and **Transpose** settings, found under Settings > CV > CV Output 1 / 2.

Volts per Octave may be set between 0.01V and 2.00V in 0.01V steps, and defaults to 1.00V. In this mode the output voltage rises by a fixed amount for each octave: MIDI note 24 (C1) is output as 0V and each octave above it adds the configured voltage, so at 1V per octave middle C (note 60) is 3V. This is the standard used by most analog synthesizers (1V per octave on Moog, Roland, ARP and Eurorack equipment; see [Ports](#) for others). Set it to match the connected synthesizer: for example, Buchla and EML instruments expect 1.2V per octave, so setting Volts per Octave to 1.20 gives 0.1V per semitone and puts middle C at 3.6V.

Turning Volts per Octave all the way down to 0 selects **Hz per volt** instead; the display changes from a voltage to "Hz/V" ("HZPV" on the 7-segment display). Hz per volt is the older standard used by Yamaha and Korg, in which the voltage is proportional to the frequency of the note rather than to its pitch, so the voltage doubles with each octave instead of rising by a fixed step. The Deluge outputs middle C as 1V, one octave above as 2V, two octaves above as 4V, and so on. Because the voltage doubles per octave, only a few octaves fit in the 0V to 10V range; notes below middle C are output as fractions of a volt. Turn **SEL Select** back up to return to volts per octave.

The **Transpose** setting for each CV output (Settings > CV > CV Output 1 / 2 > Transpose) shifts every note sent to that output by up to ± 96 semitones, with cents available in the decimal places. It is intended for matching the tuning of the connected synthesizer, and is separate from transposing the notes in a clip. Pitch bend, including MPE per-note pitch bend, is also applied to the pitch before it is converted. The resulting voltage is clamped to the 0V to 10V range of the outputs.

Gate timing

Each gate output may be set to V-Trig or S-Trig under Settings > Gate > Gate Output 1-4. V-Trig outputs a positive voltage while a note is on, and S-Trig shorts the output to ground while a note is on. See [Ports](#) for which synthesizers expect which.

The **Minimum Off-Time** setting, also under Settings > Gate, sets the shortest time a gate will stay low between one note ending and the next beginning. This ensures that back-to-back notes are heard as separate triggers by the connected hardware rather than as a single held gate. It may be set between 0.1ms and 10.0ms and defaults to 1.0ms. A note which begins sooner than this after the previous note ended is delayed until the off-time has elapsed.

Run signal and trigger clock

Under Settings > Gate, gate output 3 has a “Run signal” (RUN) option alongside V-Trig and S-Trig. This sets gate output 3 high as soon as playback starts (after any count-in) and low again when playback stops, so connected hardware can start and stop with the Deluge.

Gate output 4 has a “Clock” (CLK) option. This sends a trigger clock pulse on gate output 4 at the rate set in Settings > Trigger Clock > Output > PPQN, which may be set between 1 and 192 and defaults to 24. Switching the clock on while the Deluge is playing from its internal clock re-aligns the output to the current playback position.

Gate kit rows

A row in a kit clip normally holds a sound, but it may instead be a **gate drum**: a row which, when triggered, fires one of the Deluge’s four gate outputs rather than producing audio. Each hit on the row sends a single gate pulse to the chosen output, the same way a trigger out on a drum machine would; the CV outputs are not touched, and the row has no pitch. This is the way to trigger external drum modules and other gate-driven hardware, and the only way to reach gate outputs 3 and 4, which have no CV output of their own.

To make a kit clip row control a gate output instead of outputting audio, enter clip view, hold the row’s audition pad and press **CV**. The row defaults to gate output 3. To change the output, hold the row’s audition pad and turn **lower**  **Go!d**; the display shows the current output as GATE 1 to GATE 4 (GAT1 to GAT4 on the 7-segment display), and the CV button LED blinks while a gate drum’s row is held. See [Gate kit drum](#) on the Ports page for the full steps.

Gate drums follow the same V-Trig / S-Trig and Minimum Off-Time settings as CV clips. A gate drum set to output 3 or 4 will be silent while that output is assigned to the run signal or the trigger clock.



Take care when sharing gate outputs between a gate drum and a CV clip

The engine does not arbitrate between them, so the gate will trigger from both, a note-off from one may be ignored while the other’s note is playing, and on outputs 1 and 2 each drum hit also resets the CV pitch to middle C.

Shortcuts

Shortcuts are the fastest way to execute actions on the Deluge. Updated as of c1.0.0

All Views

Context	Action	Shortcut
System	Adjust brightness	Shift + Learn + turn  Vertical
System	Settings menu	Shift +  Select
System	Undo	Back
System	Redo	Shift + Back
System	Tempo change	turn  Tempo
System	Tempo change 1BPM inc	press & turn  Tempo Configurable in Community Features
System	Swing adjustment	Shift + turn  Tempo
System	Metronome on/off	Shift + Tap Tempo
Navigation	Check current zoom level	 Horizontal
Navigation	Change current zoom level	press & turn  Horizontal
Navigation	Scroll left or right	turn  Horizontal
Navigation	Scroll up or down	turn  Vertical
Navigation	Transpose screen	 Horizontal + turn  Vertical
Navigation	Transpose screen in octave	 Horizontal + press & turn  Vertical
Song	Load song (saved tempo)	Load + turn  Select , then Load
Song	Load song (current tempo)	Load + turn  Select , then  Tempo + Load
Song	Delete song	Shift + Save
Song	New song	Shift + Load , then Load

Context	Action	Shortcut
Song	Delay load	Load , Then turn  Select
Sampling	Loop resample	Record + Play then Record + Play
Sampling	Resample	Shift + Record
Sequencer	Nudge clock	 Horizontal + turn  Tempo

Parameter Control - Rotary Push Controls - Toggle Options

Context	Action	Shortcut
FX	LP, HP, EQ option	[CUTOFF / RES] = on, upper  Gold
FX	LPF slope type	[CUTOFF / RES] = on, lower  Gold
FX	Ping-Pong on/off	[DELAY TIME / AMOUNT] = on, upper  Gold
FX	Delay style digital / analog	[DELAY TIME / AMOUNT] = on, lower  Gold
FX	Compressor sync 8th - 32nd	[SIDECHAIN / REVERB] = on, upper  Gold
FX	Reverb room size preset	[SIDECHAIN / REVERB] = on, lower  Gold
FX	Effect song or kit: chorus, flanger, phaser	[MOD RATE / DEPTH] & affect entire = on, upper  Gold
FX	Effect song or kit: depth, offset, feedback	[MOD RATE / DEPTH] & affect entire = on, lower  Gold
FX	Stutter	[STUTTER / CUSTOM 1] = on, upper  Gold
FX	Stutter - ramp speed	[STUTTER / CUSTOM 1] = on, press & turn upper  Gold

Song View

Context	Action	Shortcut
Song	Switch song views - default row	Hold Song + turn  Select change row or grid
Song	Clip parameter adjustment	Hold Pad on the grid + turn upper  Gold or turn lower  Gold
Song	Change section assignment / Colour	Shift + Section
Song	Change pad row colour in row view	Hold Pad for row + Shift + turn  Vertical
Song	Section repeats / share status	Press Section + turn  Select
Song	Move row	Hold Pad of row to move + turn  Vertical
Song	Clone clip	Hold Pad of master clone clip + press Pad of another row
Song	Solo section	Tap Section
Song	Solo clip (arm)	 Horizontal + press clip's Launch
Song	Solo clip (Immediate)	Shift + press clip's Launch
Song	Un-solo	Press clip's Mute
Song	Instant mute / launch	Shift + Mute
Song	Delete clip	Hold Pad of clip to delete + press Save
Song	Drag clip instance to arranger	Hold Pad + press Song + turn  Horizontal , release pad
Song	Record to arranger	Hold Record + press Song
Song	Master compressor mode	Affect Entire ON, [SIDECHAIN] ON, upper  Gold
Song	Grid View - Pad Modes	Press Audition Green to Set Launch mode / Blue to edit
Looping	Create audio clip	Hold Pad of empty clip +  Select
Looping	Set input source for audio clip	Hold Learn + Press Pad of clip

Context	Action	Shortcut
Looping	Loop record	In rec mode, press Play with armed, empty audio clip(s) present
Looping	Close loop recording	Press Launch of clip
Looping	Close loop + immediate solo	Horizontal + press Launch to close loop.
Looping	Loop record during playback	In record mode, unmute armed, empty (audio) clip
Looping	Overdub	Hold Record + press Pad of clip row underneath
Looping	Continuous overdub layering	Hold Record + press Audition of row underneath
Looping	'Loop pedal' record	Record loop while no other clip is playing / unmuted and metronome is off
Looping	Grab tempo from audio clip	BPM Tempo + press Pad for clip row (song view) or any pad in clip view
Looping	Select MIDI switch LOOP target	Enter audio clip or hold clip row in song view + press switch
Looping	Auto extending instrument clip record	In record mode, unmute armed empty clip during playback

Arranger View

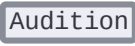
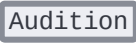
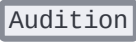
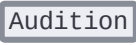
Context	Action	Shortcut
Clip	Place clip instance	Pad
Clip	Delete clip instance	Pad Leftmost start pad of an instance
Clip	Clip instance length	Hold Pad start + press Pad end on the same row
Clip	Move clip instance horizontally	Hold Pad + turn Horizontal
Clip	Change instance clip	Hold Pad + turn SEL Select
Clip	Make clip instance unique	Shift + Pad creates a 'white' clip instance

Context	Action	Shortcut
Clip	Adjust clip instance parameters	Hold Pad + turn upper GLD Gold or turn lower GLD Gold for the selected parameter
Clip	Enter clip view for a clip	Pad of any clip instance pad other than the first / leftmost
Clip	Drag 'unique' clip instance to song view	Hold Pad + Song + turn Vertical then release pad
Row	Quantize or Humanize row	Hold Audition + turn BPM Tempo . Right - Quantize / Left - Humanize
Row	Move track	Hold Audition + turn Vertical
Instrument	Mute / unmute track	Mute for row
Instrument	Solo track	Horizontal + Mute for instrument
Instrument	Change or Add new instrument	Hold Audition + turn SEL Select or press Synth or press Kit or press MIDI or press CV
Instrument	Delete track row	Hold Audition + Save
Instrument	Audition instrument	Audition - Songs root note or snare drum in kit mode
Arrangement	Clear arrangement	Horizontal + Back
Audio	Create new audio track	Empty lane Audition + SEL Select
Audio	Set input source for audio track	Learn + Audition of audio track
Audio	Record audio from current position	Play while in Record , with armed audio present

Clip View

Context	Action	Shortcut
Clip	Change clip colour	Shift + turn Vertical

Context	Action	Shortcut
Clip	Change clip preset, MIDI Ch, CV out	turn  Select
Clip	Adjust clip length	Shift + turn  Horizontal
Clip	Duplicate / multiply and append clip content	Shift +  Horizontal
Clip	Horizontal clip shift / nudge L-R	 Vertical + turn  Horizontal
Clip	Playback from current screen	 Horizontal + Play
Clip	Clear clip	 Horizontal + Back
Clip	Change Clip Direction	Shift + Direction Direction may not be labelled on the faceplate. Pad is located to the right of the OSC SYNC pad on the FM MOD 1 Column.
Note	Note length	Hold Pad start + press Pad end on the same row
Note	Note length - long	Press Pad start. Navigate grid - turn  Horizontal .  Horizontal + press Pad end on the same row
Note	Note velocity	Hold Pad on the grid + turn  Horizontal
Note	Note repeat	Hold Pad on the grid + hold and turn  Vertical
Note	Note play probability %	Hold Pad of note + turn  Select anticlockwise / left
Note	Set dependance on first note	Hold All Pad s together + turn  Select anticlockwise / left
Note	Iteration dependance for a note	Hold Pad of note + turn  Select clockwise / right
Note	Copy notes	Hold Learn +  Horizontal
Note	Paste notes	Hold Learn + Shift +  Horizontal
Note	Nudge individual notes horizontally	Hold Pad + press & turn  Horizontal

Context	Action	Shortcut
Parameter	Automate a parameter	While recording, LED on; turn upper  Gold or turn lower  Gold of selected parameter
Parameter	Per note parameter change	Hold  of note start + turn upper  Gold or turn lower  Gold of selected parameter
Parameter	Delete parameter automation	 + upper  Gold or lower  Gold of selected parameter
Parameter	Copy automation	Hold  + upper  Gold or lower  Gold of selected parameter
Parameter	Paste automation	Hold  +  + upper  Gold or lower  Gold of selected parameter
Sample	Load sample	 + 
Sound	Sound Editor	 +  of shortcut as labelled or 
Preset	Preset load interface	 +  or  or 
Audio	Audio clip trim start	Press  of leftmost column at the start of the waveform
Audio	Audio clip trim end	Press  of rightmost column at the end of the waveform
Euclidean Seq	Number of events on the row	Hold  + press & turn  Vertical
Euclidean Seq	Row length	Hold  + turn  Horizontal
Euclidean Seq	Rotate / Shift events or notes	Hold  + press & turn  Horizontal

Sound Editor

Context	Action	Shortcut
Sound Editor	Editor Move cursor	turn  Horizontal to navigate

Context	Action	Shortcut
Controls	Parameter knob assignment	Hold Learn + turn upper  Gold or turn lower  Gold parameter control
Controls	MIDI knob assignment	Hold Learn + turn (MIDI) Control of external device
Controls	Unassign MIDI control knob	Shift + Learn
Preset	Save preset	Save
Parameter	Apply a change to entire kit	Press & hold Affect Entire while changing parameter

Synth, Keyboard, MIDI, CV Clips

Context	Action	Shortcut
Synth	Synth resample	Record + Audition or grid Pad
Synth	Load blank synth	Shift + Synth
Synth	Load synth preset to a kit row	Audition + Synth
Synth	Save synth preset	Save + Synth
Scales	Cycle through default scales	Shift + Scale
Scales	Change root note	Scale + Audition row of new note
Scales	Chromatic scale	Scale to turn it OFF, LED unlit
Scales	Create scale	In chromatic mode - scale OFF; Select Pad notes, then press Scale
Scales	Alter current scale	Hold Audition + press & turn  Select
Transpose	Transpose current clip an octave	press & turn  Vertical
Transpose	Transpose current clip a semitone	In chromatic mode - Scale OFF; Shift + press & turn  Vertical

Context	Action	Shortcut
Transpose	Transpose ALL clips a semitone	In scale mode - scale ON; Shift + press & turn  Vertical
Note	Create full screen 'drone' note	Hold Pad first column + press Pad last column of grid
MIDI	Assign MIDI CC to parameter knob (MIDI Track)	upper  Gold or lower  Gold + turn  Select

Kit Clips

Context	Action	Shortcut
Kit	Change colour of specific row	Shift + Audition + turn  Vertical
Kit	Save kit preset	Save + Kit
Kit	Randomize Kit Row	Audition for row to edit + Random
Kit	Move row Hold for row	Audition + Mute + turn  Vertical
Kit	Delete row	Pad for row to delete + Save
Kit	Delete all unused rows	Kit + Shift + Save
Sample	Slice a sample	Shift + Kit , turn  Select to choose sample, Shift +  Select for slicer to set slice number
Sample	Lazy Chop Option	In the slicer function and number selection,  Horizontal to open the manual lazy slicer pads
Sample	Record sample from input	Audition + Record to start recording. Record again to end
CV	Set kit row output to gate	Audition + press CV
CV	Set kit row CV gate	Audition + turn lower  Gold - must be set as a CV row
MIDI	Set kit row output to MIDI	Audition + press MIDI

Context	Action	Shortcut
MIDI	Set kit row MIDI channel	Audition + turn lower  Gold - must be set as a MIDI row
MIDI	Set kit row MIDI note	Audition + turn upper  Gold - must be set as a MIDI row

Keyboard

Context	Action	Shortcut
Keyboard	Select Keyboard view	 Keyboard
Keyboard	Isomorphic, In-Key or Norns	 Keyboard + turn  Select
Keyboard	Note offset	Shift + turn  Horizontal
Keyboard	Change Scale	Scale +  Select
Keyboard	Change Root Note	Scale + turn  Select

Automation & Automation Editor - Clip View

Context	Action	Shortcut
Automation	Select Automation Mode	Press Clip twice until it flashes blue.
Automation	Select Automation Mode	Hold Shift + Clip or Audition + Clip
Automation	Select Automation Parameter	Shift + Pad or turn  Select
Automation	Select Affected Kit Rows	Affect Entire On for all, off for selected rows
Automation	Clear Automation	 Horizontal + Back
Automation	Record Automation	Record , Play , turn upper  Gold or turn lower  Gold
Automation	Copy Automation	Learn + upper  Gold or lower  Gold
Automation	Paste Automation	Shift + Learn + upper  Gold or lower  Gold

Context	Action	Shortcut
Automation	Delete Automation	Shift + upper  Gold or lower  Gold
Automation	Interpolation On/Off	Shift + Interpolation in first column of grid
Auto Editor	Check Parameter	Press flashing Pad
Auto Editor	Set Parameter Column Value	Press Pad
Auto Editor	Change Parameter Column Value	Hold Pad + turn upper  Gold or turn lower  Gold
Auto Editor	Set long automation shape	Hold Pad start + Press Pad end.
Auto Editor	Pad selection mode	Shift + press Waveform shortcut pad in first column of grid
Auto Editor	Pad selection mode edit	turn upper  Gold or turn lower  Gold in pad selection mode
Auto Editor	Duplicate Automation	Shift +  Horizontal
Auto Editor	Shift Automation	 Vertical + turn  Horizontal
Auto Editor	Reduce clip length	Shift + turn  Horizontal
Auto Editor	View zoom level	 Horizontal
Auto Editor	Change zoom level	press & turn  Horizontal
Auto Editor	Scroll grid	turn  Horizontal

Menu Hierarchies

Hide 7SEG ☐

This document will document the menu structure hierarchy currently in place in the deluge in order to help users understand what exists in the menu structure and how the hierarchy strings are defined for OLED and 7SEG users.

By default, the hierarchies below show the 7SEG display text first, followed by the OLED display text. In addition, only the first 4 characters of the 7SEG text is shown below by default. In some cases, longer text may be displayed on 7SEG. You can show this by clicking on the 7SEG text where available.

Settings

- › Settings Menu

Song

- › Song Menu c1.1
- › Song Clip Settings Menu c1.2
- › Perform FX Menu c1.1

Clip

Audio Clip

- › Audio Clip Menu

Instrument Clip

- › Synth Sound Menu
- › Kit FX Menu c1.1
- › Kit Sound Drum Menu
- › Kit MIDI Drum Menu

-
- › **Kit GATE Drum Menu**
 - › **MIDI Instrument Menu**
 - › **CV Instrument Menu**
 - › **Note Editor Menu** c1.3
 - › **Note Row Editor Menu** c1.3

Tips and Tricks

This page provides various tips and tricks from the Deluge Community that have been gathered over the years.

Original source: [Deluge Discord Tips and Tricks](#)

Links and resources

PDFs

[F.A.Q - Synthstrom Audible](#)

[Synthstrom OLED Update](#)

[Deluge Official Manual - 4.0 Guidebook from Synthdawg \(8-segment display pictures\)](#)

[4.1 Guidebook - OLED update](#)

[The Community Quick Reference](#)

Free Synth Presets

[Synthstrom Factory Presets](#)

[Synthstrom Deluge Archives | Patchstorage - \(User uploaded synth presets\)](#)

[Synthstrom Audible - Forum Link](#)

[Delugist - Neuma Studio - Delugist - Deluge Content Sharing Site](#)

[Delugator Web Randomizer - generates random synth presets](#)

Data and Software

[GitHub - SynthstromAudible/DelugeFirmware](#)

[Deluge Synth Parameter Testing](#)

[Deluge XML file format](#)

[Deluge Synth Parameter List - descriptions of XML params, notes in XML post by Jamie Fenton](#)

[Deluge commander app - Neuma Studio - Deluge Commander](#)

Cases

[2022 Synthstrom made their own case! Synthstrom Audible Case](#)

[DIY Dustsaver from FondsofFall 10/17/2022](#) Bought at Office Depot for ~ \$13 USD. The brand is Really Useful Products Ltd- made in the UK. I am impressed with the quality. The foam from recycle that offered free giveaway so I reused to protect Delly from slipping. Enjoy hacking DIY. Closed lid 14" L x 13.25" W x 3.25" H

postolarpunk has [MicroFreak / MiniLab / MicroBrute Travel Case | Analog Cases](#) Loosely fits the deluge, international flights and multiple road trips tested, sometimes the buttons get clicked when traveling, works okay but I wish I got something that fit the deluge better and had more space for headphones

[Decksaver review from Heptagen 05/11/2022](#) Only contact is on the sides (with foam) and from the top on the flat surfaces (cheeks, deluge logo). No contact with knobs or pads, definitely no wear. Sits tight, can definitely recommend, wouldn't take my deluge anywhere without it. Someone on the forum reported problems with worn pads that were a result of transport in a bag where something continuously pressed and rubbed the pads, which wore off the contact material. (And the knobs feel very sensitive, especially the golden ones. I'd never expose those to anything but my hands.) That's why I opted for a decksaver instead of a bag. Can still fit it in the laptop compartment of my backpack with the decksaver on.

Bay Mud, PatersonC, MChristian, rm - 05/26/2022 I've been using the Magma case (meant for Roland Boutiques, if I recall) for a few years now without fail. Nice amount of protection for when I throw it in my bag on my bike or something. [Amazon.com: MAGMA 48003 Ctrl Hard-shell Case For Roland Boutique Key](#) I would try 14" or 13.3" My bag is for 13.3" laptop and works fine. That Magma case is nice, it fits the Deluge snugly

Voynich, porkloin - 05/29/2022 on the subject of cases, I have this one in silver, it's awesome [Amazon.com: Nanuk 910 Waterproof Hard Case with Foam Insert - Black : Sports & Outdoors](#) the nanuk 910 fits the deluge perfectly, and it's built like a tank. I wanted something substantial since the deluge is so central to my setup. It's worth it. I have this same one in black color and can agree it's very great. And made in Canada! It is very bulky though. I've never flown with my deluge, it just seems to be a hair too big for bringing along on a trip like that.

volsteh - 05/23/2022 [LTGEM EVA Hard Case for Novation Launchkey Mini 25-Note USB Keyboard MK2 Controller - Travel Protective Carrying Storage Bag](#)

FX

Learn a parameter to a gold knob

- 1 Open the parameter you want for editing. See: [Edit a parameter](#)
- 2 Hold LEARN and turn the GOLD KNOB you want to bind it to. (Turn, not press!)

VU Meter

Since community release 1.1.

In SONG, ARRANGER, or PERFORMANCE view:

- 1 Press LEVEL mod button while it is already lit, and AFFECT ENTIRE is on.

Song View

Set audio clip input source

- 1 Hold INPUT and press PAD on the audio clip row.

Solo a clip

- 1 Hold HORIZONTAL and press MUTE for the clip you want to solo. Solo starts at the end of loop.
- 2 To solo the clip immediately, hold SHIFT while pressing HORIZONTAL.

Clip / Section Launching

Credit: postsolarpunk

I tried to investigate exactly when and why a set of armed clips will launch (clip sequencing study section)

Multiple index of 8 is defined as 0, 8, 16, 24, etc.

Section A playing, arm section B If the longest playing clip in section A is a multiple of the longest armed clip in section B, then section B launches at the next multiple index of the longest armed clip. Otherwise, section B launches at the end of the longest playing clip of section A.

Launching individual clips If all armed clips have multiples of their clip lengths currently playing, then all armed clips launch at the multiple index of the longest armed clip. If some armed clips have multiples of the clip lengths currently playing but not all armed clips, then Deluge checks if the highest positioned playing clip length is longer than the longest armed clip with a multiple. If it is longer, then it launches at the highest positioned playing clip loop point. Otherwise, it launches at the multiple index of the longest armed clip with a multiple. If none of the armed clips have multiples of the clip lengths currently playing, then the armed clips launch at the highest playing clip loop point. Muting multiple playing clips occurs at the end of the longest clip length.

```
SECTION: PLAYING SECTION A, ARM SECTION B
Is longest ARMED is multiple of longest PLAYING
TRUE: launch at MULTIPLE index of longest ARMED
FALSE: launch at LONGEST PLAYING loop

NOT SECTION: PLAYING ANY CLIPS, ARM INDIVIDUAL OR MULTIPLE CLIPS
(all, some, none) ARMED clips have multiples in set of PLAYING clips:
ALL MULTIPLE:
launch at MULTIPLE index of longest ARMED
SOME MULTIPLE:
IF: highest positioned PLAYING > longest ARMED MULTIPLE
TRUE: launch at highest positioned PLAYING loop
FALSE: launch at MULTIPLE index of longest ARMED
NONE MULTIPLE:
    launch at highest positioned PLAYING loop
```

Arranger View

Improvisation

Credit: TOTAL, synthrik

Improvisation inside Arranger workflow is possible. When playing back an arrangement, you may want the currently playing section of a song to continue so that you can do some improvisation on top of it. This can be seamlessly enabled by first switching to song mode, then pressing whichever of the mute buttons for the section currently enabled. Dimmed mute lights are now fully lit and the loops which have been on will continue playing and looping. To seamlessly go back to Arranger view to continue the song after improvising, switch back to arranger view, scroll horizontally to where you want to jump back to the arrangement, then push and hold the horizontal scroll knob and press play (press horizontal + play). After completing the current clip, playback will continue in the arrangement. Turn the select knob to increase the number of cycles before arrangement playback is resumed.

Clip View

General

Add / remove columns anywhere in a clip

- 1 Rotate the clip so the place where you want add/remove columns in is at the end.

- 2 Change clip length to add/remove columns at the end.
- 3 Rotate the clip back to its original position.

Clear a clip

- 1 Hold HORIZONTAL and press BACK.

Change clip play direction

- 1 Hold SHIFT and press PAD unlabelled pad immediately below the left gold encoder, to the right of the OSC SYNC PAD.

Change clip length

- 1 Hold SHIFT and turn HORIZONTAL.

Rotate a clip

- 1 Hold VERTICAL and turn HORIZONTAL.
- 2 This rotates the clip: turning left will move notes that used to be at the beginning of the clip to the end, and vice versa.

Edit a parameter

- 1 Hold AUDITION and press PAD for the parameter.
- 2 Hold SHIFT and press PAD for the parameter.
- 3 Press SELECT and use the menu to select the parameter.

Note: in a KIT you must have a row selected first!

Re-quantizing a clip

Credit: nilc

Connect MIDI Out to MIDI In; See MIDI Out to MIDI IN section for more details on this setup

The source clip is any clip with notes already recorded, that you wish to re-quantize. If it is a kit or synth, switch it to MIDI. Arm this clip to play (but no others).

Create a new synth (or kit) clip. This will be the destination. Press and hold Learn + any Audition pad, to associate your midi source clip with this destination clip.

Set the quantization level as desired. Note that this must be a larger value than any quantization that was done on the source clip. E.g. if the source was quantized to 1/32, then you may re-quantize to 1/16, 1/8, etc. Quantizing always loses information, when it changes notes.

Press record, then press play, to record the notes from the source clip into the destination clip, at the newly selected quantization level.

Kit

Tempo match for autoslicer

Credit: lodro, ok_reza, postsolarpunk

Let's say you have a sample recorded at 78 BPM (or an unknown BPM) and your song is at a different BPM, say 120 and you want to use the autoslicer feature to slice the audio into a kit where each slice is a compatible length for the 120 BPM song. First, put the sample into an audio clip. The sample will timestretch automatically to the song's BPM. Next, resample the audio clip only with rec+play then press rec+play to trigger turning off playback and resampling at the end of the audio clip. Finally, load the resample into a new kit using the autoslicer. The slices will be the right length with respect to the BPM.

Another technique is to use the autoslicer on the original 78 BPM sample to make a kit of equal length slices, then timestretch all slices at the same time, tuning them by ear. Press shift + SPEED on any sample, then with the Affect Entire button held down, turn the select knob to adjust the SPEED of all samples in the kit at once. This won't get you exactly the BPM of your song, but might get somewhere close enough.

Create a New Kit

- 1 Hold SHIFT and press KIT.
- 2 Select sample to load to first row of the kit.

Delete a Kit Row

- 1 Hold PAD on the kit row to delete and press DELETE.

Delete all unused kit rows

c1.0 feature

- 1 Hold KIT, hold SHIFT, and press DELETE.

Change sample repeat mode for all kit rows

- 1 Open the sample repeat mode editor. See: Edit a parameter. (Bottom left corner pad.)
- 2 Hold AFFECT ENTIRE while turning the SELECT encoder.

Load a folder of samples as a kit

- 1 Create a kit
- 2 Browse to the name of the folder you want, and long-press SELECT.

Move a kit row

- 1 Hold both MUTE and AUDITION buttons on the row you want to move.
- 2 Rotate VERTICAL to move it.

Send MIDI from a Kit

- 1 Hold AUDITION for a row and press MIDI. This converts the drum to a MIDI drum.
- 2 Hold AUDITION and turn the upper and lower GOLD knobs to set the MIDI note and channel.

MIDI

Assign CC to gold knob in MIDI clip

- 1 Press MODE button for the parameter whose CC you want to assign.
- 2 Hold GOLD and turn SELECT to assign the CC.

Load or save a MIDI instrument preset

Since community release 1.1.

- 1 Hold LOAD and press MIDI to load.
- 2 Hold SAVE and press MIDI to save.

Audio Clips

Set audio clip input source

- 1 In Audio clip, enter Menu by pressing SELECT and enter Audio Source menu.

Edit length of audio clip without timestretching

From the manual:

In audio clip view, much like instrument clip view, you can change the clip's length by holding shift and turning the ◀▶ knob. When this is done to an audio clip, the audio waveform shortens and lengthens with the clip's length, causing the audio to sound faster or slower. If you instead want to trim or extend the audio clip while leaving its waveform unstretched, tap a pad at the right-most end of the visible waveform. A red marker will begin blinking there, representing the loop-point in a similar way to in waveform view. You may now tap where you want to move it to. Or you can tap the red marker again to make it disappear.

Resampling

Arm resampling to start/stop with Playback

- 1 Hold RECORD and press PLAY. Recording and playback both start immediately.
- 2 While resampling is in progress, hold RECORD and press PLAY to stop resampling at next loop point. Note: doing this will cut off any reverb trails.

Backwards spinning vinyl effect

Gives a reverse tape stop style of effect.

Credit: Heptagen

1. Resample a couple of bars of the track
2. Init new synth and load the sample as osc
3. Sample mode: loop
4. Reverse it
5. Pitch-Speed: linked
6. Env2: Attack 32, Decay 26, Sustain 0, Release 50 (values are what I used in the example)

Live Sampling, Looping Performance

Credit: Heptagen

The Elektron Octatrack has this neat function where you sample a loop of what's going on currently, then seamlessly switch to said loop so you're free to mangle it (or prepare something different "behind the scenes" while the loop keeps the track going), to then get back to the normal sound / live performance.

To some extent you can imitate this on your Deluge:

- Set up a new row as an audio track, set source to "outp".
- Arm Rec
- Press launch pad of said track, and the recording will start

Now if you were to press the launch pad again at the end of your loop, you would hear the live performance AND the loop-sample. To avoid that, press HORIZONTAL and the launch pad instead, to stop the loop and switch to solo mode of this track. Now you can do whatever you want to this sample, and you will be able to return to your original performance "non destructively".

If you now leave the solo mode, you'll have the same problem as before. To avoid this, press shift + launch pad to assign it to a separate section. Now you can return to any other section (of any color other than the loop-sample track is on). The loop will be muted, the other section will play.

Live Resample Deluge Audio into Slices

Credit: Cowboy, voltseh, ok_reza

I want to take one or more currently-playing clips and sample them into slices in a new Kit clip so I can reorder the slices arbitrarily, all without stopping playing the main groove. Then I'll mute the clips I had recorded and play the new Kit clip and have an insta-remix.

This is what I did. While the groove is playing:

1. Create a new audio clip in Song mode by holding an empty clip pad and pressing Select
2. Set the new audio clip to record Mix by holding Learn and pressing a clip pad of the new audio clip, turning Select until Mix is visible, and pressing Select
3. Ensure Record is armed (red)
4. Mute all but the clip(s) you want to record to a new clip
5. Unmute the audio clip to start recording at the beginning of the next measure and re-mute when done recording to end recording at the end of the current measure (step 4+5 can be done at the same time!)
6. Save the project so that the audio clip is written to disk by pressing Save followed by Select
7. (Optional) Delete the newly-created audio clip by holding a clip pad of the audio clip and pressing Delete

8. Create a new kit clip by holding an empty clip pad and pressing Kit
9. Enter Clip mode in the new kit clip by pressing one of its pads
10. Hold Shift and press Kit to create a new kit preset
11. Navigate to the root directory and then to the CLIPS directory (if not already there) and scroll to the 2nd-to-last file
12. While holding Select, rotate Select until Slice is selected, press Select, and choose the number of slices (eg. 8), then press Select
13. Hold Shift and press Polyphony, and then while holding Affect Entire, rotate Select until Choke is displayed. Release Affect Entire and press Select
14. Place slices!

Alternatively to step 6 with the Save, the resampled audio should be saved to a folder inside Deluge and can be navigated to using Browse. The manual also says, "If playing already, Hold Rec + Play to Quantize Rec to start loop" but often the sequencer stops while trying to quantize the recording to the tempo.

Sound Design

Saturation

The Saturation effect on the Deluge works WAY better if you turn down the Osc/Gain level of the instrument. Like down to 1-5.

This pretty much goes for any nonlinear effects - not just the deluge. The input level and frequency content will dramatically change what comes out.

Stereo Width / Widening

Credit: postsolarpunk

There's a technique called stereo widening where a noise sounds like it's spread across the stereo field (L and R) instead of only from the center point. Slightly delaying either the L or R channel from the other can produce this effect, but we don't have that control on Deluge. Hard panning two copies of a track L and R can also aid in producing stereo width. This technique is used often for vocal doubling, layering guitar tracks, widening synth pads, making bass "huge", and so on.

On the Deluge, we can start first with the digital delay with stereo ON. Get any sound, then set the delay time to a very short time, say 40. Turn up the delay amount from 0 to a small value, say 8. The stereo delay hard pans the delay repeats L R L R L R, and so on, which at small delay times fills the stereo field. This might be good enough, but it has a specific delay sound which might not be what you want.

Another method is to duplicate a track twice, and then pan a copy L, Center, and R. This gives you 3 copies of a sound to work with that fills the stereo field. This gets hard to manage and mix, so it's a good technique to use when you're done composing and you're onto the mixing stage. Alternatively, this can be used as a good composition technique if you modulate the filter, volume, and panning of these tracks in a complimentary way. For example, if you had a copy L that was rising in volume and the high pass filter was rising as well, you could compliment this sound with the R copy by pulling down the lowpass filter and its volume in an "opposite" modulation way. Since they're the same sound and melody, it'll sound like it's being modulated inside the stereo field, when really it's just two copies of the same synth. You could then do some creative panning here too.

Lastly, if you want to "thicken" a single synth track, layering multiple synth voices, slow rate and small amounts of chorus, and small amounts of short time stereo digital delay will give you a bunch of layered voices inside of a single synth track. This is called unison and is the basis for the supersaw type of patch common to a lot of sawtooth basses. Try layering octaves or sub bass as well for OSC1 and OSC2. This process of generating multiple voices for one patch can be CPU intensive, but if you're happy with how a patch sounds, you can resample the melody and load it as a sample. Resampling could be part of the composition as well, because all of these techniques can be reapplied to the resampled multivoice synth.

Additive Synthesis

Credit: annaluise

I just realized that the Delly is also capable of additive synthesis. By assigning multiple synth tracks to the same midi controller you can play them simultaneously. This may be pretty obvious to some of you. I was trying to replicate a Hammond organ using the eorgan single cycle waveforms from AKWF. That actually worked well enough. But then I realized I could just as well use five synth tracks (nine sine waves) to emulate the nine drawbars of the b3 organ. Using LFO1 to modulate the pitch of each track and LFO2 to modulate the LPF frequency as well as the pan of each track makes for a good enough Leslie.

Then I assigned the volumes of the individual oscillators to the nine drawbars of my midi controller and the rates of all the LFOs to the same single knob on the controller. Another knob assigned to the reverb of each track. Turning the knob for the LFOs by hand until you reach the rate that sounds right seems to emulate the acceleration of the Leslie good enough.

I just had a few minutes to experiment with this this morning. But it's a promising sound already.

Neurofunk Bass

Credit: Kravening (<https://soundcloud.com/kravening/mosfet-deluge-jam-03>)

- 1 Low pass filter with resonance
- 2 Add in the Saturation

- 3 Turn up both OSC Levels
- 4 Detune them slightly with Transpose -5 cent on OSC1 and + 5 cents on OSC2
- 5 Turn Synth Voices to 2 voices, and play with the voice detune amount
- 6 Adjust / Automate the Transpose detuning, filter cutoff, and distortion to taste.

Reese bass

Reese bass using 3 synth clips controlled by a single midi clip (See MIDI Out to MIDI IN section). Start with a sub bass synth clip using a sine wave. Next, add a low bass synth clip using sawtooth waves, low-passed, with some saturation to taste. Third, add a top bass synth clip of sawtooth waves, low-passed, then add as much unison, saturation, chorus, reverb, and delay as you want to flavor it. The sub and low bass clips provide a foundation for the bass sound while the top bass can be used to sculpt the tone of the signal.

Granular Synthesis Hack

Demo Video and Explanation: <https://www.youtube.com/watch?v=6nYdeFWyY9s>

So here's a quick rundown:

- New Synth
- Sample as OSC
- Shorten clip to 0.1.0 bars, zoom level 64th
- Sequence a whole row of notes (untested alternative: use arpeggiator e.g. set to 64th notes. Could make it easier to play and add / remove notes)
- Play

At this point you already have grains, but very choppy ones. You can change the grain count by adjusting the tempo (or the arp rate).

To make the grains smoother:

- More attack, more decay, more release
- Modulate A, D, R with random (so that it doesn't sound so static)
- Modulate LPF with random
- Modulate Pan with random
- Modulate master volume with random
- For more sparkles and highs add some notes one or two octaves above (try out pitch/speed: link - independent, makes a huge difference)

- EQ: less lows, more highs (the low end tends to get way too muddy)
- Add all the reverb
- Add a lot of delay with slow rate

Now you have a nice pad.

To change the position:

- Go to waveform editor
- Change sample start position (green bar) by pressing somewhere or by rotating the select knob (zoom in for finer resolution for both)
- To make the switch even smoother, turn the LPF (or volume) way down before switching and pull it back up after the switch, before the reverb has faded

-> RESAMPLE THE PROCESS AND PROFIT

You could also:

- Record each desired position into a separate sample
- Put those samples into a kit
- Make them loop
- Add a long attack/release/reverb

This way you can switch between the different positions/chords in a more controlled way or sequence it to make it fit your track. -Heptagen

Wavetable synths also work well for granular. Either put down lots of notes at 1/64 or set the ARP rate very fast, as above. Wavetable position (Custom 2 gold knob) now changes the sound of the grains. Modulate with a slow LFO1 or record automation for great sweeping effects (ENVs and LFO2 retrigger at the granular level, not as useful). -nilc

Percussion Synthesis

Credit: postsolarpunk

A general purpose percussion patch is a quickly decaying envelope patched to the transpose of an oscillator and/or patched to the cutoff frequency of a filter. Turn envelope 2 sustain down to 0, set the attack to 0, set the decay somewhere between 1-15 to taste, turn up the resonance of the low pass filter, patch ENV2 to the the cutoff frequency of the low pass filter. Turn down the cutoff frequency of the low pass filter to the point that sounds good. Whenever you play a note, the envelope will quickly sweep the cutoff frequency from a high to a low value.

LPF cutoff frequency determines percussion tone. ENV2 > LPF modulation depth shapes percussion transient tone. Decay time changes how long it takes to move the filter (plucky vs slow descent) Resonance affects how pronounced the filter is.

Apply this same idea of a “snappy envelope” to modulate other parameters to achieve different results (FM feedback, OSC transpose, HPF, PW ...) Percussion sounds consistent of a transient, body, and “tail” to the sound. Try synthesizing all 3 components individually and layering them to create different percussion sounds. For example, a snare drum using only white noise is hard to replicate the sound of a physical snare drum. A better approximation can be found by synthesizing the plucky drum stick hit, the snare noise, the tonality of the snare resonating, and then layering these 3 sounds together. Try layering samples instead of synthesizing. Use 3 samples for the transient and 4 different samples for the body. Try resampling sounds to print multiple layers of sound to a single .wav file.

Feedback Synthesis

Credit: postsolarpunk

Watch your volume!

We can patch the audio outputs into the audio input of Deluge and listen to the result using the headphones output (or alternatively patch the headphones output to the input and listen using the main outs). Using either an audio clip or a synth clip with the OSC TYPE set to inL, inR, or inLR can be used to create an audio feedback loop inside Deluge. Placing a note at C3 extended across the length of the clip means the audio input is played out with no pitch shifting applied. This audio is immediately read at the input of the device and thus feedback is generated.

Volume control can be done using Deluge’s main gold volume knob to control what is sent out of the module. The OSC LEVEL on the synth clip can be used to adjust the input gain. A loud output volume could be used to overdrive the input of Deluge creating clipping distortion artifacts to be introduced into the loop. However, this is also the monitoring volume, so watch your levels. The OSC LEVEL could also be used to drive the signal internally and saturate the headroom of the device. Use gain controls to encourage feedback if the gain is dying.

The high pass (HPF) and low pass (LPF) filters can self-oscillate when resonance is turned up. Modulating the cutoff frequency yields a lot of cool sounds while feedbacking. Modulate the resonance to send bursts of tone into the feedback loop.

Transposing + feedback can generate rising tones as the transposed signal transposes itself and so on. Decimal transpose values of 0.01 give more subtle effects than integer values like 5.00. Feedback transpose of octaves and fifths are used for a lot of pitch shifting delays. Patch and LFO to the transpose with a small amount of depth to push the transpose slightly positive then slightly negative to hear the audio spill upwards and downwards. Use the arpeggiator to pitch shift the audio feedback. Turn the gate down to a low value and turn up the delay to get feedbacking arpeggiated noise. Modulate everything!

Panned reverb feedback

Credit: heptagen

Panned Reverb Feedback

- deluge stereo out -> deluge stereo in
- listen to what the deluge is doing through headphone jack
- make a synth, pan it to right, add reverb, pan reverb to left
- add new synth, osc type "inL", place a C3
- add bitcrush, phaser, decimation etc to reverb
- You can even transpose it or turn it into an arp. -Heptagen

Humanizing drum loops

Credit: Koka Nikoladze <https://www.youtube.com/watch?v=WGNclh-eTe4>

Koka's Talk Episode 002 is often linked as an example of how to make a drum loop sound more like if a human played it. It involves doing a lot of small changes that add up to a great effect. DTCTS + other magic

Dynamics: Accent specific triggers of a pattern by adjusting velocity louder on emphasized trigs.

Timing: Nudge notes left and right to establish small amounts of swing

Chance: 90% or 85% chance for all notes. Add lower chance triggers for fills at 40% or below and apply dynamics, timing, and chance to the fill triggers as well.

Tone: Randomize LPF freq by very little, maybe 10. Randomize snare frequency by 4. Small amounts of random modulation

Space: Delay time to something very small slapback, amount to something small, reverb amount to something small as well for both the high hat and reverb. This gives it a small amount of reverberation inside a room as if recording it.

Envelope Release: Randomize high hat release time, this means that high hats will be very short or sometimes very long which adds a lot of interest, especially good at varying how fills sound. Do the same with snares.

Stereo desktop FX unit

Credit: postsolarpunk

Using an audio track, the Deluge can constantly output whatever audio is coming into the input. This can be useful for playing something before the Deluge Play button is engaged, or just simple monitoring of something through the unit. Audio tracks can also be used to record incoming audio to loops in a guitar pedal looper style workflow. Each overdub can be individually recorded, played, reverse, timestretched, and have FX applied to it.

A synth track can also be used to monitor incoming audio. Make a new synth, set OSC TYPE to inL, inR, or inLR, then place a note on the grid at C3 and extend it the entire length of the clip. Press play and Deluge will play out whatever it hears at its audio input as long as the note is playing. At C3 there is no pitch shifting of the audio input, but if you play

notes higher up, you will get corresponding pitch shifted versions of the audio input. Think of this as if the audio input was your oscillator in the synth.

Arp can be used to sequence and gate the audio input rhythmically. The two filters can be used and modulated. The input can be panned L or R. The reverb, delay, and mod effects like flanger can be used and modulated. Playing notes can pitch shift the input. The transpose and level of the OSC can be modulated. Noise can be added. EQ, saturation, bitcrush. What's a good portamento for an arpeggiated audio input into stereo delay modulated with an audio rate sawtooth LFO sidechained to a drum kit???

This is only one synth patch. Deluge lets you make more. Load up 5 different parallel stereo delays with different parameters. Load up 6 different audio input arpeggio patterns. Try parallel dry, saturation, bitcrush, and flanger then use the Song View reverb send on the mix. Try 4 of the same patches and pan them all across the stereo field to fill up the space.

Karplus strong synthesis

Credit: Heptagen

What is Karplus Strong synthesis? I wondered and went on to find out that it means that a short burst of white noise gets fed through a delay with a very short delay time to get comb filter effects. This is used to simulate plucked strings and such. Then I wondered if the Deluge is able to do this (most important factor being the delay time) and lo and behold - it is! (Although just a very basic form of it)

Shift + Synth = New Synth patch OSC1 and OSC2 are silent (Set OSC level at 0 for both) Noise to 50 Patch ENV1 to Noise Set ENV1 attack 0 decay 3 sustain 0 release 0 Delay normal (not pingpong), analog, very short time, very high feedback (around the middle) Optional: LPF frequency to ENV1

The delay feedback handles the sustain of the note, the delay frequency changes the pitch deluge limit: can't only put delay signal into lpf, source gets filtered too. Also there's no way to musically play the "string" with different pitches, you can only change the delay time by hand, map it to sidechain or to lfo1 (which could make this useful for a limited amount of cases after all).

So yeah, deluge does Karplus Strong. Is it useful? I don't know. Probably not. But since when does stuff like this get measured by its usefulness anyway...?

Credit: postsolarpunk

To add to this, you could use different sample types instead of the noise to change the tone of the string. Instead of a short noise burst with ENV1, load a noisy sample of something into OSC1 and shape that sound to send into the delay. You might be able to "sequence it" using a kit track by changing the sidechain send amount per step, but that seems like a lot of work. The other way is to parameter-lock the delay time and sequence it that way.

Sampler

Credit: postsolarpunk

There are thousands of things you can do with a Sampler.

One unique thing Deluge can do is use the Synth Voice parameter to have multiple playbacks of the same sample and detune them, similar to how synths can do unison but with samples. Refer to the Sound Engine: Number of Synth Voices section for more details.

Pressing and holding [Affect All] + turning Select knob will change the value of a parameter for all rows in a Kit clip. This only applies to Polyphony, Sample Mode, Reverse, Speed, and Pitch/Speed. Doing this for speed is a fun way to get a “decay” effect to all the samples at once. It’s also great for setting the playback mode of a Kit with a ton of rows, specifically when using the auto slicer feature and a drum loop. Affect all Reverse, Speed, and the gold knob for pitch (defaults to Custom 1) as live performance effects. Make a copy of the kit clip, modulate all the parameters, then return to the original copy. Affect all Speed can timestretch a lot of samples simultaneously. At lower speeds, a pseudo-reverb effect can be achieved. At higher speeds, it achieves a similar outcome to “shortening the decay” for a kit of basic drum machine one-shot samples.

Make Multisample of Any Folder of Samples

Credit: postsolarpunk

Endless WAV | Bjorn Bojahr Save your data before trying anything with 3rd Party Software!

(<https://www.bjoernbojahr.de/endlesswav.html>) Deluge Sample Maps by postsolarpunk A few sample maps I’ve made using my own samples (https://drive.google.com/file/d/1tHSacHr22leTv463JSnhDXsldUfPR4Ez/view?usp=share_link)

The multisampler on Deluge works by automatically detecting the pitch of a sample and then mapping it to the correct location along the keyboard. If the metadata (<https://en.wikipedia.org/wiki/WAV#Metadata>) of the .wav file samples have the Key set to a note, then Deluge will look at that data and map that sample to that note, bypassing the automatic pitch detection. This means that we can distribute a folder of samples across the keyboard in any way we want by setting the metadata on the .wav files. Then we load up the multisample like usual and it should map all the samples correctly. Any software that can edit metadata of .wav files can work for this. Endless WAV was a free software recommended to me.

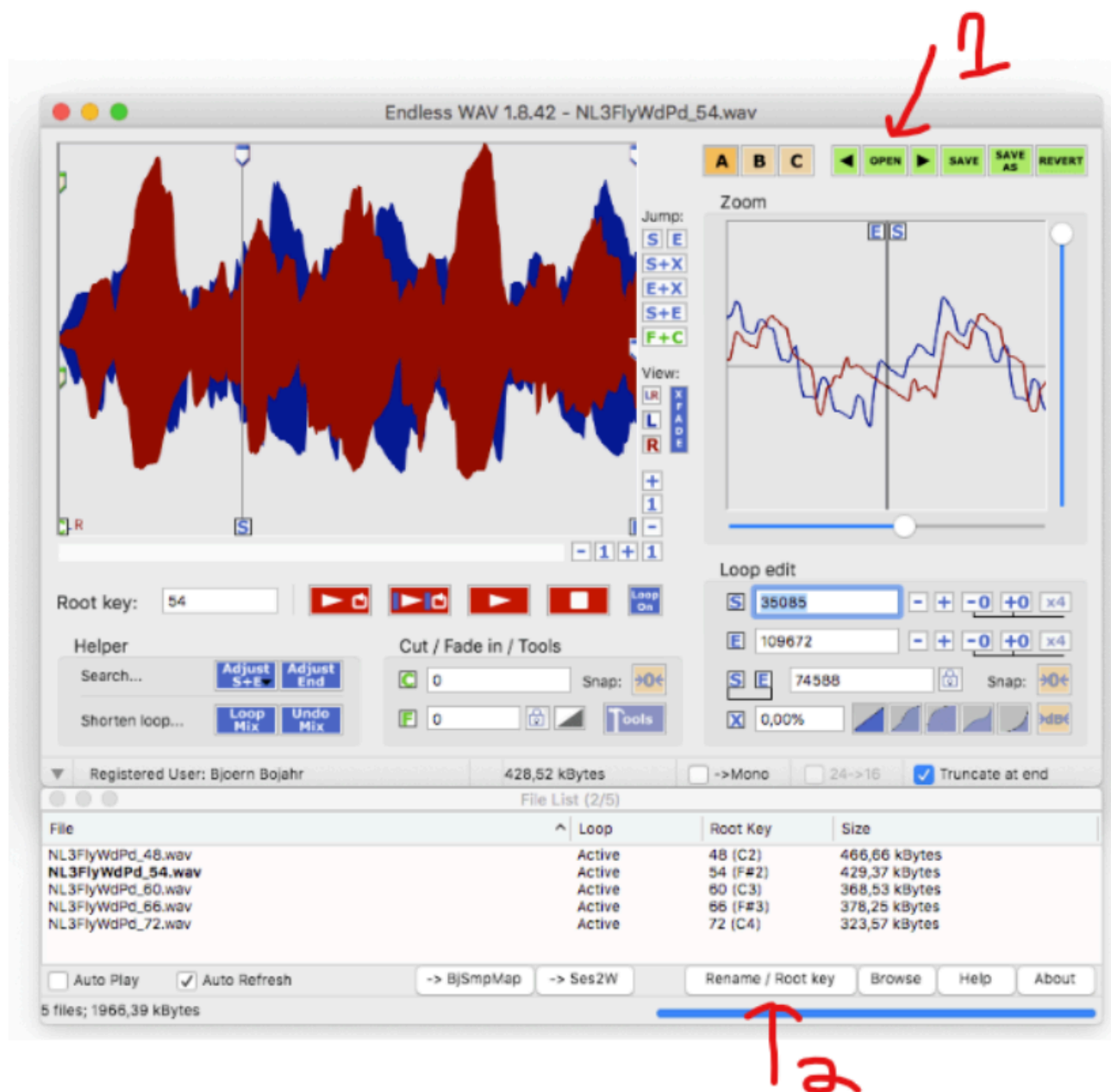
1. Make a folder full of samples you want to make a multisample with.

This can be any pile of samples. I’ve mapped drum loops to a multisample here (<https://www.youtube.com/watch?v=3FVTTXZital>) and created a few different maps of percussion samples here (<https://www.youtube.com/watch?v=0wJXjwLtRKQ>) as two examples. The .wav files need to have a metadata tag applied to it. Some .wav files can be seen as “corrupted” because the metadata tags are absent. Some applications truncate the metadata tags from .wav files. I ran into this while chopping up a 5 minute recording in Ableton where the audio was saved to the .wav, but the

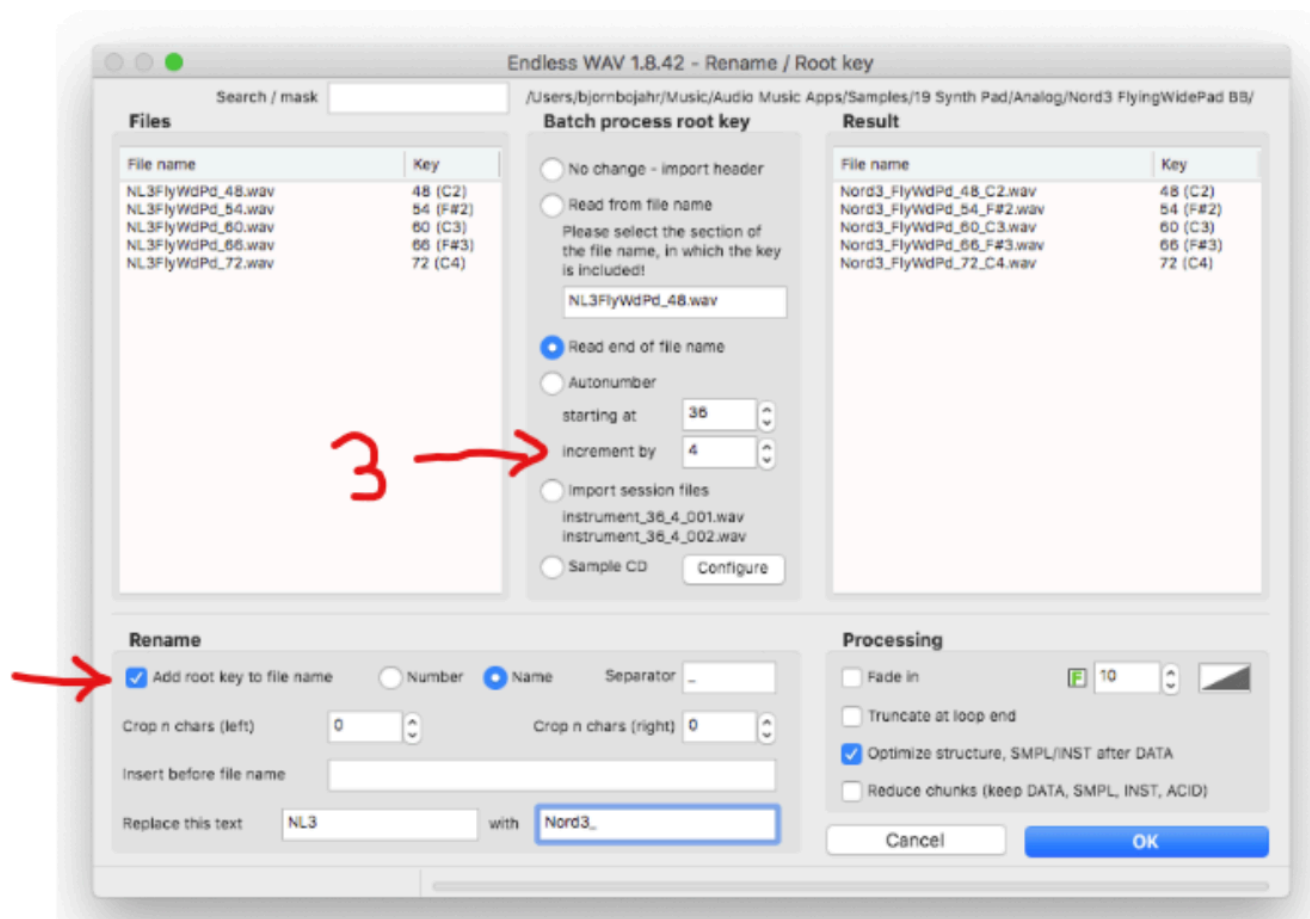
metadata for all the chops was absent. VLC Media Player is a common software that can reapply metadata tags to all your files by importing and exporting all the chops samples as .wav file type again.

2. Edit the metadata of your wav files

I used Endless WAV linked above, but it should work with anything that can edit all the metadata of your samples.



Open a sample in the folder with your samples. The rest should show up at the bottom. Click the Rename / Root Key button



On the left are your current files and on the right is what the current operation will do to them. Use the Autonumber feature to set at what note we start mapping from and the spacing between samples as we increase in note. I usually started from zero and moved up by 1 or 2 mapping around 100 files across the keyboard. I also added the root key to the file name, but I don't think you need to modify the names of the files at all. If your files are "corrupted" which means the metadata tags are missing and the software can't find them, you'll see that the Key parameter can't be updated. Use VLC Media Player to batch import / export all your samples as .wav files which should save them all with metadata tags appended to the file and try again.

3. Load up your multisample!

Copy the folder of the multisamples to the Deluge SD card. Shift + Synth makes a new synth. Shift + [Browse] lets you browse files on the Deluge. Navigate to the folder with your multisample. Click and hold the select knob, you should see MULT flash on the screen, click it. Deluge should load up the multisample!

4. Enjoy your multisample!

Using this technique we can modulate the sample selection on Deluge. Usually the arp sequences the note, but with a multisample each note is mapped to a different sample, which lets us sequence the sample selection. This is fun for rapidly firing off a dozen different drum samples. Polyphony acts strangely here. Poly will let the samples ring out as we play chords or melodies, usually to completion depending on the sample mode. Mono will cut off any previous sample played, which can be fun for sequencing multiple long loops and triggering playback of one sample while

cutting off playback of another. Portamento can lead to fun unintentional effects as unrelated samples try to slew their pitch while moving across the keyboard.

This opens up SP404 style sample playing as well using the isomorphic keyboard. Hit record and start finger drumming patterns. Use the arp sync rate as a performative feature to do quantized fills while finger drumming patterns.

Subtractive synth

Credit: postsolarpunk

FM inside Subtractive Synth Mode with the Filters

For some reason, the filters are disabled when using the FM synth mode. Traditionally, FM adds harmonics by multiplying sine waves whereas with subtractive synthesis we start with a harmonically rich waveform and subtract harmonics using the filter.

However, we can map audio-rate LFOs to OSC transpose in subtractive synth mode to imitate an FM synth, then use the filters additionally. Turn up the LFO speed super high, set them to sine wave shape (for now) and modulate the transpose of OSC using the LFO. Then, use an ENV to modulate the modulation depth of the Transpose LFO. This means that the envelope controls how strongly the LFO modulates the Transpose, which is sort of how FM synths do it.

Continue from here modulating the LFO speed with another audio rate LFO or something. You can modulate the transpose of each OSC individually and then modulate the main transpose of the whole synth track too for different layers. Then use the filters however you want.

FM Synth

Credit: Heptagen

SY Programming by Herbert JanBen (<https://chrisarndt.de/files/yamaha/SY%20Programming%20v0.40.pdf>) Helpful resource for FM synthesis. Specifically pages 15-19 can be applied directly to the deluge, but other parts are helpful too. It explains the general ideas to get into certain areas of sound instead of giving hard values to enter.

Ring Mod Synth

I believe this is the most unused synth mode due to the difficulty of using ring mod, however delugians Rezzonator and RSKT have made a fantastic tutorials covering ring mod which you can view here:

Rezzonator: Synthstrom Deluge - Ring Mod Explained (<https://www.youtube.com/watch?v=emXa-buOKTk>) RSKT: The Deluge Video Manual 11 - Ring Modulation (<https://www.youtube.com/watch?v=-pujEVANOxY>)

Often ring modulation is employed pragmatically for metallic sounding sound effects, distortion type noises, and generating sounds with interesting combinations of harmonics.

Wavetable

Credit: postsolar postsolarpunk

Xfer Records Serum plugin has wavetables that are compatible with Deluge.

Decimation reduces the audio's sample rate without filtering then interpolates it back up to the Deluge's native sample rate. We lose high frequency content this way, which is desirable if our wavetable is very harsh due to a lot of higher harmonic frequencies present in the sound. Decimation between values 0-20 can lead to some nice filtering of harsh frequencies with the wavetable synth that sounds different than a LPF. It does give the sound overall an increased aliased sound, but a little decimation might do the trick as a different flavor.

Modulate Sample Start Point using Wavetable Synthesis (This was just a fun experiment that yielded some cool sounds, do not expect this to "work")

I loaded a drum loop as a wavetable for an OSC. Any sample you load into the wavetable must be a mono waveform. The wavetable can load pretty long files (up to 10 seconds of audio tested) as a wavetable which is notable. I attempted to "playback the sample" by modulating the wavetable position at the same speed as the wave that was playing back. Thus the oscillator would scroll through the wavetable at the same rate it was oscillating (hopefully) and thus we'd get a sort of timestretched sample playback of the sample as a wavetable.

To get it to "play the sample" you have to get the wavetable position to move at the correct speed. I modulated the wavetable with an ENV. The envelope depth controls the "distance" across the wavetable we're traversing, but an increase in the depth means that we're traversing a larger distance in the same amount of time, which means the "playback speed" increases. Thus, you have to compensate by turning up the attack time of the ENV too. I had mine at like attack 45.

Next, use the grid to step sequence the starting position of the wavetable. Since the ENV "scans" crudely through the sample, whatever the wavetable position is becomes the "sample start point". Use the grid to do parameter-locking to sequence the sample start point.

Finally, we can modulate the ENV depth with an LFO. At lower mod depth values, we traverse a smaller distance, thus we change the waveform less often, and the sound turns into a more synthy drone sound. As the LFO increases, the mod depth value goes up, we traverse a higher distance, thus we scan through the wavetable faster, and the sound turns into a strange timestretched sample playback sound.

The actual values of the modulation depths are dependent on the other modulation sources and the length of the sample used in the wavetable, so it becomes very difficult to find the right values to use. It took me a while to find values that only sort of worked, but it did result in some really unique sounds, somewhere between a wavetable and a sample scrub.

Credit: nilc, postsolarpunk

Map Note mod source to wavetable, so that each time you play a note, it starts the wavetable at a different position.

Line in and Microphone

The Deluge line is used for external audio input. It is a TRS input and the L and R channels can be addressed individually or mono. If a synth clip's OSC TYPE is set to inL, inR, inLR, then when a note on that synth is played, instead of playing an oscillator, Deluge will play back the audio on the left input, right input, or both left and right inputs, respectively. A note placed at C3 will result in no pitch shifting of the incoming audio. A note placed elsewhere will playback the input audio at a pitch shifted amount relative to C3, for example, a note at C4 will playback audio pitch shifted one octave higher. This can be fun to "play the input audio" as if it was an instrument, playing chords of the incoming audio. The incoming audio replaces the role of the oscillator, so the envelopes, filters, modulation, and FX can still be applied, and a second oscillator could be layered on top as well if desired. Because this is just another synth clip, multiple synth clips each set to playback input audio can be created, each with their own processing and FX applied for parallel FX chains. However, this requires that a note be playing to playback the input audio. See Feedback Synthesis, Live Resampling Performing, and Stereo Desktop FX Unit for more creative examples of using Line In.

To monitor a constant stream of Line In audio, use an audio clip instead of a synth clip. Make a new clip, then in Song View, press and hold a pad on the row you'd like to turn into an audio clip, then click Select. Use Learn + Row Pad Press to select what input source the clip is playing from (inL, inR, inLR, etc.) and then the audio clip should stream the incoming audio without regards to if Deluge is playing or not.

If there is no physical cable connected to the TRS input jack, then inL, inR, and inLR will default to the onboard internal microphone located in the top right section of the deluge. The Deluge can act as a quick field recorder or vocal FX unit using this mic. The HI gain setting is surprisingly sensitive and clear enough for quick recordings. Be careful about feedback, or be aware of it if that's what you're trying to do.

Low Pass Filter

Modulating the low pass filter is one of the first things most people learn about subtractive synthesis. Most modulation tricks mentioned in this document could be applied to the low pass filter cutoff frequency. Modulating the resonance is a less common trick that can be used to add variation to your basic filter sweeps. Try adding rhythmic LFO modulation to the resonance as well as the cutoff to add a bit more tonal spice to your filter sweeps. Pushing the resonance up to a high value will make the LPF oscillate at the frequency set by the cutoff filter which can be useful for adding selective harmonics or a third oscillator to your synth patch. Use the NOTE modulation source to have the LPF track the pitch of the sequence playing so the cutoff frequency stays in tune with the note sequence. Apply an audio rate LFO to a resonating LPF to frequency modulate the cutoff. Use modulation to push the resonance into and out of self-oscillation territory, effectively turning the resonance control into an ON/OFF switch for the oscillation. Try using a small amount of modulation depth for all of these techniques to give your basic filter sweeps more interesting character, or try using

these techniques with a lot of modulation depth to get a lot of fun noise. Small amounts of high frequency modulation applied to the resonance and cutoff frequency is an unusual way to get distortion sound effects.

High Pass Filter

The traditional use case of the HPF is to get rid of bass in a sound. Clean up your mix by high passing anything that doesn't need to play lower notes.

The resonance of the high pass filter can be set high to self-oscillate as an additional oscillator. Try playing the filter instead of the oscillators, modulate the "volume" of the filter by modulating the resonance of the filter. Ping the filter by sending very short bursts of noise into the filter. Turn up the noise, turn ENV1 attack to 0, turn ENV1 decay to 1 or 2, turn sustain and release to 0. Play a note and you should hear a short noise. Use the resonance to tune the response of the filter. Use NOTE modulation source to modulate the filter cutoff so that the filter cutoff changes depending on the note you play on the keyboard.

The HPF can also be used to boost a bass frequency. Play a note, turn up the resonance, and tune the filter to the bass harmonic of the note being played. Turn up the resonance until you can hear the bass of the sound being amplified. Use NOTE modulation source to filter track the HPF so that the bass boost follows the note being played. The preferred method to boosting bass is using the EQ, but this could also lead to a similar but different result. If the resonance is turned up to self-oscillate, then it could be used as a pseudo-sub oscillator.

Flanger, Chorus, phaser

One technique I like to use is a square wave LFO applied to the rate control of the mod fx. If the rate is at a small value, say 5, then the speed of the mod FX is very slow, almost stationary. A square wave LFO1 applied to the RATE will switch from 5 to some higher value, sort of acting like a switch turning on and off the movement of the mod fx.

Turning up the rate of the mod fx can introduce some distorted sound effects as well. Small depth amounts of mod FX when the rate is 40+ can add a fuzzy tone to your sound. It's just another small trick to add a small bit of colorful saturation to your sound. It gets very distorted with a high feedback and depth amount combined with a high rate with the phaser.

If you are dissatisfied with the Chorus, there are two other ways to introduce chorus sound effects. One way is to manually detune OSC2 by a few cents in comparison with OSC1, or to detune it using a modulation source. Another way is to turn SYNTH VOICES to 2 or more and use the DETUNE parameter to detune all copies of the current voice.

Saturation / Distortion

Credit: postsolarpunk

Deluge can't modulate the saturation parameter, but it can modulate OSC Level which then feeds into the saturation. At different audio inputs, there will be different amounts of saturation applied to the signal. In a similar vein, if you have a sample that's too quiet even with the level turned all the way up, turn up the saturation a few notches (1-4 ish) and it will boost the volume of the track without too much distortion. If you want some compression to the signal and don't care too much about the tone of the audio, you can use a bit of saturation as well to bring up the levels and squish the audio together.

There are other ways the Deluge can get distorted sounds other than Bitcrush, Decimation, and Saturation. Pulse width modulation can be used to shape synth oscillators. Audio rate modulation from an LFO can add a certain flavor of distortion to a signal. Applying an audio rate LFO to the filter cutoff can yield some good results. Applying a small amount of this modulation can be key to getting subtle effects. Fast modulation speed with small modulation depth is key to dialing in good sounds. Ring Mod synthesis and FM synthesis also get very noisy pretty quick. The mod FX (phaser, flanger, chorus) all can oscillate very quickly as well, yielding some distortion sounds. These can be modulated by other parameters like ENVs and LFOs to bring in and out the audio rate mod FX dynamically.

Finally, this one's a stretch, but the analog delay model can distort signals over time. Set a long delay time, set feedback at 100% (amount 25), turn stereo off, play a sound and let it feedback through the analog delay buffer a couple dozen times and resample the output.

Bitcrush

Used a sine wave at various pitches. Bitcrush seemed to have 8 stages which go up in increments of 6 ish. 0 - 1 - 7 -13 - 19 - 25 - 32 - 38 - 44 - 50 There's a dramatic difference between 0 and 1, often it sounds like it preserves the original signal while adding a lot of digital noise in the background. Little difference in sound between sine, triangle, and saw. Square sounds square all the time. Most dramatic differences come at 25 and 50. Combining saturation, bitcrush, and decimation at lower values of each yield the widest range of distortion sounds. Ring mod + bitcrush gives a wider distortion sound range than using the subtractive synth engine. Bitcrush doesn't seem to be affected by the oscillator volume.

Decimation

Try using a small amount of decimation to remove harsher higher frequencies from a saturated or distorted signal. Often a value of 5-6 can be enough to remove harshness while minimally affecting the overall tone of the sound. Sometimes a low pass filter can be too strong when trying to preserve the distortion while removing "harshness".

Delay

There are many uses of delay in sound design. See the sections Stereo Width / Widening, Stereo Desktop FX Unit, and Karplus Strong Synthesis, for some novel uses for delay.

Digital delay feeds back clearly while analog delay passes the delayed signal through a model of an analog filter giving it a characteristic grittier sound over time as the delay feeds back multiple times. Both models will self-oscillate at an amount of 25. At an amount of 26, both models will start to gain volume every delay loop, which can cause runaway oscillation and feedback noises. The digital delay will become much louder when oscillating than the analog delay. Often the analog delay model can be run at these high feedback levels and be overpowered by incoming audio such that the buffer doesn't overtake the mix. However, the digital delay will loudly feedback and overpower most of the mix if run above 25.

Digital model high feedback amounts with short delay time can produce stereo width FX, pseudo comb filtering effects, and other oscillation type effects for a given sound. Analog model high feedback amounts with short delay time can give you an oscillating delay that is ducked by incoming audio, which can produce a rhythmic pulsing feedback effect. Try this out with a kick drum with a long tail into the analog delay model with the feedback all the way up, a very short delay time, and see if you can get the analog delay to duck to the incoming kick. Then, tune the delay time to complement the pitch of the kick for some neat swells.

The delay sync is used to tie the delay time to intervals of the project tempo. The delay time can be dramatically extended by turning sync on and turning down the tempo of the song to a very low value. I've been able to get at least a minute of delay time using this method. At sufficiently long delay times, this enables a "frippertronics" workflow. If there is already sound in the delay buffer, it will be timestretched as the tempo is turned down. The sync changes delay time in terms of powers of 2, thus you can get octave pitch shifts in the delay line using this. Similar pitch shifting effects can be achieved by modulating the delay time with modulation sources. The digital delay model at slower stretched speeds will begin to sound digitally aliased, similar to the decimation effect. The analog model at slower stretched speeds will begin to saturate and distort since the buffer is run through the analog model first before feeding back. These long delay times can be a good way to mimic pitch shifting delays and pitch shifting loopers like many boutique guitar pedals do.

We can do flanger, chorus, and phaser type effects manually using a short delay time with high feedback and modulating the delay time with either LFO1 or Sidechain. Investigate this if you'd like to exploit the different LFO shapes or sidechain envelope amounts to control a "mod FX" instead of using the built in mod FX. The sidechain envelope could be employed to do "manual retriggering phaser" sound effects in this way.

Reverb

Credit: postsolarpunk

There are three presets for Small, Medium, and Large reverb sizes, but those are mapped to actual numbers on the Size parameter. The Large parameter is only 45 and can be turned up to a max of 50 for a significantly longer reverb tail. On the other end, it's fun to turn the size down to a small value and the amount all the way up to get short reverberation sounds to flavor a bass or add width to a dry sound. Turning down the dampening to 0 will bring out high end frequencies in the reverb. The amount parameter can be modulated using LFO1 and the sidechain, try swelling the reverb in and out with an LFO, or do rhythmic reverb ducks with the sidechain. There's an automatic sidechain for

the reverb as well which bases its parameters on the sound with the most reverb being applied to it. The amount of the sidechain and the selection between automatic and manual sidechaining can be edited in the sound editor menu.

Credit: Affectionate_Bee_781

For 100% wet reverb, first start with any sample in a kit. Turn the reverb amount all the way up, then close the low pass filter on the whole kit. The wet reverb sound will come through due to the Deluge signal routing, but not the dry signal.

EQ

Credit: postsolarpunk

Turn up the bass! EQ your synths, they'll sound better. There are two shelf EQs on the Deluge. This means we can define the frequency cutoff point, and then everything lower than that for the Bass EQ can be increased or decreased. Similarly, we pick a frequency cutoff for the Treble, then raise or lower everything above that point. I often increase the bass cutoff point, set the Bass amount to 30, decrease the treble cutoff point, then set the Treble to 30. These are rough guidelines, but this boosts the low and high ends. Bringing both the bass all the way up and treble all the way down can boost the mids of the synth as well. Or use these to mix the high end of your synth without the sharp filtering the LPF provides. The EQ amounts are also available as gold knob values if you click the knob to cycle through LPF, HPF, EQ. This only accesses the depth of the shelf and not the cutoff point.

If there's not enough boost / cut, resample the track and keep EQing!

Stutter

Credit: postsolarpunk

If you press the knob, turn it down, and release, the light should reset to the initial halfway point. However, if you press the knob, turn it up, and release, the knob value should stay at a higher value. The stutter is tied to the project tempo. One trick is to Stutter then increase the stutter speed while decreasing the tempo (or the opposite, decrease stutter while increasing tempo). The tempo decreasing will slow down the stutter speed while turning up stutter compensates for the lag to keep it at the same speed. When you release stutter, the song tempo will be at a slower tempo than when you started. This is fun for project transitions or unexpected tempo changes in the song. This same idea applied if you have Deluge externally clocked and you modulate the incoming tempo. Stutter will shift speed in relation to whatever the project tempo is.

Another fun trick is that stutter can be applied to individual tracks when in Song View. Press and hold a row, then start stuttering. It'll only be applied to that track. It's fun to stutter drums while the melody and bass keep playing.

Sidechain

Credit: postsolarpunk

Synthstrom Sidechain Demonstration Video (<https://www.youtube.com/watch?v=ogNgyRWMYR8>)

Sidechain is a simple attack and decay envelope triggered by a note in a Kit clip. Sidechain can modulate all modulatable parameters inside Deluge both positively and negatively, as well as the mod depths. There is one sidechain mod source shared between all the synths on Deluge, so it could be used as a macro modulation source if you control the SEND amounts from a single Kit source.

The Sidechain gold knob is the modulation depth of the sidechain > volume mapping. Turn the knob up, there we get a positive sidechain amount, but the volume decreases when the sidechain is applied, so it's kind of backwards. Sidechain can be mapped negatively, which can increase the volume when the sidechain is applied. This same idea extends to all other parameters. Most of the default kits have the kick drum SEND amount at 50 for quick volume ducking, but any row in a Kit can have its own SEND amount.

We can attempt drum compression by modulating the volume of a row in a kit with the sidechain. Each row can adjust how the sidechain affects the sound, but also each row can send its own trigger to the sidechain, so it can be a bit hard to tune the compression. We can not do audio envelope following (fw 4.0), so a real-time compressor is not possible.

Synth Voices and Detune

Phasing Copies of Samples The number of synth voices can take up a lot of CPU, but it sounds rad. Use this with Detune to create multiple copies of the same oscillator voice at detuned offsets, often called “unison”. The Deluge has a unique feature where it can have multiple synth voices for samples as well. For example, 8 synth voices when playing back a sample results in 8 copies of the sample being played back at multiples of the Detune amount. A very low detune amount results in a phasor type of modulation sound that is retriggered whenever the sample is played back, whereas a large detune amount results in a chorus sound.

If you load a sample that's around 10 seconds long, set synth voices to 2, and pitch and speed linked, then the detuned copy will playback at a slightly slower rate than the original synth voice. Setting the sample to loop will result in the detuned voice moving slightly out of phase of the original as the sample loops over and over again. This can be a fun soundscape trick to get the sounds to move in and out of phase from one another, similar to the famous piece Piano Phase by Steve Reich. This could be done manually by loading the same sample into OSC1 and OSC2 then turning down the speed of OSC2, but we can achieve the same outcome using Synth Voices and Detune instead.

If we build off of this, turning the voices up to 8, playing one note, we get 8 copies of the sample all slightly moving out of phase from one another. Playing a 4 note chord results in 4 notes, 8 copies each, all moving out of phase of each other. Load up a different sample into OSC2, and then we've got 2 samples, 8 copies of each, per note, all moving out of phase from each other. Let it loop. Turn on and off the pitch and speed links to “freeze” them so the copies stop moving out of phase.

Fast Layering of Drum Samples Sometimes the easiest way to make a sample sound better is to add another copy or two of the same sample. The way to do this on Deluge would be to copy and paste an entire clip, but instead we could use Synth Voices and Detune. Try this with a kick drum in a Kit clip. Play the kick drum with one voice, then change it to 2-3 voices to see how it sounds. A low Detune amount will bring the samples closer together, often resulting in an

increase in volume and presence of the kick. Be careful to not apply this to all your samples because it will quickly consume a lot of the Deluge CPU. Resample a multi-voice sound and use that as the new base sample. Then you could apply multiple voices to the resampled sample and keep going.

Pan

Credit: postsolarpunk

Random pan is neat. Fast LFO to pan is neat. Did you know there's a Pan amount on the reverb? We can't modulate it, but it's there! There's a classic "doubling" production technique you can do with pan by making a copy of a clip you're working on and panning one all the way left and the other all the way right. This "doubles" the signal and gives it a bigger sound. Try making a copy of a synth patch then using slightly different modulation speeds for the Pan and Filter. Maybe the LFO1 rate on the first copy is at 16 and the second copy is at 18. The slightly different modulation speeds will phase against each other resulting in the sound to wander sound in space.

Vibrato

Credit: postsolarpunk

"Technically FM synthesis is just very fast vibrato" - Deluge manual Vibrato is the modulation depth of LFO1 to master transpose. This parameter is just a shortcut for this LFO mapping since it's a very common technique. Often it's used to add a "warble" or slightly waving sound with a slow vibrato speed pushing the pitch slightly up and down. Very fast speeds result in FM synthesis. Violinists use vibrato often to accent long held notes. Guitarists and opera singers use the same technique too to vibrate the note up and down while holding it. Try modulating the LFO1>master transpose depth with the envelope, so that the vibrato gets more intense over time to mimic this effect. See LFOs section or study FM synthesis for learning more complicated forms of vibrato.

Polyphony

Credit: postsolarpunk

Polyphony applies to samples as well. Set polyphony to poly for a drum loop loaded into a row in a kit (or any longer sample) and then place a note with 8 ratchets on the grid. That loop will play back 8 times in a row and they'll all be layered on top of one another. Fun for drum breaks and glitchy sounds.

Portamento

With a monosynth, portamento will glide between pitch targets instead of instantly changing pitches from one key press to another. This is great for a slippery feeling, see acid basslines for an example of portamento on a mono synth in action. We can also use it for polyphonic patches where we glide between chords at the rate determined by the

portamento. A maximum portamento value can help slowly increase in pitch smoothly, for designing interesting risers for transitions.

One unique thing to do with portamento on the Deluge is to use it with multisamples. Each note on the keyboard will be a specific sample playing, but with portamento, deluge will try to glide from one note to another. Since we don't have an oscillator to use here, it will attempt to pitch shift the target sample appropriately. If you are at a lower spot on the keyboard going to a higher location, it will pitch the target sample lower and glide up to the regular pitch of the sample at the target location. Similarly if you're going down the keyboard, lower target notes will be pitched up higher at first and decay to the normal pitch as the portamento time decays. It's harder to type it out than to hear it, give it a try sometime. Use this to give slippery portamento monosynth effects to a natural piano multisample, or use this with a multisample of drum loops and hear all the percussion pitch shift around while you play the keyboard. Turn the arp on, gate all the way up, and sweep the portamento time to see what effects you get.

Arp

Credit: postsolarpunk

Very good video from Easy Tiger (https://www.youtube.com/watch?v=P9e9Ftzu3_k)

The arp can have its speed modulated by LFO1 or the sidechain. A fun effect is to tie the arp speed to the sidechain mod sent from the kick drum, so that whenever the kick hits, a burst of arp speed is heard. The arp itself needs to be unsynced from tempo BPM to do this. The rhythmic bursts of speed are fun to hear even if the actual arpeggiator isn't tempo synced.

8-bit music uses fast arpeggios to imitate chords. We can do a similar thing on the deluge with a fast arpeggio and a chord to run through. A very fast arpeggio can act as a strange waveshaper as well if the speed is very fast, then we can play the synth as a sort of monosynth. Try this out with the keyboard and listen to how a fast arpeggio can transition between a stable oscillator sound to a fast arpeggio if you play 8 notes instead of just one note at a time. It's a fun effect but pretty noisy.

Envelopes

Credit: LegsMechanical, volsteh, and other Delugians on the forum

Better Envelopes through Modulation Forum thread (<https://forums.synthstrom.com/discussion/comment/14859>)

If you have difficulty finding the sweet spot for decay, attack, and so on, you can fine tune the envelopes on Deluge using modulation. Need a longer attack? Modulate the envelope positively with its own attack. Need a snappier decay? Modulate the envelope negatively with its own decay. For example, patch ENV1 to ENV1 attack to do self modulation of its own attack stage. Note, this changes the envelope's shape too, not just its time length. The envelopes can be used to boost the volume of the OSC levels as well, pushing them past their amount 50 maximum. Short snappy envelopes patched positively to the OSC level can also boost the dynamic range of plucky synth patches.

Credit: dannytaurus, ok_reza, z64, postsolarpunk

Delayed LFO modulation The goal of this patch is to delay application of the LFO for modulation. Delayed LFO>Pitch or Delayed LFO>LPF.

One patch suggested is to use LPF < LFO1 < ENV2 where the LPF is modulated by LFO1 and the speed of LFO1 is modulated by ENV2 with a slow attack. That way, the LFO starts very slow and then speeds up as ENV2 increases in value.

Another similar patch suggested is LPF < LFO1 < ENV2 but this time, we modulate the modulation depth of LFO1 being applied to LPF. This keeps the LFO1 rate the same, but the depth of modulation is increased as ENV2 increases in value. Self-modulating the ENV can provide fine tuning of the ENV time and shape.

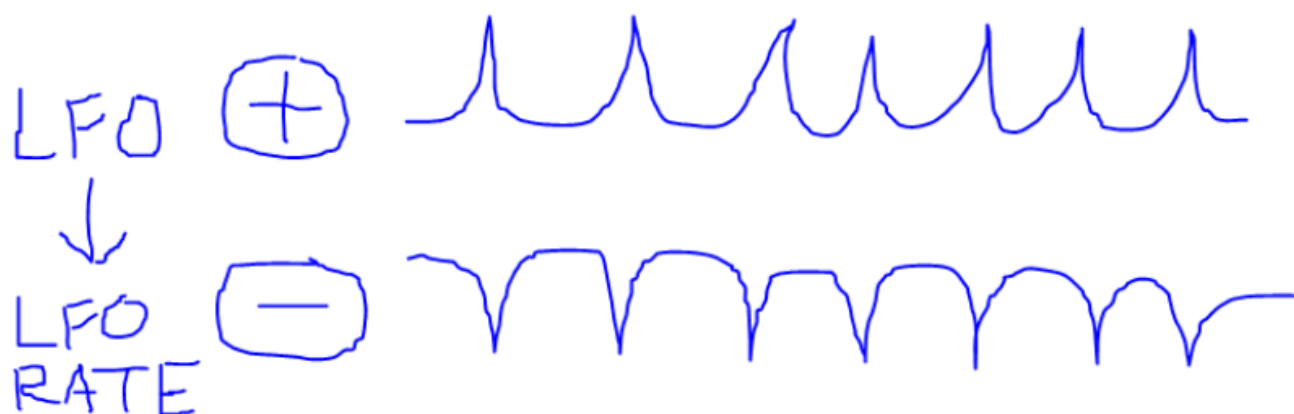
Another patch is to modulate ENV2 sustain. LPF < ENV2. ENV2 sustain < LFO. Set the attack and decay to some high values to set the desired delay time, then patch an LFO to ENV2's sustain stage. Set sustain to a large value 50 and set modulation depth of the LFO to a negative value so it pulls that value up and down. When you play a note, ENV2 runs through the attack and decay stages, then the sustain value will be moving up and down with the LFO which will then modulate the LPF.

LFOs

Credit: postsolarpunk

LFO1 is the main LFO of a synth patch. Currently, LFO1 can sync to tempo whereas LFO2 can not (firmware v4.0.0). However, LFO2 is retriggered for each note, so it can act like another envelope in a pinch and if the note decay is long enough. Both can do audio rate speeds and both can go very slow.

Similar to the self-modulation tricks the ENVs can do, LFOs can also vary their shape and rate through self-modulation. LFO1 can only modulate itself using LFO1 or sidechain. Mapping LFO1 speed to LFO1 rate will cause the shape of the LFO to warp over time. Positive modulation depth results in a behavior where the LFO increases in value, the rate increases, which causes the value to increase faster, thus it stays at higher values for a shorter time. Similarly, the LFO goes negative, resulting in less rate modulation, and thus will stay at lower value for a longer amount of time. Positive modulation depth means the LFO1 shape will be spikey. The opposite is true for negative modulation depth, the LFO will stay at positive values for longer and spike to lower values for shorter periods of time.



This can result in pretty interesting shapes for LFO2 which can have its rate modulated by multiple different sources. Try experimenting with LFO2 rate being modulated by itself and modulated by LFO1 at a slightly different rate. The shape will morph over time as the two LFOs at different rates modulate the rate of LFO2 at slightly different speeds. The ENVs can modulate LFO2, and LFO2 can modulate the envelopes. Unusual feedbacking modulation shapes can be found through the modulation matrix.

Not many things can modulate the reverb, but LFO1 can affect the reverb send amount. Try using LFO1 sync'd to tempo to swell the reverb send using a saw LFO shape negatively applied to the reverb amount. Negative modulation depth means the shape of the saw waveform is flipped so that it ramps up instead of down. Square wave shape with reverb send is also cool to "turn on and off" the reverb send amount. Modulate the rate of LFO1 with itself to adjust the shape of the LFO which controls the pulse width of the square shape, or the curvature of the saw shape. This can help dial in when the reverb swells timing and amount.

The side chain can also be used to modulate LFO1. One example would be to modulate the filter cutoff with an LFO, then modulate the rate with sidechain. Whenever a kick drum hits, it spikes the LFO speed then decays, acting like a retriggerable envelope modulation. Different sidechain send amounts from a kit can vary the LFO speed to make it more interesting over time. The modulation depth of LFO1 applied to a parameter could also be modulated with sidechain. For example, an LFO1 > Transpose mapping with 1 mod depth means that the LFO is barely affecting the pitch, but with sidechain mapped to the mod depth, whenever a kick hits, the LFO mod depth increases, and then the pitch will start to wobble with the LFO. Kind of fun to get a sort of drunk, interrupted, unstable reactive sound. Whenever a sample hits, throw everything out of tune for a bit, then the sidechain decays, and it all comes back in tune. You could do it with just a sidechain, but with an LFO, it'll sway differently each time, making it much more interesting to listen to. Try this technique with PAN, Filter, pulse width, and so on to "apply an LFO to a parameter" whenever a kick hits.

Note

Credit: postsolarpunk

Use Note + Arp to Sequence Parameters Load a sample for a synth Note to ocs1 transpose -50 Note to master transpose -34 Note to osc1 level +50 Note to master level +50 Mapping Note to transpose negatively when we play

notes in the higher register pulls the transpose down and stabilizes us around a certain pitch. The Note mod source pivots around E3 (4.0 fw) so that if you play E3 with any amount of Note mod, it will not affect the destination. Negative mod depth means if we play a note higher than E3, the destination will be pulled down in value. Similarly, if we have a positive mod depth, a note lower than E3 will be pulled up in value. This patch makes the sample the same pitch regardless of what note we play on the keyboard. It “disables” transpose, but still lets us use the Note mod source information. The arp can then be used to sequence the notes played, but we won’t hear any change in the pitch. However, we can use the Note mod + the arp to sequence other parameters (like filter cutoff, pw, LFO2 speed, etc...)

Random

Random pan is triggered every note, combine it with the arp to disperse notes randomly across the stereo field, or apply a small amount to add humanization to samples to wiggle them slightly to give the ear something small to catch onto. Random modulation depth is a great way to generate lots of variation in a patch. For generative sequences, if LFOs are sounding too static and predictable, apply random modulation to the LFO modulation depth, that way the depths of the LFOs will constantly be changing for each note. For plucky synth patches, slight random modulation to envelope depths can give small variations so that the sound doesn’t get repetitive when a quick series of synth plucks are heard. Try this out with ratchets, compare random with no random to give bursts of plucky notes some individuality. This can emulate guitar picking too. Tonal variations can be had by slightly modulating pulse width randomly as well as envelope depth. Too much random modulation and it sounds a bit uncanny.

Performance

Priority

If you’re getting voices dropping, setting clips to HIGH priority should help. However, sometimes this means other voices get dropped in favor of the high priority synths, and then you’re setting everything to HIGH priority.

Multisamples, samples with long release times / playback times, synths with a high number of voices, very long delay times, and pitch shifting real time incoming audio are all major sources of CPU drain on Deluge. Try resampling problematic tracks then deleting them from the song to save on CPU if you’re running into a lot of voice dropping. Deluge will prioritize sounds to drop based on their priority settings, but also if a sound is in its release stage it will be prioritized to be dropped. Try switching sample mode from ONCE to CUT so that it doesn’t playback unnecessarily long, and to keep it out of the release stage. More recent sample playbacks will be prioritized higher than less recent sample triggers.

Multi samples

Resample multi-sample instruments to preserve CPU resources.

Generative strategies

Credit: 1[wild]rogue, postsolarpunk

Generative is a term used to describe setting the rules of the sound sequencing which results in a constantly changing audio output. Often this is achieved by using randomization, feedback, audio analysis (envelope followers / pitch tracking / BPM tracking), irregular sequencing patterns, and slow changing modulation. We can't do all of that on Deluge, but there are quite a few capabilities to achieve a generative patch.

Given a clip with some notes, we can hold down several notes and assign probability to them. This will link the probability to all held notes and either all or none will play with whatever percentage you assign to it. The dot that appears on the display denotes if that note probability is tied to other notes, or if it's independent of other notes. If the percentage probability in one column of notes adds up to 100%, then only one of those notes will be triggered. Use this to have a short melody change one of its notes every time the melody repeats.

To randomize a lot of notes, you could press a lot of notes and assign a lot of probabilities, you could reduce the length of one clip to 1 column, then set the probability of a selection of notes to add up to 100%, or you can use the arp with random direction to randomly step to a note within the arpeggiator's possibilities.

All clip types (synth, kit, midi, cv) can have each row's length set to a different value. For kits, this can be used to create shorter length patterns that are at unusual length ratios (like if the high hat length is 7 and the kick drum length is 11). This is an easy way to create polymetric rhythms. Combine this with the Euclidean sequencing to quickly generate odd drum patterns and fill clips. Apply the same techniques to synth clips to sequence notes using usual patterns. The "main clip length" is set using shift + turn horizontal. Per step modulation (parameter locking, step sequencing, automation, etc.) can be set by holding down the start of a note and changing the value of the parameter for that step. We can't modulate per step for a droning note, but we can add some additional notes and mute them to give ourselves places to put in a step for modulation. Try this with "Affect All" on with kit tracks. All per step modulation points before the "main clip length" can be set, but you are unable to set any per step modulation points for rows longer than the "main clip length". This can be useful where per step modulation for the whole clip can phase against some of the note triggers.

Slow changing modulation can sweep filters, change the arp speed which changes how many notes are played back, sweep envelope stage times, extend delay times, and so on. Use Deluge's random modulation to get constantly changing values whenever a note is triggered. Use random modulation to modulate modulation sources like ENV which can be used to modulate parameters. Or at a deeper level, modulate ENV with RAND, then modulate the modulation depth of other mappings with the randomized ENV.

Square wave LFOs can be used as a limited "2-step sequencer". Two square wave LFOs with different speeds and modulation depths applied to transpose results in a selection of 4 possible notes that are played back when a note is triggered. Mapping these LFOs to multiple parameters with slow LFO rates can create 4 different "states" that the LFOs move through for a synth patch. Square wave LFOs are also great for modulating delay time, and can switch between delay time octaves if the modulation depths and delay time parameters are set correctly.

Finally, sidechain can modulate almost all of the parameters, but we have only a single sidechain modulation for an entire song. This can be triggered at different intensities depending on the send amount from a kit track. Different rows can have different send amounts. Also, the sidechain is only triggered if the note itself is triggered, thus we can trigger different levels at different rates of probability.

MIDI

MIDI Out to MIDI In

credit: volsteh, annaluise, postsolarpunk

Patch Deluge's MIDI Out to Deluge's MIDI in. Turn off midi thru. Make a new midi clip, put in a couple notes, then press play. Now Deluge outputs some midi notes and also hears some midi notes coming in. Open up a new synth clip, press LEARN and an audition pad to midi learn the incoming midi sequence (the midi clip sequence) to this synth clip. Now the synth clip is linked to the midi channel. Use the midi clip to play the synth. Deluge can map a midi channel to any number of synth clips! Map 20 synth clips to the same midi sequence! Play them all simultaneously! Pan 20 different synths across the stereo field!

The same technique also works for midi CC. In the midi track, record automation of a gold knob with the midi CC you want to use and playback the clip. Then in a synth track, select the sound parameter you want to map to the midi CC (shift + low pass filter for example) then while the parameter is flashing, press LEARN to map the incoming CC to the currently selected sound parameter. Now that this midi CC is mapped, go back to the midi track, and delete the gold knob automation (shift + click the gold knob). The automation will be deleted and the midi mapping should be saved. Any number of sound parameters can be mapped to the same midi CC.

One example of this patch is to make a reese bass using 3 synth clips controlled by a single midi clip. See the Use Case: Additive Synthesis and Use Case: Neurofunk Bass sections for examples on how to use this workflow.

MIDI CC

Credit: Too_Mere

Recording MIDI CC from external controller Forum thread (<https://forums.synthstrom.com/discussion/3452/recording-midi-cc-from-external-controller>)

It is possible to record incoming MIDI CC data from an external MIDI controller. Instead of using MIDI thru, learn a MIDI controller to the audition pads of the MIDI clip that's set to the channel of the external synth. Then MIDI CC changes will be recorded with the clip, regardless of gold knob settings. If a gold knob is set to the same CC as the controller the LEDs will reflect any movement or automation.

MIDI Learn

Credit: ilovesteak, metamere

If you're using a midi controller and it's only sending on channel 1 or only channel 2, but it's playing both clips, then it is probably set as an MPE device. Midi > Devices > MPE > Input and make sure the upper and lower zones are both set to 0 channels. It can automatically be set to a nonzero value if deluge gets notes on 2 channels while in learn mode.

CV / Gate

Clock Sync

If you are having midi troubles syncing to a device, or CV/Gate run/stop/start sequencing troubles as well, try manually creating a gate clock using the Deluge sequencer and a gate output to sync to the other device.

Trigger Clock

Credit: postsolarpunk

Tempo Modulation via CLK IN (https://youtu.be/_EKpT1tO02o?t=1179)

Demonstration patching a copy of the kick to the CLK in, while monitoring incoming audio through the Deluge using a synth clip with osc type inLR, using tempo synced delay FX, while playing samples on Deluge using an external midi controller.

CLK IN can track audio rate signals. I don't know how accurately, but I discovered this when I patched a kick drum from a modular synth to the clock in order to see if Deluge would crash. Instead of crashing, Deluge synced to the audio signal. A basic kick drum is a short frequency sweep from high (1000Hz) to low (20Hz) for example. This means that the playhead of the Deluge sequencer follows along at those speeds, 1000Hz down to 20Hz, as if you're turning the Tempo knob very quickly. At a certain low pitch, the Deluge loses track and stops playback because it doesn't have a fast enough series of triggers to hold on to. Try using audio clips or synth clips with inLR oscillator type to monitor incoming audio and use Deluge as a tempo modulated FX box.

This can be fun to regard Deluge as a large eurorack sequencer module with 1 CLK input and 4 CV/GATE outputs. Modulate the incoming CLK tempo to sequence the Deluge in a variety of ways. Randomly double the incoming clock speed to get the sequencer to double in speed. This is equivalent to "one octave up" if you are playing an oscillator into CLK in. Jump between half-time and regular tempo drum pattern / melody playback speed.

Look up clock divider patches (<https://www.youtube.com/watch?v=ilo52K8Oje8>) and try applying the same techniques on the Deluge, provided you have a modular synth with a clock divider to modulate the Deluge. Deluge can use Sync

Scaling to derive polyrhythmic patterns from the Tempo clock. Combining these techniques, you could probably sequence polyrhythmic patterns on the deluge.

Anything that has a SYNC parameter is controlled by the Tempo. This means that Sidechain, Delay, Arp, Stutter, and LFOs that are synced to the project tempo will also be modulated in time with the tempo. This can produce some wild sounds, see demo linked above. Very fast modulated delay time can result in a lot of interesting time buffer artifacts. The Stutter buffer is tempo controlled as well, so if the stutter is engaged while the tempo is changed, it results in a change in the pitch of the stutter buffer. LFOs could be swept from audio rate down to low frequency quickly for stabs of audio oscillation. Have fun experimenting, who knows what can happen.

Clip sequencing study

CLIP SEQUENCING SONG VIEW SUMMARY

SECTION: PLAYING SECTION A, ARM SECTION B

Is longest ARMED is multiple of longest PLAYING

TRUE: launch at MULTIPLE index of longest ARMED

FALSE: launch at LONGEST PLAYING loop

NOT SECTION: PLAYING ANY CLIPS, ARM INDIVIDUAL OR MULTIPLE CLIPS

(all, some, none) ARMED clips have multiples in set of PLAYING clips:

ALL MULTIPLE:

launch at MULTIPLE index of longest ARMED

SOME MULTIPLE:

IF: highest positioned PLAYING > longest ARMED MULTIPLE

TRUE: launch at highest positioned PLAYING loop

FALSE: launch at MULTIPLE index of longest ARMED

NONE MULTIPLE:

launch at highest positioned PLAYING loop

////////////////////////////////////

SECTION: PLAYING SECTION A, LAUNCH SECTION B

Is longest ARMED is multiple of longest PLAYING

TRUE: launch at MULTIPLE index of longest ARMED

FALSE: launch at LONGEST PLAYING loop

```
[16, 6, 5] on, [ 8, 7, 6, 4] arm, launch at 8
[16, 6, 5] on, [ 4, 7, 6, 8] arm, launch at 8
[16, 6, 5] on, [      7, 6, 4] arm, launch at 16
[16, 6, 5] on, [      6, 4] arm, launch at 16
[16, 6, 5] on, [      4] arm, launch at 4
[16, 6, 5] on, [      7] arm, launch at 16
[16, 6, 5] on, [      6] arm, launch at 16
```

```
[ 6, 16, 5] on, [ 8, 7, 6, 4] arm, launch at 8
[ 6, 16, 5] on, [ 4, 7, 6, 8] arm, launch at 8
[ 6, 16, 5] on, [      7, 6, 4] arm, launch at 16
[ 6, 16, 5] on, [      6, 4] arm, launch at 16
[ 6, 16, 5] on, [      4] arm, launch at 4
[ 6, 16, 5] on, [      7] arm, launch at 16
[ 6, 16, 5] on, [      6] arm, launch at 16
```

```
[14, 6   ] on, [ 8, 7       ] arm, launch at 14
[14, 6   ] on, [      7, 6   ] arm, launch at 7
[12, 7   ] on, [      7, 6   ] arm, launch at 12
[ 7, 12  ] on, [      7, 6   ] arm, launch at 12
```

highest position PLAYING doesn't matter with section launching
due to muting behavior

////////////////////////////////////

NOT SECTION: INDIVIDUAL CLIP LAUNCHING

Considers clip lengths of PLAYING and ARMED clips

Length unit defined here as a single pad in 8th note zoom level in song mode
(length 16 = 16 pads at 8th zoom)

Multiple index of 4 means (0, 4, 8, 12, etc.)

launch at 8 means clip will launch at (0, 8, 16, 24, etc.)

[16, 6] means clip 1 is length 16 and positioned above clip 2 of length 6

(all, some, none) ARMED clips have multiples in set of PLAYING clips:

ALL MULTIPLE:

launch at MULTIPLE index of longest ARMED

SOME MULTIPLE:

IF: highest positioned PLAYING > longest ARMED MULTIPLE

TRUE: launch at highest positioned PLAYING length

FALSE: launch at MULTIPLE index of longest ARMED

NONE MULTIPLE:

launch at highest positioned PLAYING length

ELSE IF: all clips trigger at the repeat of the highest positioned currently playing clip

[16,] on, [8,] arm, all multiples, 16 > 8, launch at 8, longest of armed lengths

[16, 6] on, [8,] arm, all multiples, 16 > 8, launch at 8, longest of armed lengths

[16,] on, [4,] arm, all multiples, 16 > 4, launch at 4, longest of armed lengths

[16, 6] on, [4,] arm, all multiples, 16 > 4, launch at 4, longest of armed lengths

[16, 6] on, [6,] arm, all multiples, 16 > 6, launch at 6, longest of armed lengths

[16,] on, [7,] arm, none multiples, 16 > 7, launch at 16, highest position playing clip loop

[16, 6] on, [7,] arm, none multiples, 16 > 7, launch at 16, highest position playing clip loop

[16,] on, [17,] arm, none multiples, 16 < 17, launch at 16, highest position playing clip loop

[16,] on, [8, 4] arm, all multiples, 16 > 8, launch at 8, longest of armed lengths

[16,] on, [8, 7] arm, some multiples, position playing clip loop	16 > 8, launch at 16, highest
[16,] on, [6, 4] arm, some multiples, position playing clip loop	16 > 4, launch at 16, highest
[16,] on, [17, 4] arm, some multiples, position playing clip loop	16 > 4, launch at 16, highest
[16,] on, [32, 4] arm, some multiples, position playing clip loop	16 > 4, launch at 16, highest
[16, 6] on, [8, 6] arm, all multiples, of armed lengths	16 > 8, launch at 8, longest
[16, 6] on, [8, 4] arm, all multiples, of armed lengths	16 > 8, launch at 8, longest
[16, 6] on, [6, 4] arm, all multiples, of armed lengths	16 > 6, launch at 6, longest
[16, 14] on, [8, 7] arm, all multiples, of armed lengths	16 > 8, launch at 8, longest
[16, 14, 5] on, [8, 7] arm, all multiples, of armed lengths	16 > 8, launch at 8, longest
[16, 14] on, [7, 4] arm, all multiples, of armed lengths	16 > 7, launch at 7, longest
[16, 6] on, [8, 7] arm, some multiples, position playing clip loop	16 > 8, launch at 16, highest
[16, 6] on, [7, 4] arm, none multiples, position currently playing clip loop	16 > 7, launch at 16, highest
[16, 12] on, [8, 7] arm, some multiples, position playing clip loop	16 > 8, launch at 16, highest
[14, 6] on, [8, 7] arm, some multiples, position playing clip loop	14 > 8, launch at 14, highest
[12, 16] on, [8, 7] arm, some multiples, position playing clip loop	12 > 8, launch at 12, highest
[6, 16] on, [6, 4] arm, all multiples, of armed lengths	6 = 6, launch at 6, longest
[6, 16] on, [8, 6] arm, all multiples, of armed lengths	6 < 8, launch at 8, longest
[6, 16] on, [8, 4] arm, all multiples, of armed lengths	6 < 8, launch at 8, longest

[6, 16] on, [8,] arm, all multiples, of armed lengths	6 < 8, launch at 8, longest
[6, 16] on, [7,] arm, none multiples, position playing clip loop	6 < 7, launch at 6, highest
[6, 16] on, [6,] arm, all multiples, of armed lengths	6 = 6, launch at 6, longest
[6, 16] on, [4,] arm, all multiples, of armed lengths	6 > 4, launch at 4, longest
[6, 16] on, [8, 7] arm, some multiples, of armed lengths	6 < 8, launch at 8, longest
[6, 16, 5] on, [8, 7] arm, some multiples, of armed lengths	6 < 8, launch at 8, longest
[6, 14] on, [8, 7] arm, some multiples, of armed lengths	6 < 7, launch at 7, longest
[6, 15] on, [8, 5] arm, some multiples, position playing clip loop	6 > 5, launch at 6, highest
[6, 16] on, [7, 6] arm, some multiples, of armed lengths	6 = 6, launch at 6, longest
[6, 16] on, [7, 3] arm, none multiples, position playing clip loop	6 < 7, launch at 6, highest
[16, 6, 5] on, [8, 7] arm, some multiples, position playing clip loop	16 > 8, launch at 16, highest
[6, 16, 5] on, [8, 7] arm, some multiples, of armed lengths	6 < 8, launch at 8, longest
[6, 16, 5] on, [7, 4] arm, some multiples, position playing clip loop	6 < 7, launch at 6, highest
[6, 14, 5] on, [7, 4] arm, all multiples, of armed lengths	6 < 7, launch at 7, longest

MUTING

all of these match up with INDIVIDUAL CLIP LAUNCHING logic

[16, 6] on, [8, 4] arm, unlaunch 8 with 4 still flashing, 4 launches on 8
 [16, 6] on, [8, 6] arm, unlaunch 8 with 6 still flashing, 6 launches on 8
 [16, 6] on, [8, 7] arm, unlaunch 8 with 7 still flashing, 7 launches at 16
 [16, 6] on, [7, 4] arm, unlaunch 7 with 4 still flashing, 4 launches at 16
 [16, 6] on, [6, 4] arm, unlaunch 4 with 6 still flashing, 6 launches at 6

Questions and Answers

This page provides various Frequently Asked Questions and Answers that have been asked over the years.

Hardware

Power

Q: Which DC power supply?

A: Center negative, same type used for guitar pedals. Make sure you have 9V and at least 500mA available from the supply. Generic guitar pedal power supplies should work fine (1Spot, Strymon, VoodooLab). USB port charging works also; it works with generic USB port phone chargers, public airport charging stations, computer USB ports, etc. The Deluge can not power most other devices via its USB port. Try first connecting a 9V power supply to the (9 - 12V) barrel jack input, then turning on the Deluge with the USB midi connected. Separately power external devices if possible.

Audio Output

Splitting main and headphone out

Q: Is it possible(or will it be) to route only one track/synth/kit to the headphone output, while everything else is playing in the main out?

A: No it's not possible. Main out and headphone out receive the same output

Q: Can I split the main out and headphone out?

A: The same stereo audio will output through the line outs and the headphones outs. There is no way to route audio through only one or the other.

FX send / return

Q: Can I send one track to an external FX unit, like an external reverb?

A: You can create a "mono send and return" by panning all tracks to the left and using the right output as a send. Connect the returning audio to the Deluge input and use an audio clip or an input oscillator type to hear the input audio. Make sure to pan the input monitoring track to the left as well, or else there will be a feedback loop. The left output will be mono. You could swap left and right in this example as well. There is no way to create a stereo send and return.

MIDI

Doubling of MIDI Output over USB

Q: MACOS user. I am having a very weird bug - it is on 1.1 and 1.2 betas, where USB MIDI notes created from pressing the audition pad are doubled but ONLY FROM THE USB MIDI PORT. Regular DIN has normal behavior.

it works fine on both DIN and USB on the final official firmware, so something added in Community Features seems to have messed something up - or I have a dumb setting enabled

A: it's a macOS issue

You need to unplug the deluge, delete the deluge in macOS audio/midi setup, then plug the deluge back in

After that it'll work and you'll see both usb ports in ableton and be able to select just one

Clock Jitter over Computer USB

Q: USB MIDI Clock is Jittering when Deluge is slaved.

A: Try all USB ports on Computer, as they are not all equal. USB MIDI clock is notoriously unstable. An audio clock performs much better.

Upgrading CPU

Q: Is possible to upgrade the deluge cpu To an ARM Cortex-A12 or ARM Cortex-A17

A: Upgrading the deluge hardware is not currently possibly because The Deluge firmware is locked to the current Renesas hardware. Until the firmware can run independent of hardware this won't be possible.

SD Card

Lost SD card inside Deluge

Q: I didn't mind the gap and lost my SD card inside the Deluge, help?

A: Take off the wooden side cheeks by unscrewing the 4 screws on the top and 2 screws on the bottom of the deluge and shake it out. "The right side is probably the easiest way to get at it, just take the one cheek off and the SD card should easily fall out"

Naming SD Card

Q: Can I name my SD card?

A: Yes

Moving files on SD Card

Q: Can I rename or move presets without damaging existing projects? How about samples?

A: Renaming songs should be fine, but changing preset names will damage projects that reference that preset by name. Similarly for songs referencing samples via file location. There is a 3rd-Party App that a fellow player developed for the purpose of rearranging files on the SD card and updating song projects. Back up your data before using any 3rd-Party application.

SD card type

Q: Which SD card should I buy? How do I format an SD card? Does the SD Card speed matter?

A: See SD card page

Arranger view

Looping

Q: Is there a way to select and loop a section whilst playing live' in Arranger mode?

A: No

Scrolling

Q: How does one get the progress bar to stay static while the clips move?

A: Press the cross screen button to turn on auto scroll mode

Clip view

Looping

Q: Is it possible to loop a portion of a clip's sequence

A: No

Scrolling

Q: Is it possible to have a fixed playhead where the sequences auto scrolls like in arranger view?

A: No