Operation Manual

Version 6.0.0 6/21/2025

FCC Compliance Statement

CAUTION: The manufacturer is not responsible for any changes or modifications not expressly approved by the party responsible for compliance. Such modifications could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

ISED Compliance Statement

This Class B digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe [B] est conforme à la norme NMB-003 du Canada.
CAN ICES-3 (B)/NMB-3(B)

Credits and Acknowledgments

Concept & Inspiration
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Sound Library / Factory Content
Avrilcadabra, Electronisounds, Mikey303, Tobokegao, Trash80

User Contributed Documentation
Disposable Planet, Fabien Guérin, Gunnbr, Jonbro, Lazerbeat, Mare Corax, Peter Swimm, Roboctopus, rootnode

Help and Feedback
Everyone who has contributed with time and effort in beta testing and continual support via Patreon and Discord. Thank you!

Table of Contents

Introduction

Thank you for exploring the M8. This ambitious little music maker is the end result of a MIDI tracker project that was started in 2013. Inspired by controlling external synthesizers with Little Sound DJ to bring simplicity and efficiency to modern music making. In 2019 it was expanded with a more powerful processor, realizing the project could do more than MIDI alone.

Originally the plan was to have basic sample playback, MIDI, and a version of one of my chiptune inspired software synthesizers (Oki-Computer, Digitech, Blittersynth). However the concept was pushed further over the last 2 years to include original effects algorithms (reverb, delay, chorus, and compressor/limiter), a port of Mutable Instruments “Macro” synth, a unique 4-op FM synthesizer, song rendering, and sample recording/editing.

The M8 has transformed from a simple concept to a powerhouse of sound in a portable form factor. It has been quite the journey and I hope you find it inspirational and useful for your creative endeavors.

Cheers,
Timothy Lamb - Trash80

Operation Manual Conventions

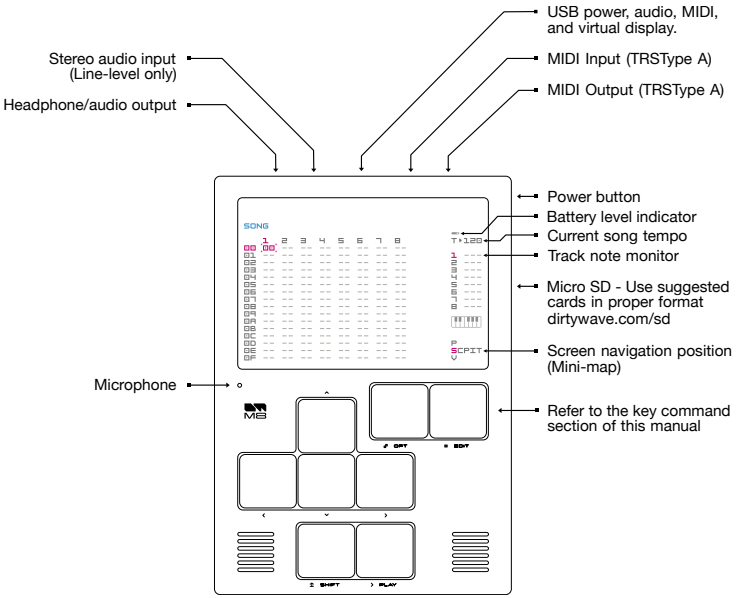
The following format is used for describing key combinations:

Examples

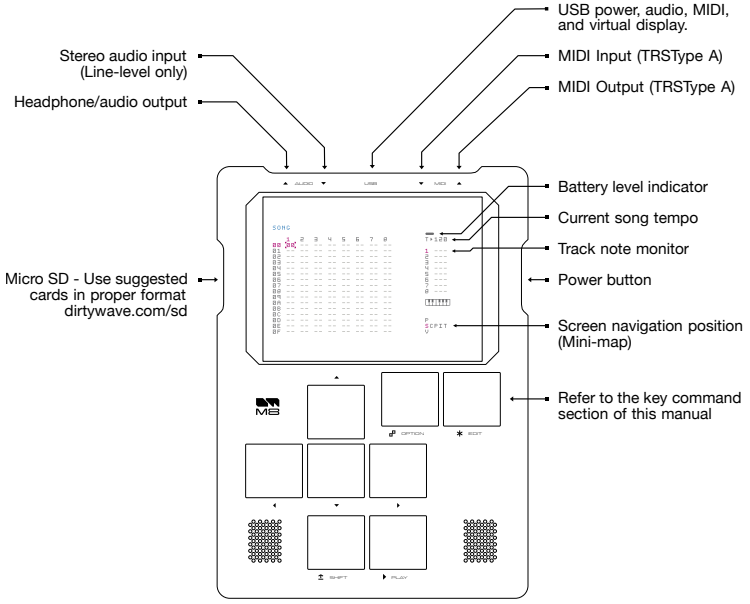
- **[OPTION]+[EDIT]** Hold down the option key and press edit.
- **[OPTION, then EDIT]** Press and release the option key, then press and release the edit key.
- **[SHIFT]+[OPTION, then EDIT]** While holding down the shift key, press and release the option key, then press and release the edit key.
- **[SHIFT]+[UP or DOWN]** While holding down the shift key, press and release either the up or down direction keys.
- **[DIRECTION]** Use any of the 4 directional keys: left, right, up, or down.

Overview

Physical Layout - Model:02



Physical Layout - Model:01



Powering Up

The power button is located on the right side of the unit. Press the button for 1 second to turn on, 2 seconds to turn off. The button is slightly recessed by design to prohibit unintentional power cycles when stored.

Note: If a software crash occurs or unit is non-responsive, you can power down the unit by depressing the button for 7 seconds. The unit can be powered back on to continue normal operation. Please report issues or crashes to support@dirtywave.com.

Charging

Charge the unit with the included USBC or Micro USB cable and an adequate USB power source (500mA - Standard USB). Battery level and charging indicator status can be found at the top right of the display. The M8 is charging when the battery icon is animating. You can operate the M8 while it is charging, however please allow the M8 to fully charge for the first time before using it without external power.

Audio Output and Volume Control

The audio output connector is suitable for both general output and headphone use. When an output is connected the built-in speakers will stop functioning. You can adjust the output and speaker volume by navigating to the Mixer view **[SHIFT]+[DOWN]**, highlight the “OUTPUT VOL” setting, and adjust with **[EDIT]+[DIRECTION]**. Please note that levels above “F0” will be quite loud when using small headphones/earbuds/IEMs and as such for your hearing protection “F0” is the maximum volume recalled when the M8 powers up- regardless of what it was previously set to.

The microSD Card

The M8 uses a microSD card to store data including songs, samples, instruments and themes. When samples are played, they are streamed directly from the SD card. They are not read from memory. Therefore the random access read speed of the SD card is critical to the proper operation of the M8. Most cards are optimized for working with a single file sequentially and can have performance issues with playback of multiple samples at the same time. A complete list of tested cards with the M8 is available here: https://dirtywave.com/sd.

Please be careful inserting the card. The slot in your unit might be slightly bigger than the card reader. Misaligned insertion may result in the card being stuck in the enclosure. See the troubleshooting section for more information.

Cards used with the M8 must be formatted using the SD Association SD Memory Card Formatter tool: https://www.sdcard.org/downloads/formatter. This will ensure the card’s format is optimized for reading data quickly. Formatting a brand new card is not required, but if you experience issues it is recommended.

The SD card that ships with the M8 has been tested to have a high enough read speed to handle most workloads. However, even the included card does have limits. If song playback is halted with a “CPU TOO BUSY” message, this is most likely the cause. To limit this issue there are multiple steps you can take:

- Convert stereo samples to mono where stereo is not necessary - e.g. Kick drums
- Convert 32-bit or 24-bit samples to 16-bit or 8-bit where possible
- Avoid playing samples an octave or higher above their recorded frequency (each octave doubles the amount of data that needs to be read each second)

Converting to mono or dropping the bit rate or sample rate can be done in the sample editor view. More information can be found in the Sample Editor section of this manual.

Introduction

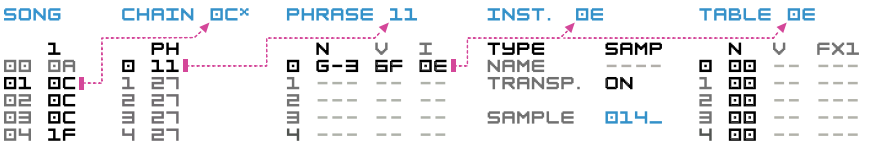
The M8 is an 8 track sequencer and synthesizer. Each track can play one single note at a time using any one of up to 128 instruments in the song. Every instrument can be configured to be a synthesizer, a sample, or to control external equipment using MIDI.

The sequencer used in the M8 is known as a “music tracker” commonly found in classic composition software dating as far back as the late 1980s. Unlike typical DAWs and step sequencers, musical notes and events are arranged from top to bottom and the tracks are arranged from left to right. At first glance it might look complicated, but it is really quite elegant. The advantage of using this layout is that any instrument changes or commands entered appear more intrinsically tied to the note they reside next to.

On a traditional music tracker a song is constructed by arranging patterns together where a pattern consists of tracks grouped together for a predefined number of steps. What makes the M8 different is each track has its own independent play position, and the pattern is broken up even further into what are called chains and phrases. Typically songs are composed of a list of chains per track, where each chain contains a list of phrases. This structure avoids repetitive copying and pasting, as well as allows for easily duplicating, cloning, and transposing sections of a melody or progression.

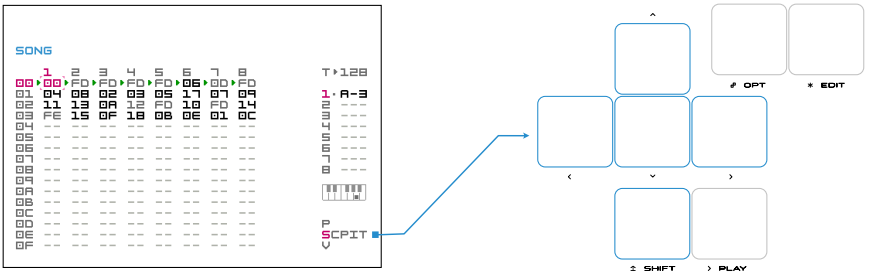
Song Structure

Songs are comprised of 8 functionally identical tracks that play through a list of chains vertically. Chains are groups of phrases, and phrases contain the notes, velocities, instrument assignments, and command effects.



Navigation

The M8's user interface is divided into "Views" which can be navigated by holding **[SHIFT]** and using the **[DIRECTION]** keys. There is a helpful mini-map located on the bottom right of the display. Do not worry about the functionality of each of these views; we'll dive into them later.



View Layout

Global Key Shortcuts

There are quite a few key combinations / shortcuts but for the most part they are shared across all views on the M8. A printed card was included with the M8 which has a complete list of shortcuts on the reverse side for convenience. Refer to the section on Key Shortcuts in the appendix. Below is a list of common key commands you should familiarize yourself with:

- **[DIRECTION]** Move the cursor on the screen.
- **[SHIFT] + [DIRECTION]** Navigate between Views
- **[EDIT]** Start editing a value; also functions as a “YES” or “ENTER”
- **[OPTION]** Varies depending on context; also functions as a “NO” or “EXIT”
- **[EDIT]+[OPTION]** Sets a highlighted parameter to the default value, or acts as a “cut” operation on song, chain, phrase, and table “grid” views.
- **[SHIFT]** by itself has no function.
- **[PLAY]** Starts/stops the song from the current cursor position on the song view, or plays the current Chain, Phrase, or Instrument when in those views.
- **[SHIFT]+[PLAY]** Plays all tracks from the current song cursor position regardless of current view (song, chain, phrase, etc).

Common Editing Shortcuts

Quite a few of the views in the M8 use a grid layout. In these views there are common functions such as editing values, cut/copy/paste, and selection mode. It is important to familiarize yourself with the key shortcuts as this makes editing both fast and fun.

- **[EDIT]** On an empty cell (“--”): inserts a new value with a default value of the last edited or deleted value.
- **[EDIT]+[UP or DOWN]** Edits the selected value in large steps. On a command column: shows the Effect Help/Selection view.
- **[EDIT]+[LEFT or RIGHT]** Edits the selected value by small steps.
- **[SHIFT]+[OPTION]** On any view with a grid (song, chain, phrase, table, etc): enter selection mode.
- **[OPTION]** In selection mode: copies the selection and exits selection mode.
- **[SHIFT]+[EDIT]** On any view with a grid: paste the copied contents from selection mode.
- **[EDIT]+[OPTION]** Deletes/cuts the selected value. On selection mode: cuts the selection into the copy buffer.

Hexadecimal

The M8 uses a number system called hexadecimal where numbers 0-15 are represented as 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, and F. For example, “40” in hexadecimal is 64 in decimal (Refer to the hexadecimal table in the appendix). This is useful for quite a few reasons:

- Screen real estate: 0 to 255 in decimal is 00 to FF in hexadecimal. With 3 command FX columns, it would be cumbersome to fit 3-digit decimal values on the screen. Furthermore, when a value range includes negative and positive numbers (see Absolute and Relative in the appendix), this can add up to 4 characters in length: -128 to +127.
- Parameters and FX commands that represent counts of 16 where the first digit will represent a phrase. Ex: “24” translates to the second phrase on row four.
- FX commands where the left and right digits control different aspects of the command. Ex: “ARP37” - Plays an arpeggio where the first interval is +3 semitones, and the second is +7 semitones while presenting a larger range.

Where guidance is needed, help text is presented at the bottom of the screen that displays the decimal equivalent and/or useful messages while editing values.

Firmware Updates

Updating the firmware is performed via a USB connection to a computer. To perform the update without issue it is critical that the connection is not hindered by other USB devices on the same hub. Therefore it is highly recommended to use a dedicated USB connection without a hub if possible. You can find the latest firmware, changelog, and instructions at https://github.com/Dirtywave/M8Firmware.

If the firmware fails or the M8 is non-responsive after an update please refer to the section on troubleshooting.

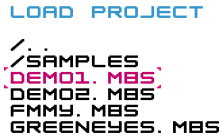
Additional Help and Resources

Links and additional resources are available at https://dirtywave.com/support.

Loading a Demo Song

The best way to explore the M8 for the first time is to check out some of the demos included on the SD card. By default the M8 shipped with one of the demo songs already loaded. You can press **[PLAY]** in the song view and navigate around the views to get comfortable with the layout and watch what is happening during playback.

Let's familiarize ourselves with the project view and the file browser. Navigate to the Project which is located above the Song view. If you're not already in the song view, hold **[SHIFT]** and keep pressing **[LEFT]** until you see "SONG" in the title area of the display, then navigate up using **[SHIFT]+[UP]**. Move the cursor down to highlight "LOAD" and press **[EDIT]**.



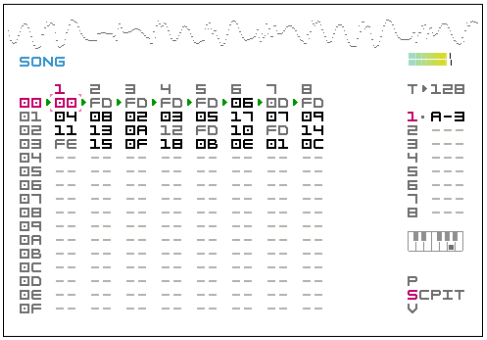
This is the file browser. By default when loading a song the browser is opened to "/Songs" on the SD card. Any entry that starts with a "/" is a directory, and pressing **[EDIT]** on a directory will display its contents. Pressing **[EDIT]** on the "/.." entry will take you back to the previous directory. Furthermore there are a few handy shortcuts that can be used in this view:

- **[LEFT]** will navigate to the top of the list.
- **[RIGHT]** will navigate to the bottom of the list.
- **[OPTION]+[UP or DOWN]** will skip over 8 entries in the list.
- **[PLAY]** will preview a song, sample, or instrument when browsing for them.
- **[SHIFT]+[OPTION]** will sort a directory by name if it is unsorted.
- **[OPTION]** will exit the file browser.
- **[OPTION]+[EDIT]** to delete a file.

Highlight "/DEMOS" by pressing **[DOWN]** and press **[EDIT]**. Choose a song to load and press **[EDIT]** to load it. If a song was already playing when you entered the Load Project view, the new song will load and start playing back after the playing song reaches the end of a chain. This is called Queued Song Loading and it is useful for switching songs in a live setting.

Views

Song View



The song view is where you create the structure of your song. It is comprised of 8 tracks from left to right, with a list of chains for each track to play though vertically. When the song is playing, each track's song position will increment vertically through the list of chains until it reaches an empty column ("--"), at which point the given track will loop back to the beginning of its list of chains.

Since each chain can contain 1 to 16 phrases it is possible to have different play lengths for each track, causing individual track play positions to be misaligned. If you do not wish to have this behavior it is recommended to design your chains to all have the same number of phrases. To maintain a track's play position with other tracks while it remains silent, create a chain that contains empty phrases. It is common to use either chain "00" or "FE" for this purpose. Note that chains which contain no notes are grayed out on the song screen for readability.

The song can contain up to 256 rows of chains. You may find it useful to use unused rows below the base song structure, "isolating" to experiment or create new arrangements without breaking the existing song (see row "06" in the graphic above).

Live Mode

Live mode allows playing, cueing, or stopping each track independently and from anywhere in the song structure. Press **[SHIFT]+[LEFT]** from the song view to enter or exit live mode playback.

When a track is cued for playback via **[PLAY]** the sequencer will wait for the currently playing chain to finish before activating the newly cued chain by default. You can change this behavior on the Project View under "LIVE QUANTIZE".

Song View Shortcuts

Navigating

- **[DIRECTION]** Move cursor.
- **[OPTION]+[UP or DOWN]** Move/scroll the cursor 16 rows up or down.

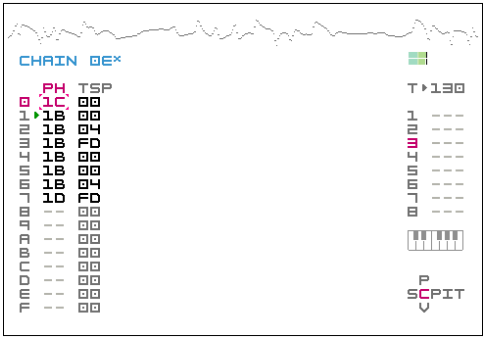
Playing

- **[PLAY]** Plays/stops all tracks.
- **[LEFT]+[PLAY]** Cue the selected song row for playback.
- **[OPTION]+[LEFT or RIGHT]** Solo all tracks to the left or right side of the cursor's position.
- **[OPTION]+[SHIFT]** Mute current track (release option first to hold the mute).
- **[OPTION]+[PLAY]** Solo current track (release option first to hold the solo).
- **[OPTION]+[SHIFT]+[PLAY]** Clears all mute and solos.

Editing

- **[EDIT]** On an empty column ("--"): inserts a chain with a default value of the last edited or deleted chain.
- **[EDIT]+[DIRECTION]** Edits the chain number on the cursor's position. In selection mode: Selected contents can be moved up or down.
- **[EDIT]+[EDIT]** (double tap) Will insert a new unused empty chain.
- **[EDIT]+[OPTION]** Deletes/cuts the selected chain. In selection mode, cuts the selection into the copy buffer.
- **[SHIFT]+[OPTION]** Enters selection mode for moving, copying, or cutting chains.
- **[OPTION]** While playback is stopped, hold option to reveal the current track's time in min:sec. In selection mode: copies the selection and exits selection mode.
- **[SHIFT]+[EDIT]** Pastes the copy buffer that was copied in selection mode.
- **[SHIFT]+[OPTION, then EDIT]** Copies the contents of the selected chain into a new chain number. (I.e. "clone").
- **[SHIFT]+[OPTION, then double tap EDIT]** Copies the contents of the selected chain and the contents of all phrases inside the chain into a new chain and phrases. (I.e. "deep clone").
- **[OPTION]+[OPTION]+[OPTION]** Creates or removes a "bookmark" to mark a chain
- **[UP]+[UP]** On ROW "00" enter into track reordering mode. Hold **[Edit]** and press **[LEFT or RIGHT]** to move the selected track left or right respectively. Press **[Down]** to exit.
- **[EDIT]+[EDIT]** While playback is stopped and in selection mode, render the selection to a new instrument.

Chain View



A chain is a playlist of phrases. This allows easy construction of a musical idea that extends past a single measure without having to copy and paste repetitive sections. You can use up to 16 rows of phrases per chain, allowing up to 256 steps.

In the chain view, the left column “PH” is the phrase number to play, and the right column “TSP” is an optional note transpose in semitones. To insert a new phrase, press **[EDIT]** on an empty column (“--”). The inserted value will be the last edited phrase. To create a new empty phrase on a given row, double tap the **[EDIT]** key. Duplicating a phrase to a new empty number is also possible by highlighting the desired phrase number and pressing **[SHIFT]+[OPTION, then EDIT]**.

Playback behavior is determined by the first empty phrase column that the sequencer encounters in the chain. An empty phrase (“--”) is considered the end of the chain and the song will continue on to the next chain in the song view.

Chain View Shortcuts

Navigating

- **[DIRECTION]** Move cursor.
- **[OPTION]+[UP or DOWN]** Navigate to previous or next chain in the song.
- **[OPTION]+[LEFT or RIGHT]** Navigate to previous or next track.

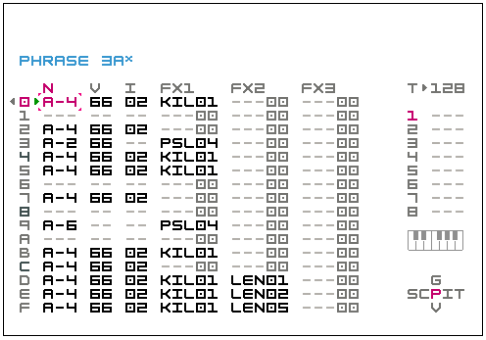
Playing

- **[PLAY]** Starts/stops playing chain at cursor position.
- **[SHIFT]+[PLAY]** Continue song at cursor position.
- **[OPTION]+[SHIFT]** Mute current track (release option first to hold the mute).
- **[OPTION]+[PLAY]** Solo current track (release option first to hold the solo).
- **[OPTION]+[SHIFT]+[PLAY]** Clears all mute and solos.

Editing

- **[EDIT]** On an empty row ("--"): insert a phrase with a default value of the last edited or deleted phrase.
- **[EDIT]+[DIRECTION]** Edits the phrase number on the cursor's position.
- **[EDIT]+[EDIT]** (double tap) Will insert a new unused empty phrase.
- **[EDIT]+[OPTION]** Deletes/cuts the selected phrase. In selection mode, cuts the selection into the copy buffer.
- **[SHIFT]+[OPTION]** Enters selection mode for moving, copying, or cutting a block of phrases.
- **[OPTION]** In selection mode: copies the selection and exits selection mode.
- **[SHIFT]+[EDIT]** Pastes the copy buffer that was copied in selection mode.
- **[SHIFT]+[OPTION, then EDIT]** Copies the contents of the selected phrase into a new number. (I.e. "clone").

Phrase View



A phrase contains 16 steps of notes with volume, instrument number, and 3 command effect columns. By default each step represents a 16th note in time, but can be altered by defining the number of ticks per step in the Groove View.

The first column “N” is the note with its current octave spanning 11 octaves. It covers the entire 128 MIDI note range. The value can be changed in semitones using **[EDIT]+[LEFT or RIGHT]** or by octave using **[EDIT]+[UP or DOWN]**. A note-off can be inserted in the Note column by clearing **[OPT]+[EDIT]** an empty note “---”. The next column “V” is the volume which determines the loudness of the corresponding note from 00 (silence) to 7F (maximum volume) with a default of 64. The “I” column specifies the instrument number to play. Leaving it empty (“--”) allow notes to be changed without the instrument retriggering. You can press **[EDIT]** twice on this column to choose a new/unused instrument number, or press **[SHIFT]+[OPTION then EDIT]** to copy the contents of the current instrument to a new number for editing.

The three “FX” columns are for placing commands that affect the sequence, notes, or instruments in different ways. The commands available are determined by the type of instrument that is currently being used. To see a helpful view for selecting and placing commands use **[EDIT]+[UP or DOWN]** which will launch the Effects Command Help view.

An asterisk next to the phrase number (“PHRASE 00*”) indicates that the phrase is used elsewhere in the chain or song.

Phrase View Shortcuts

Navigating

- **[DIRECTION]** Move cursor.
- **[OPTION]+[UP or DOWN]** Navigate to previous or next phrase in the chain.
- **[OPTION]+[LEFT or RIGHT]** Navigate to previous or next track.

Phrase View Shortcuts (Continued)

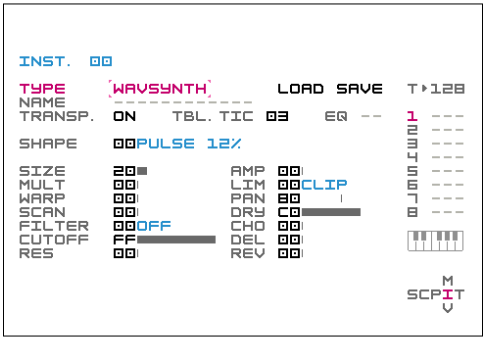
Playing

- **[PLAY]** Starts/stops playing phrase.
- **[SHIFT]+[PLAY]** Continue song at chain position.
- **[OPTION]+[SHIFT]** Mute current track (release option first to hold the mute).
- **[OPTION]+[PLAY]** Solo current track (release option first to hold the solo).
- **[OPTION]+[SHIFT]+[PLAY]** Clears all mute and solos.

Editing

- **[EDIT]** On an empty cell: insert a new value with a default value of the last edited or deleted value.
- **[EDIT]+[UP or DOWN]** Edits the selected value on the cursor's position incrementing by large steps. On a command column: show the Effect Help/ Selection view. In selection mode: If multiple colums and row are selected the contents can be shifted up or down.
- **[EDIT]+[LEFT or RIGHT]** Edits the selected value on the cursor's position incrementing by small steps.
- **[EDIT]+[EDIT]** (double tap) On the instrument column: set the selected instrument value to a new unused instrument. On a command value column where the command is the table or groove command (TBL, TBX, GRV, or GGR): set the value to a new unused table.
- **[EDIT]+[OPTION]** Deletes/cuts the selected value. In selection mode: cuts the selection into the copy buffer.
- **[SHIFT]+[OPTION]** Enters selection mode for moving, copying, or cutting a block of phrase data.
- **[OPTION]** In selection mode: copies the selection and exits selection mode.
- **[OPTION]+[UP or DOWN]** In selection mode with note column selected: Randomize the note value up or down, else navigates to the previous or next phrase in the chain.
- **[OPTION]+[LEFT or RIGHT]** In selection mode with note column selected: Left to cycle note fill modes, right to randomize note and instrument triggers, else navigates to the previous or next track's phrase.
  * *When exiting selection mode after a fill action, perform a paste to undo.*
- **[SHIFT]+[EDIT]** Pastes the copy buffer that was copied in selection mode. In selection mode: with a series of rows and a single column highlighted: interpolate the selected range.
- **[SHIFT]+[OPTION, then EDIT]** On the instrument column or on a command value column where the command is the table or groove command (TBL, TBX, GRV, or GGR): copy the contents of the selected data into a new number. (I.e. "clone").

Instrument View



Use the instrument view to load, save, or edit the main settings for the sounds used in the song. There are 128 instruments available per song that each contain settings, instrument modulations, and a table. The M8 has 7 instrument types to choose from. Change the “TYPE” parameter to select one of the types currently available: Wavsynth, Macrosynth, Sampler, FM Synth, Hypersynth, MIDI Out, and External Instrument. The default type is set to “NONE” which helps both you and the M8 know when a instrument slot is being used. Use “LOAD” or “SAVE” to load or save an instrument preset from the SD card.

General Instrument Settings

- **TYPE** - Set the instrument type as described above.
- **LOAD / SAVE** - Load or save a instrument preset to the SD card.
- **NAME -** helps keep your song organized when browsing through instruments, saving an instrument, or exported when “bundling” your song.
- **TRANSP.** - Enable or disable all note transpositions from scales, chain transpose columns, or the project view transpose setting. This is useful for selectively disabling transposition on instruments that are used for percussive or effect elements.
- **TABLE TIC** - Set the default speed at which the instrument’s table increments through each step. The default is “01” or one tick per table step. “02” will be two ticks per step and so forth. There are a few special modes for incrementing the table position as discussed on the Table View. This setting can be overwritten by the TIC command effect in the phrase or table.
- **EQ** - Set the EQ slot number to assign an EQ to the current instrument. Press **[EDIT]** or navigate right **[SHIFT]+[RIGHT]** with the EQ highlighted to open the EQ Editor.

Instrument View Shortcuts

Navigating

- **[DIRECTION]** Move cursor.
- **[OPTION]+[LEFT or RIGHT]** Navigate to previous or next instrument.
- **[OPTION]+[UP or DOWN]** Navigate +/- 16 instruments.
- **[SHIFT]+[LEFT or RIGHT]** Will navigate to the phrase or table view respectively (from both the Instrument view or Instrument Envelopes view) and set the default FX command value to the instrument parameter that is highlighted.

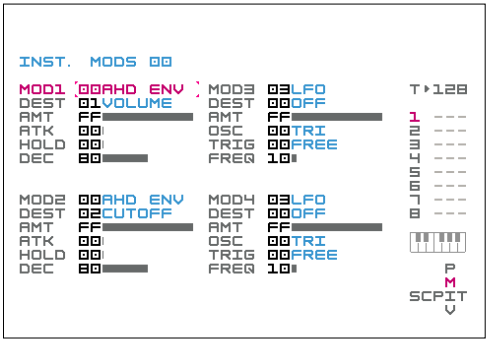
Playing

- **[PLAY]** Start/stops playing phrase.
- **[EDIT]+[PLAY]** Preview instrument.
- **[SHIFT]+[PLAY]** Continue song at chain position.
- **[OPTION]+[SHIFT]** Mute current track (release option first to hold the mute).
- **[OPTION]+[PLAY]** Solo current track (release option first to hold the solo).
- **[OPTION]+[SHIFT]+[PLAY]** Clears all mute and solos.

Editing

- **[EDIT]+[UP or DOWN]** Edit the selected value on the cursor's position incrementing by large steps.
- **[EDIT]+[LEFT or RIGHT]** Edit the selected value on the cursor's position incrementing by small steps.
- **[EDIT]+[OPTION]** Set the selected value to the default setting.
- **[SHIFT]+[OPTION]** Copy current instrument.
- **[SHIFT]+[EDIT]** Paste instrument or **undo a paste operation.**
- **[EDIT+TOUCHSCREEN]** Edit selected value with the position of a finger on any value with a visual slider.
- **[OPTION+TOUCHSCREEN]** Assign the touchscreen axis to the selected parameter on any value with a visual slider. See the section on the MIDI Mappings view.

Instrument Modulation View



This view is accessible above the instrument view (**[SHIFT]+[UP]**). Modulations alter instrument parameters over time. M8 has 4 configurable modulation slots per instrument, each slot can be assigned to one of the following:

- **AHD ENVELOPE** - A simple Attack Hold Decay envelope based on tempo
- **ADSR ENVELOPE** - Traditional Attack Decay Sustain Release envelope
- **DRUM ENVELOPE** - A sharp peak and swelling hold envelope designed for percussive elements
- **LFO** - Traditional tempo-synced low frequency oscillator
- **TRIG ENVELOPE** - AHD envelope that is triggered by another playing track or instrument.
- **TRACKING** - Modulate an instrument parameter to Notes or Velocities

Common Modulation Settings

- **MOD[1-4]** - Modulation type. Refer to the section on Modulation Types (page 20) for more information.
- **DEST** - Destination parameter to be modulated.
- **SRC** - Source of the modulation (when available).

Modulating Modulators

By setting “DEST” to “MOD AMT”, “MOD RATE”, or “MOD BOTH”, each modulator can affect the amount or rate of it’s neighboring modulator. Mod 1 affects Mod 2, 2 to 3, 3 to 4, and 4 to 1.

- **MOD AMT** - The amount is a scaling factor from 0% to 100%
- **MOD RATE** - The rate is a multiplication factor of time related parameters.
- **MOD BOTH** - Enables both amount and rate parameters.

Instrument Modulation View Shortcuts

Navigating

- **[DIRECTION]** Move cursor.
- **[OPTION]+[LEFT or RIGHT]** Navigate to previous or next instrument.
- **[OPTION]+[UP or DOWN]** Navigate +/- 16 instruments.
- **[SHIFT]+[LEFT or RIGHT]** Will navigate to the phrase or table view respectively (from both the Instrument view or Instrument Envelopes view) and set the default FX command value to the instrument parameter that is highlighted.

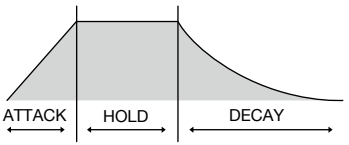
Playing

- **[PLAY]** Start/stops playing phrase.
- **[EDIT]+[PLAY]** Preview instrument.
- **[SHIFT]+[PLAY]** Continue song at chain position.
- **[OPTION]+[SHIFT]** Mute current track (release option first to hold the mute).
- **[OPTION]+[PLAY]** Solo current track (release option first to hold the solo).
- **[OPTION]+[SHIFT]+[PLAY]** Clears all mute and solos.

Editing

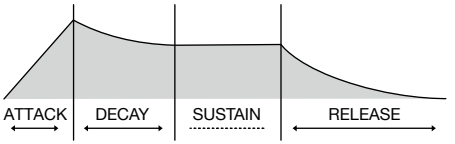
- **[EDIT]+[UP or DOWN]** Edit the selected value on the cursor's position incrementing by large steps.
- **[EDIT]+[LEFT or RIGHT]** Edit the selected value on the cursor's position incrementing by small steps.
- **[EDIT]+[OPTION]** Set the selected value to the default setting.
- **[SHIFT]+[OPTION]** Copy currently selected modulation slot.
- **[SHIFT]+[EDIT]** Paste modulation slot.
- **[EDIT+TOUCHSCREEN]** Edit selected value with the position of a finger on any value with a visual slider.
- **[OPTION+TOUCHSCREEN]** Assign the touchscreen axis to the selected parameter on any value with a visual slider. See the section on the MIDI Mappings view.

Modulation Type: AHD Envelope



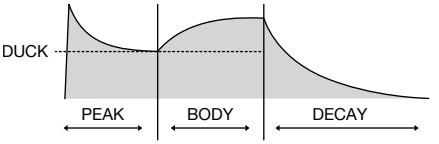
Attack “ATK” is the time it takes to reach the specified amount “AMT”, Hold “HOLD” is the time to wait after the attack is completed before proceeding to decay, and Decay “DEC” is the time it takes to decrease back to zero. All time-based values are in ticks and thus relative to the current song tempo. Refer to the help text at the bottom of the screen while editing a parameter for assistance.

Modulation Type: ADSR Envelope



Attack “ATK” is the time it takes to reach the specified amount “AMT”, Decay “DEC” is the time it takes to reach the sustain level, Sustain “SUS” is the hold level while the note is playing, and Release “REL” is the time it takes to decrease back to zero. For a note to proceed from sustain to the release stage, the phrase must have a OFF note value or FX command (or a note release via MIDI input).

Modulation Type: Drum Envelope



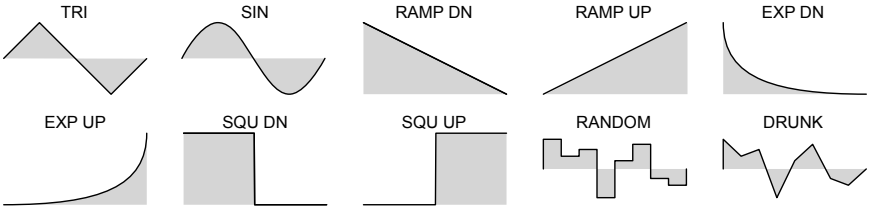
Peak “PEAK” determines the shape of the initial transient. It modifies two parameters: Duck amount and peak time - Refer to the help text when adjusting the value. Body “BODY” is the time to hold the modulation before proceeding to the decay stage. Decay “DEC” is the time it takes to decrease the modulation back to zero.

Modulation Type: LFO

LFO (Low Frequency Oscillator) modulates an instrument parameter over time. Unlike an envelope, it has a static shape that can be configured to repeat in-

finitely or trigger once like an envelope.

“OSC” is the oscillator shape - Triangle, sinusoidal, ramp down, ramp up, exponential down, exponential up, square down, square up, random, and drunk. The initial 10 shapes repeat with an additional “T” added to the end which signifies “Tick rate” where the frequency range runs much faster in ticks.



Trigger behavior “TRIG” configures how the LFO will react when the instrument triggers and when the shape reaches the end of a cycle:

- **FREE** - Loop the shape and not reset on new notes/instrument triggers.
- **RETRIG** - Loop the shape and reset on each new instrument trigger.
- **HOLD** - Hold the last value of the shape instead of repeating from the beginning.
- **ONCE** - Play through the shape once and reset to the start value.

Frequency “FREQ” is the rate at which the LFO cycles. The value is represented in steps (16th notes) or in ticks when the OSC is set to one of the tick “T” rate shapes.

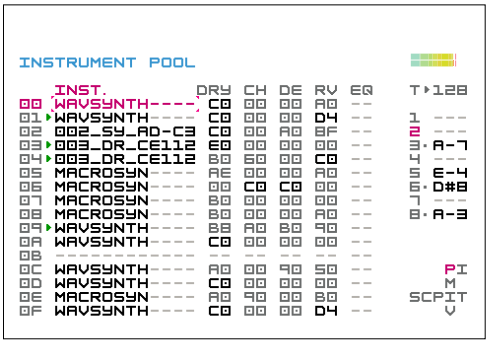
Modulation Type: Trig Envelope

The Trig Envelope is similar to the AHD Envelope, with the exception that it is bipolar (can have a positive or negative amount applied to the destination) and is designed to be triggered by another source. “SRC” can either be a instrument number (“00” to “7F”) or assigned to all instruments on a given track (“80” to “87” - Tracks 1 to 8).

Modulation Type: Tracking

Tracking assigns velocity or note values to a parameter. Select “NOTE”, “VELOCITY”, or “VELOCITY TAKEOVER” (disables velocity affecting instrument volume) in source “SRC”. “LVAL” is the lowest value and “HVAL” is the highest value from source to scale to the assigned parameter. Note “LVAL” and “HVAL” values can be reversed so that the source’s range is inverted.

Instrument Pool View



The Instrument Pool view is an overview of all instrument slots in the current song. This view is accessible above the Instrument Modulation View (**[SHIFT]+[UP]**), as a shortcut from the Project View, and when selecting an instrument with **[EDIT]+[DOWN]** on instrument number “00” in phrase.

From this view it is possible to quickly adjust mixer related settings per instrument, load instruments or samples by tapping **[EDIT]** on an empty slot, copy/paste values or instruments **[SHIFT]+[OPT]**/**[SHIFT]+[EDIT]**, and reorder instruments with **[EDIT]+[UP or DOWN]** on the instrument name column.

Previewing an instrument is possible by pressing **[PLAY]** while playback is stopped.

Navigating away from the Instrument Pool view to the right **[SHIFT]+[RIGHT]** navigates to the Instrument view for quickly jumping between the two views while managing instruments.

Instrument Pool View Shortcuts

Navigating

- **[DIRECTION]** Move cursor.
- **[OPTION]+[LEFT or RIGHT]** Navigate to previous or next instrument.
- **[OPTION]+[UP or DOWN]** Navigate +/- 16 instruments.
- **[SHIFT]+[LEFT]** Navigate to the phrase view and sets the default inserted note to the highlighted instrument.
- **[SHIFT]+[RIGHT]** Navigate to the Instrument view as a means to quickly jump between the two views.

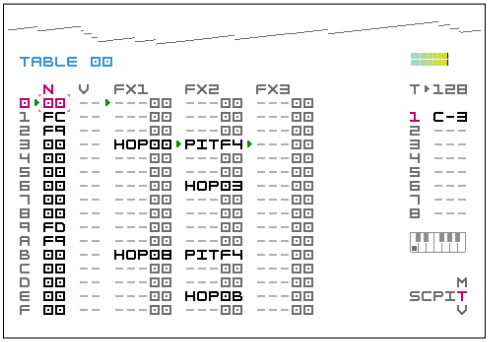
Playing

- **[PLAY]** If playback is stopped, preview the selected instrument, else stop playback.
- **[SHIFT]+[PLAY]** Continue song at chain position.
- **[OPTION]+[SHIFT]** Mute current track (release option first to hold the mute).
- **[OPTION]+[PLAY]** Solo current track (release option first to hold the solo).
- **[OPTION]+[SHIFT]+[PLAY]** Clears all mute and solos.

Editing

- **[EDIT]+[UP or DOWN]** On the instrument name column, move the current instrument up or down on the instrument list. On mixer-related columns edits the selected value on the cursor's position incrementing by large steps.
- **[EDIT]+[LEFT or RIGHT]** On mixer-related columns edit the selected value on the cursor's position incrementing by small steps.
- **[EDIT]+[OPTION]** Set the selected value to the default setting. On the instrument name column, clears the instrument.
- **[SHIFT]+[OPTION]** Copy currently selected value. On the instrument name column, copies the selected instrument.
- **[SHIFT]+[EDIT]** Paste value. On the instrument name column, pastes the previously copied instrument.

Table View



Tables are little sequencers that play alongside instruments. They are an incredibly powerful tool to transform instruments and compositions, from arpeggios and volume slides to multi-stage envelopes and effects. Every instrument has its own dedicated table with an additional 128 tables freely assignable via the table ("TBL") FX command. Each table has 16 rows that include a note transpose, volume amount, and 3 FX command columns. Unlike a phrase which runs at the speed of the global tempo and groove, tables run at the user-defined speed that is set by the Table Tic Rate in the Instrument View. By default when the play position reaches the bottom of a table it loops back to the top and continues for as long as the instrument is played.

The left column "N" is the transpose column. Entering a value here will transpose the instrument for the duration of the step. The "V" column is the volume column. These values are multiplied by the "V" in the Phrase View. The three "FX" columns are identical to the "FX" columns in the phrase screen, however some commands have a different behavior. To see a helpful view for selecting and placing commands use **[EDIT]+[UP or DOWN]** which will launch the Effects Command Help view. Each command column can run at different speeds by using the tick ("TIC") command in an FX column. You can place TIC commands at the end of the table to affect all rows to save space. To shorten a table refer to the HOP command in the appendix.

Table TIC Modes

- **TIC00** - Increments table row each time the instrument is triggered.
- **TIC01 TO TICFB** - Number of ticks per row.
- **TICFC** - Octave Map: Maps playing octave to table row.
- **TICFD** - Velocity Map: Maps velocity to table row.
- **TICFE** - Note Map: Maps note to table row. Note: Use **HOP00** on row "0C" to limit table to 12 notes / octave.
- **TICFF** - Increments table row at 200 Hz.

Table View Shortcuts

Navigating

- **[DIRECTION]** Move cursor.
- **[OPTION]+[LEFT or RIGHT]** Navigate to previous or next table.
- **[OPTION]+[UP or DOWN]** Navigate +/- 16 tables.

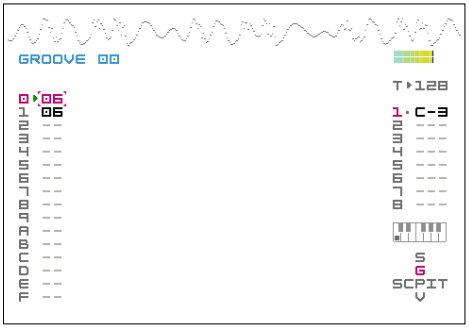
Playing

- **[PLAY]** Starts/stops playing phrase.
- **[SHIFT]+[PLAY]** Continue song at chain position.
- **[OPTION]+[SHIFT]** Mute current track (release option first to hold the mute).
- **[OPTION]+[PLAY]** Solo current track (release option first to hold the solo).
- **[OPTION]+[SHIFT]+[PLAY]** Clears all mute and solos.

Editing

- **[EDIT]** On an empty cell: insert a new value with a default value of the last edited or deleted value. In selection mode with a single column highlighted: interpolate the selected range.
- **[EDIT]+[UP or DOWN]** Edits the selected value on the cursor's position incrementing by large steps. On a command column: show the Effect Help/ Selection view. In selection mode: If multiple columns and row are selected the contents can be shifted up or down.
- **[EDIT]+[LEFT or RIGHT]** Edits the selected value on the cursor's position incrementing by small steps.
- **[EDIT]+[OPTION]** Deletes/cuts the selected value. In selection mode, cuts the selection into the copy buffer.
- **[SHIFT]+[OPTION]** Enters selection mode for moving, copying, or cutting a block of table data.
- **[OPTION]** In selection mode: copies the selection and exits selection mode.
- **[SHIFT]+[EDIT]** Pastes the copy buffer that was copied in selection mode.
- **[SHIFT]+[OPTION, then EDIT]** On a command value column where the command is the table or groove command (TBL, TBX, GRV, or GGR): copy the contents of the selected data into a new number. (I.e. "clone").

Groove View



Grooves allow defining the speed of each of the 16 steps in a phrase by altering the number of ticks each step consumes. This allows swing, shuffle, triplets, and faster phrases. See the section on common grooves in the appendix.

Groove “00” is the default groove for all 8 tracks. Each track can use a different groove independently. Assign a groove to a track by using the groove (“GRV”) FX command in a phrase.

Add swing to a song by navigating to the Groove view that is located above the phrase **[SHIFT]+[UP]**. Start the song by pressing **[SHIFT]+[PLAY]** and edit the value in row 0 by using **[EDIT]+[UP or DOWN]**. Notice that it alters both rows 0 and 1 at the same time. A common swing setting is 07,05 or 08,04.

The Groove Math/s

The M8 has a resolution of 24 ticks per quarter note (24PPQ). Since there are 4 sixteenth notes in a quarter note and each row in a phrase represents a sixteenth note in time, there are 6 ticks per row (24PPQ / 4 sixteenth notes = 6 ticks). Therefore by default all grooves have two rows of “06”. If you want to stick with the same count, the total ticks in a phrase should be equal to 96 (16 steps x 6 ticks per step). When editing a groove there is a help message at the bottom of the screen that sums the ticks for your convenience.

The groove will loop to the beginning when an empty row (“--”) is encountered, and a row of “00” will skip the phrase step.

Groove View Shortcuts

Navigating

- **[DIRECTION]** Move cursor.
- **[OPTION]+[LEFT or RIGHT]** Navigate to previous or next groove.
- **[OPTION]+[UP or DOWN]** Navigate +/- 16 grooves.

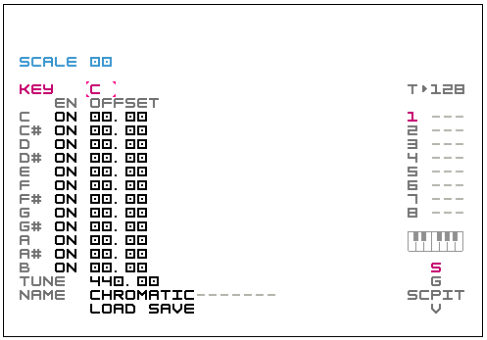
Playing

- **[PLAY]** Starts/stops playing phrase.
- **[SHIFT]+[PLAY]** Continue song at chain position.
- **[OPTION]+[SHIFT]** Mute current track (release option first to hold the mute).
- **[OPTION]+[PLAY]** Solo current track (release option first to hold the solo).
- **[OPTION]+[SHIFT]+[PLAY]** Clears all mute and solos.

Editing

- **[EDIT]** On an empty cell: insert a new value with a default value of the last edited or deleted value.
- **[EDIT]+[UP or DOWN]** Edits the selected value and the value above or beneath.
- **[EDIT]+[LEFT or RIGHT]** Edits the selected value by small increments.
- **[EDIT]+[OPTION]** Deletes/cuts the selected value. In selection mode: cut the selection into the copy buffer.
- **[SHIFT]+[OPTION]** Enters selection mode for moving, copying, or cutting a block of table data.
- **[OPTION]** In selection mode: copy the selection and exits selection mode.
- **[SHIFT]+[EDIT]** In selection mode interpolate the selected range, else pastes contents from the copy buffer.

Scale View



Scales allow defining and quantizing note related events in M8. This includes project transpose, chain transpose, note entry, arpeggio (“ARP”) command, pitch (“PIT”) effect command, the “PIT” modulation modifier in FMSynth, and the MIDIOUT instrument chord (“CHD”) and add note (“ADD”) effect commands, respectively.

There are up to 16 user defined scales available per project. Scale “00” is the default scale for all 8 tracks. Each track can independently use a different scale. Assign a scale and key signature to a track by using the scale (“SCA”) FX command, globally using the global scale (“SCG“) command, or for use in Hypersynth. Enable or disable scales per-instrument by editing the “TRANSP.” option in Instrument view.

The “Key” is a global setting that defines the root note for the default scale. It can be overwritten on a per-track basis by using the scale “SCA” command as mentioned above.

For any given scale each of the 12 note intervals can be enabled by setting “EN” to “ON” with an optional detuning offset from -24.00 to +24.00 semitones.

Name, load and save any of the 16 scales for use in other projects. On power-up M8 pre loads the installed SD card with 92 different scales which can be found in /Scales/Factory

Scale View Shortcuts

Navigating

- **[DIRECTION]** Move cursor.
- **[OPTION]+[LEFT or RIGHT]** Navigate to previous or next scale.
- **[OPTION]+[UP or DOWN]** Navigate to the first or last scale.

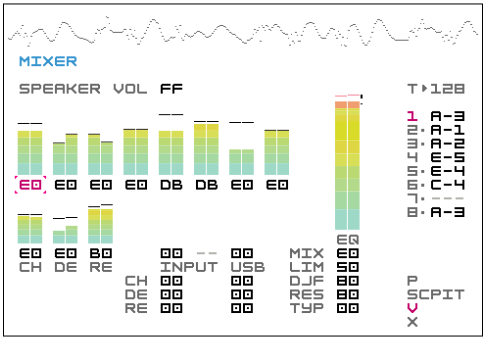
Playing

- **[PLAY]** Starts/stops playing phrase.
- **[SHIFT]+[PLAY]** Continue song at chain position.
- **[OPTION]+[SHIFT]** Mute current track (release option first to hold the mute).
- **[OPTION]+[PLAY]** Solo current track (release option first to hold the solo).
- **[OPTION]+[SHIFT]+[PLAY]** Clears all mute and solos.

Editing

- **[EDIT]** On an empty cell: insert a new value with a default value of the last edited or deleted value.
- **[EDIT]+[UP or DOWN]** Edits the selected value and the value above or beneath.
- **[EDIT]+[LEFT or RIGHT]** Edits the selected value by small increments.
- **[EDIT]+[OPTION]** Deletes/cuts the selected value.

Mixer View



The mixer allows you to view and adjust the volume of each of the 8 tracks, the 3 send effects (chorus, delay, and reverb, see Effect Settings View), analog and USB input for monitoring; control the global DJ filter effect; and overall song EQ, volume, and limiter. When an instrument is triggered on a given track, its volume parameters are applied to the given track's outputs. The track's volume in the mixer also adjusts its effect send levels. The effect volumes of the 3 send effects can be adjusted under "CH", "DE", and "RE". The analog and USB inputs can be mixed in for live monitoring as well as routed to the 3 send effects. "INPUT" refers to the analog input and "USB" refers to anything the USB host computer is sending to the M8.

All of the tracks, inputs, and effects are mixed together and routed through the main EQ, limiter, DJ filter, and finally though the main song volume. Any clipping will appear as a red bar on the graphical meter.

The DJ filter can be one of several mixed modes: low-pass / high-pass, low-pass / band-stop, and band-stop / high-pass. A value of "80" is off with no filtering, below 80 will engage the low-pass (or band-stop) filter, above 80 will engage the high-pass filter (or band-stop, selected by "TYP"). This is useful in a live setting when it is mapped to the touchscreen or an external controller, or automated in the song using the "DJF" FX command.

LIM is the main mix limiter which is engaged when its value is above 00. There is a white line drawn on the "MIX" graphical indicator to show the limiters compression activity.

Dual-mono input mode can be enabled by setting the "--" cell to the right of the input volume "00 --". Clear this value with **[EDIT]+[OPTION]** to disable it.

With EQ is selected, **[SHIFT]+[RIGHT]** or **[EDIT]** will enter the EQ Editor View. With MIX or LIM selected, **[SHIFT]+[RIGHT]** or **[EDIT]** will enter the Limiter / Mix Scope View.

Mixer View Shortcuts

Navigating

- **[DIRECTION]** Move cursor.

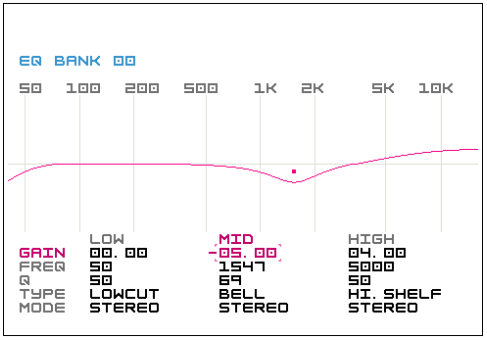
Playing

- **[PLAY]** Plays/stops all tracks.
- **[SHIFT]+[PLAY]** Plays/stops all tracks.
- **[OPTION]+[SHIFT]** Mute current track (release option first to hold the mute).
- **[OPTION]+[PLAY]** Solo current track (release option first to hold the solo).
- **[OPTION]+[SHIFT]+[PLAY]** Clears all mute and solos.

Editing

- **[EDIT]+[UP or DOWN]** Edits the selected value incrementing by large steps.
- **[EDIT]+[LEFT or RIGHT]** Edits the selected value incrementing by small steps.
- **[EDIT]+[OPTION]** Set selected parameter to its default value.
- **[SHIFT]+[OPTION]** Creates a song snapshot for temporarily storing entire song to recall at a later point.
- **[SHIFT]+[EDIT]** Recall song snapshot. See **[SHIFT]+[OPTION]**
- **[OPTION+TOUCHSCREEN]** Assign the touchscreen axis to the selected parameter. See MIDI Mappings view.
- **[OPTION+MIDI CC]** Assign a MIDI CC to the selected parameter. See MIDI Mappings view.

EQ Editor View



M8 features a 3 band parametric equalizer per instrument, the main mix, and chorus, delay, reverb global effects. There are 128 assignable Instrument EQ slots to allow multiple instruments to share the same EQ settings by assigning the EQ slot number on the Instrument and Instrument Pool views respectively. The main mix EQ can be accessed from the Mixer View, and the global effect EQs are located on the Effects Settings View.

The 3 equalizer bands are labeled as “LOW”, “MID”, and “HIGH” with respect to their default settings. Each band is functionally identical and can be configured to suit your needs.

EQ Band Parameters

- **GAIN** - Amount of boost or cut applied to the band in decibels (dB). Positive values increase volume (boost), while negative values reduce it (cut).
- **FREQ** - The center (or corner) frequency around which the band operates.
- **Q** - The quality factor (bandwidth) of the filter. Higher Q values narrow the band (affect a tighter range of frequencies), while lower Q values widen the band.
- **TYPE** - The filter shape for the band:
    - **LOWCUT** - Removes frequencies below the cutoff.
    - **LOWSHELF** - Boosts or cuts frequencies below the set shelf frequency with a relatively flat response up to that point.
    - **BELL** - A peaking filter that boosts or cuts around the center frequency with a bell-shaped curve.
    - **BANDPASS** - Passes frequencies around the center frequency while attenuating frequencies both below and above that range.
    - **HI.SHELF** - Boosts or cuts frequencies above the set shelf frequency with a relatively flat response beyond that point.

EQ Band Parameters (Continued)

    - **HI.CUT** - Attenuates or removes frequencies above the cutoff, letting lower frequencies pass.
    - **ALLPASS** - Passes all frequencies at equal gain while shifting their phase, changing timing without affecting amplitude.
- **MODE** - How to apply the band to the stereo signal:
    - **STEREO** - Processes both left and right channels identically.
    - **MID** - Affects only the summed “mid” information (common to both left and right).
    - **SIDE** - Affects only the “side” information (differences between left and right).
    - **LEFT** - Affects only the left channel.
    - **RIGHT** - Affects only the right channel.

EQ Editor View Shortcuts

Navigating

- **[DIRECTION]** Move cursor.
- **[OPTION]** Exits and returns to the Mixer View.

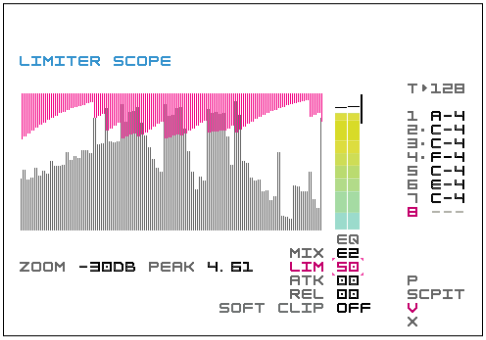
Playing

- **[EDIT]+[EDIT]** (Double tap) Mutes / Unmutes the current EQ
- **[PLAY]** Plays/stops all tracks, or previews instrument from the Instrument Pool view.
- **[SHIFT]+[PLAY]** Plays/stops all tracks.
- **[OPTION]+[SHIFT]** Mute current track (release option first to hold the mute).
- **[OPTION]+[PLAY]** Solo current track (release option first to hold the solo).
- **[OPTION]+[SHIFT]+[PLAY]** Clears all mute and solos.

Editing

- **[EDIT]+[UP or DOWN]** Edits the selected value incrementing by large steps.
- **[EDIT]+[LEFT or RIGHT]** Edits the selected value incrementing by small steps.
- **[EDIT]+[OPTION]** Set selected parameter to its default value.
- **[SHIFT]+[OPTION]** Copy EQ bank
- **[SHIFT]+[EDIT]** Paste EQ bank
- **[OPTION+TOUCHSCREEN]** Assign the touchscreen axis to the selected parameter. See MIDI Mappings view.
- **[OPTION+MIDI CC]** Assign a MIDI CC to the selected parameter. See MIDI Mappings view.

Limiter & Mix Scope View



The Limiter & Mix scope view displays a histogram “scope” of volume and compression over time. This view is accessible by pressing **[EDIT]** or **[SHIFT]+[RIGHT]** on the “MIX” or “LIM” parameters in the Mixer View. Selecting “MIX” will highlight the main mix volume along the bottom with the limiter activity from the top. Selecting “LIM” will display the limiter input signal along the bottom, while highlighting the limiter activity along the top.

For convenience the EQ, MIX and LIM parameters are duplicated from the mixer screen. At the bottom you’ll find extra limiter envelope settings for adjusting the attack (ATK) and release (REL) of the limiter’s compression envelope.

Scope Parameters

- **ZOOM** - Adjusts the lower limit of the scope histogram vertically in decibels.
- **PEAK** - Displays the current peak dB of the main mix. This value resets when the MIX and LIM settings change and can be manually cleared with **[OPT]+[EDIT]** when selected.
- **EQ** - Views the main mix EQ (also available from the Mixer view).
- **MIX** - Controls the main mix/song volume, applied after the limiter stage (also available from the Mixer view).
- **LIM** - Sets the limiter amount (also available from the Mixer view).
- **ATK** - Specifies the limiter attack time, from 0 to 100 ms. See the on-screen help text for the conversion to milliseconds.
- **REL** - Specifies the limiter release time, from 4 to 1000 ms. A “00” setting activates “AUTO” mode, which dynamically adjusts the time between 100 and 900 ms based on the limiter’s compression amount.
- **SOFT CLIP** - Applies a gentle saturation after the limiter to prevent harsh clipping. Bring up the MIX amount to exaggerate the effect.

Limiter & Mix Scope Shortcuts

Navigating

- **[DIRECTION]** Move cursor.
- **[OPTION]** Exits and returns to the Mixer View.

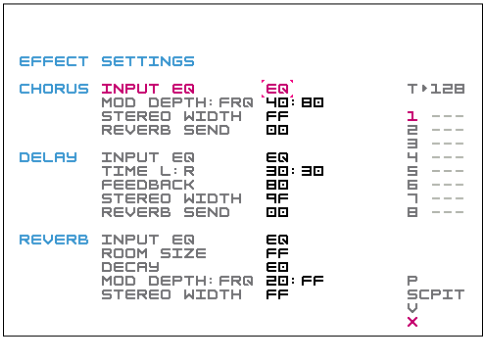
Playing

- **[PLAY]** Plays/stops all tracks, or previews instrument from the Instrument Pool view.
- **[SHIFT]+[PLAY]** Plays/stops all tracks.
- **[OPTION]+[SHIFT]** Mute current track (release option first to hold the mute).
- **[OPTION]+[PLAY]** Solo current track (release option first to hold the solo).
- **[OPTION]+[SHIFT]+[PLAY]** Clears all mute and solos.

Editing

- **[EDIT]+[UP or DOWN]** Edits the selected value incrementing by large steps.
- **[EDIT]+[LEFT or RIGHT]** Edits the selected value incrementing by small steps.
- **[EDIT]+[OPTION]** Set selected parameter to its default value.

Effect Settings View



The effect settings view is accessible under the mixer view **[SHIFT]+[DOWN]**. The M8 has 3 send effects that are utilized by the instrument settings “CHO”, “DEL” “REV”, as well as on audio and USB input configured in the mixer view.

Chorus

Stereo width effect with subtle modulation. Created by using a stereo delay buffer while smoothly modulating the read position between the left and right channels.

- **INPUT EQ** - Adjust the input EQ settings
- **MOD DEPTH** - The amount of modulation that occurs in the stereo signal.
- **MOD FREQ** - The speed of the modulation.
- **WIDTH** - Stereo width. “00” is mono, “FF” is stereo.
- **REVERB SEND** - Adjusts the amount to send to the reverb effect.

Delay

Ping-pong delay where the incoming audio bounces between left and right channels.

- **INPUT EQ** - Adjust the input EQ settings
- **TIME L:R** - Delay time for left and right channels. First digit is in beats, second digit is in fractions of a beat. Ex: “40” is 4 beats long.
- **FEEDBACK** - Adjusts the amount that the signal is fed back into itself.
- **WIDTH** - Stereo width. “00” is mono, “FF” is stereo.
- **REVERB SEND** - Adjusts the amount to send to the reverb effect.

Reverb

Simple reverb with subtle modulation similar to the chorus. Particular attention has been given to this model to prevent metallic / ringing feedback.

- **INPUT EQ** - Adjust the input EQ settings
- **SIZE** - The size of the room.
- **DECAY** - Amount to decay the signal over time.
- **MOD DEPTH** - The amount of modulation that occurs in the stereo signal.
- **MOD FREQ** - The speed of the modulation.
- **WIDTH** - Stereo width. “00” is mono, “FF” is stereo.

Effect Settings View Shortcuts

Navigating

- **[DIRECTION]** Move cursor.

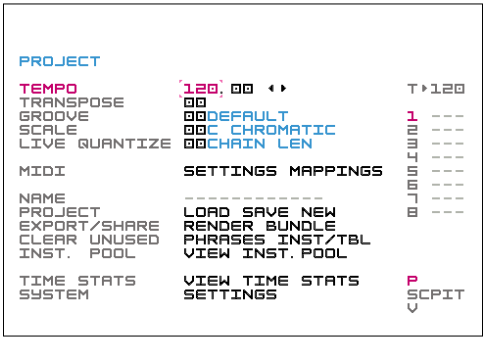
Playing

- **[PLAY]** Starts/stops all tracks.
- **[SHIFT]+[PLAY]** Starts/stops all tracks.
- **[OPTION]+[SHIFT]** Mute current track (release option first to hold the mute).
- **[OPTION]+[PLAY]** Solo current track (release option first to hold the solo).
- **[OPTION]+[SHIFT]+[PLAY]** Clears all mute and solos.

Editing

- **[EDIT]+[UP or DOWN]** Edits the selected value incrementing by large steps.
- **[EDIT]+[LEFT or RIGHT]** Edits the selected value incrementing by small steps.
- **[EDIT]+[OPTION]** Set selected parameter to its default value.
- **[OPTION+TOUCHSCREEN]** Assign the touchscreen axis to the selected parameter. See MIDI Mappings view.
- **[OPTION+MIDI CC]** Assign a MIDI CC to the selected parameter. See MIDI Mappings view.

Project View



The project view contains settings relevant to the song as a whole. Saving, loading, and exporting can be found here as well as access to MIDI settings, mappings, and theme.

- **TEMPO** - Adjust the song's speed in beats per minute (BPM). Press **[EDIT]** rhythmically to use tap-tempo and set the BPM by tapping.
- **TRANSPOSE** - Globally transpose the song in semitones. The transposition only affects instruments that have "TRANSP." enabled. The transposition occurs when the edit key is released which is useful for live performance.
- **GROOVE** - Default groove to be used on song playback. See Groove View. The groove change takes effect when the edit key is released.
- **SCALE** - Default scale to be used on song playback. See Scale View. The scale change takes effect when the edit key is released.
- **LIVE QUANTIZE** - Set the cue-waiting behavior when playing a chain in live mode.
- **MIDI: SETTINGS** - See the section on MIDI Settings View.
- **MIDI: MAPPINGS** - See the section on MIDI Mappings View.
- **NAME** - Enter a name for the current song for saving.
- **LOAD, SAVE, NEW** - Load, save, or create a new song.
- **RENDER** - See the section on Render View.
- **BUNDLE** - See the next page on Bundles.
- **CLEAR UNUSED** - Frees/clears unused chains, phrases, instruments, EQs, and tables not used in the song.
- **INST. POOL** - Navigates to the Instrument Pool View.
- **SYSTEM SETTINGS** - Navigates to the System Settings View.

About Project Files

Project files contain all song data including chains, phrases, instruments, as well as MIDI mappings and settings configurations. Output volume, speaker volume, and theme colors are stored internally on the M8. Samples are not stored in the project file. Moving or deleting samples will result in samples failing to load with the song.

Bundles

Since samples are not stored inside the project file, you may want to share your work or archive a song before moving samples around on the SD card. Bundling a song handles this. It creates a sub-folder in the "/Bundles" directory that contains the project file, samples, and instruments.

Project View Shortcuts

Navigating

- **[DIRECTION]** Move cursor.

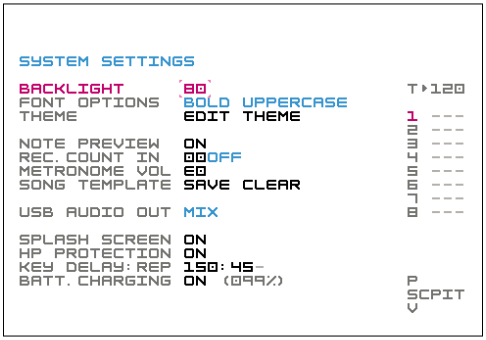
Playing

- **[PLAY]** Plays/stops all tracks.
- **[SHIFT]+[PLAY]** Plays/stops all tracks.
- **[OPTION]+[SHIFT]** Mute current track (release option first to hold the mute).
- **[OPTION]+[PLAY]** Solo current track (release option first to hold the solo).
- **[OPTION]+[SHIFT]+[PLAY]** Clears all mute and solos.

Editing

- **[EDIT]+[UP or DOWN]** Edits the selected value incrementing by large steps.
- **[EDIT]+[LEFT or RIGHT]** Edits the selected value incrementing by small steps.
- **[EDIT]+[OPTION]** Set selected parameter to its default value.
- **[SHIFT]+[OPTION]** Creates a song snapshot for temporarily storing entire song to recall at a later point.
- **[SHIFT]+[EDIT]** Recall song snapshot. See **[SHIFT]+[OPTION]**
- **[OPTION+TOUCHSCREEN]** On Tempo and Transpose - Assign the touchscreen axis to the selected parameter. See MIDI Mappings view.
- **[OPTION+MIDI CC]** On Tempo and Transpose - Assign a MIDI CC to the selected parameter. See MIDI Mappings view.

System Settings View

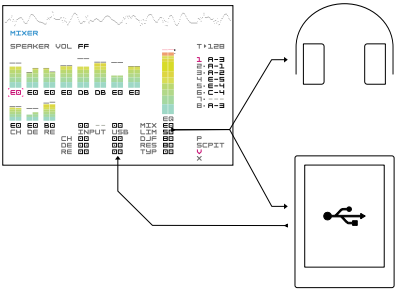


The system settings view contains all system-wide settings. Adjusting the backlight brightness, theme settings, metronome, and various options can be found here.

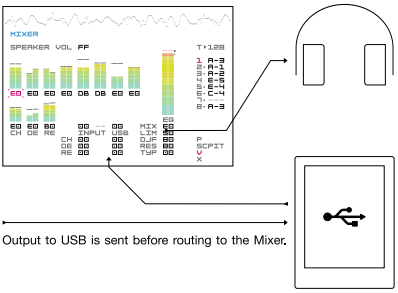
- **BACKLIGHT** - Set the back light LED brightness of the display.
- **FONT OPTIONS** - Various font display options, including a larger font mode for increased readability.
- **THEME** - See the section on Theme View.
- **NOTE PREVIEW** - Enable note preview when editing notes in phrase view.
- **REC. COUNT IN** - Number of phrases/measures to count-in a metronome before recording audio either in the Sample Editor (with song playback enabled) or song Selection to Sample (for Realtime and External only modes.)
- **METRONOME VOL** - The volume of the metronome sound.
  Note: You can edit or replace the metronome sound by editing or saving the /System/Metronome.m8i instrument file.
- **SONG TEMPLATE** - Set the currently opened song as the new-song template when creating a new song.
- **USB AUDIO OUT** - Change the routing behavior of USB Audio. Refer to the diagram on the following page.
- **SPLASH SCREEN** - Enable / Disable the M8 logo splash screen and sound when turning on the device.
- **HP PROTECTION** - Enable / Disable headphone hearing protection - The headphone output volume is limited to a maximum of “F0” when unplugging and reinserting a pack into the headphone output for hearing protection.
- **KEY DELAY:REP** - Key delay and repeat settings in milliseconds. Delay is the time it takes for M8 to repeat a key press when holding down a button, Repeat is the time in between each repeated press.
- **BATT. CHARGING** - Enable / Disable charging when M8 is turned on and USB is connected to reduce power consumption on connected host device. Only available on Model:02.

USB Audio Routing Options

USB Audio Out: "MIX"

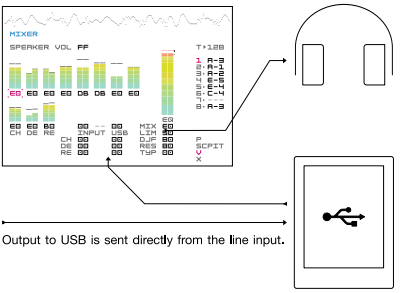


USB Audio Out: "PRE:TRACK/EFFECT"



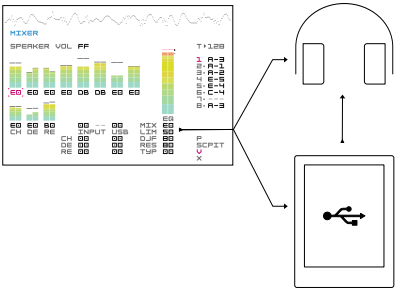
Output to USB is sent before routing to the Mixer.

USB Audio Out: "LINE IN"

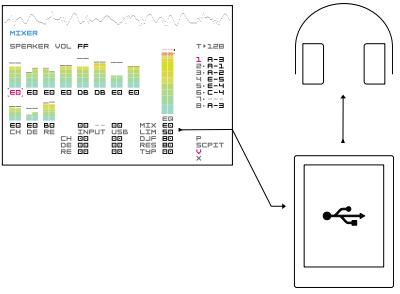


Output to USB is sent directly from the line input.

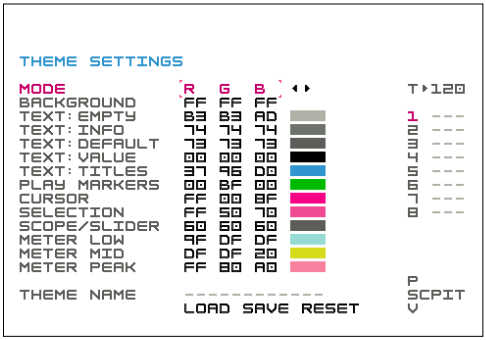
USB Audio Out: "MIX AND MONITOR"



USB Audio Out: "POST:MIX"



Theme View



The theme view is accessible from the System Settings View. Adjust brightness, font settings, interface colors, load presets, and save preset themes for sharing.

Select either RGB or HSV mode by pressing **[EDIT]** on “MODE”. When the “<>” icon is highlighted the theme’s overall hue can be adjusted when pressing **[EDIT]+[DIRECTION]**

Adjust each property’s color in RGB or HSV format to see what it controls. Minor adjustments may not show due to the display’s color depth. There are a handful of default themes located on the SD card that can be browsed by selecting “LOAD”.

Theme View Shortcuts

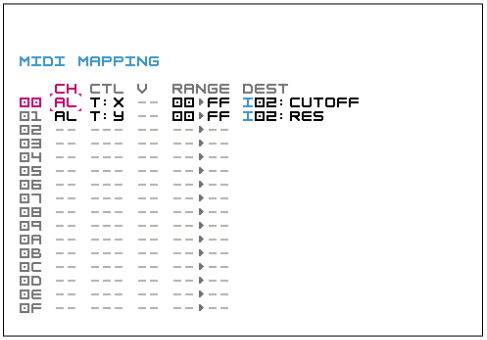
Navigating

- **[DIRECTION]** Move cursor
- **[OPTION]** Exits view

Editing

- **[EDIT]+[UP or DOWN]** Edits the selected value incrementing by large steps
- **[EDIT]+[LEFT or RIGHT]** Edits the selected value by small steps.
- **[EDIT]+[OPTION]** Set selected parameter to its default value.

MIDI Mapping View



The MIDI mapping view is accessible from the Project View. MIDI mappings are MIDI CCs (Continuous Control - knobs on an external MIDI controller) or the touchscreen that are assigned to instrument or mixer parameters. Up to 128 mappings are available per song. The destination parameter can only be assigned to one mapping, but one control/touchscreen axis can control many parameters. Assign a MIDI CC or touchscreen to a parameter by placing the cursor on the desired parameter, holding down the **[OPTION]** key, and turning the MIDI CC or touching and sliding vertically or horizontally on the touchscreen. All mappings are stored within the song file.

This view allows you view and edit the range of the mappings, as well as remove them by pressing **[OPTION]+[EDIT]**.

MIDI Mapping View Shortcuts

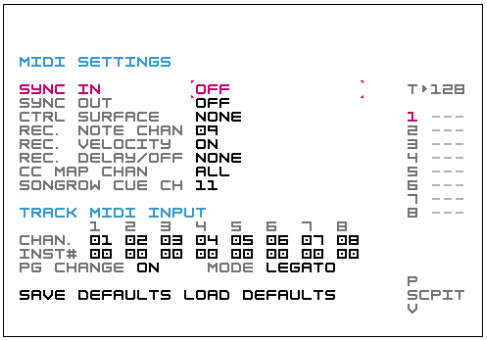
Navigating

- **[DIRECTION]** Move cursor.
- **[OPTION]** Exits view.

Editing

- **[EDIT]+[UP or DOWN]** Edits the selected value incrementing by large steps.
- **[EDIT]+[LEFT or RIGHT]** Edits the selected value incrementing by small steps.
- **[EDIT]+[OPTION]** Delete a mapping.

MIDI Settings View



The MIDI settings view is accessible from the Project View. Edit the MIDI settings for sync input and output, transport control (play, stop, continue), MIDI note recording options, and MIDI channel assignments. All parameters in this page are stored within the song. Save or load the default configuration used when creating a new song.

MIDI Settings

- SYNC IN / SYNC OUT
  - **CLOCK** - Enable MIDI clock for sending/receiving sync.
  - **TRANSPORT** - Enable song start/stop MIDI transport messages.
  - **CLOCK+TRANSP.** - Clock and transport
  - **TRANSPORT+SPP** - Transport & Song position pointer allow control of song position.
  - **CLK+TRANSP+SPP** - Clock, transport, and SPP
- **CTRL SURFACE** - Set the MIDI control surface to be used with M8. Currently only the Novation Launchpad Pro MK3 is supported.
- **RECORD NOTE CHANNEL** - MIDI channel for recording incoming MIDI notes. See next section under Recording MIDI Notes.
- **RECORD VELOCITY** - Enables recording note velocity when recording MIDI notes.
- **RECORD DELAY/KILL** - Record delay (“DEL”) and kill/note off (“KIL“) FX commands when recording incoming MIDI notes into a phrase.
- **CONTROL MAP CHANNEL** - MIDI channel for incoming MIDI CCs for MIDI Mapping. Refer to MIDI Mappings View.
- **SONG ROW CUE CHANNEL** - MIDI channel for incoming MIDI notes for cueing song rows.

Recording MIDI Notes

Inserting and recording MIDI notes from an external controller can be accomplished by selecting the correct “REC. NOTE CHAN” channel for your controller and highlighting a note column in the phrase view. While the song is playing, notes will be inserted based on the time they were played. Notes and instruments can be previewed when the cursor is outside the note column.

Track MIDI Input

The M8 can act like a sound module, where each of the 8 tracks can be independently controlled by an external sequencer or controller. Changing the instrument can be accomplished by sending a MIDI program change message from the external controller or selecting the instrument number in the MIDI Settings view under the appropriate track number.

- **CHAN** - MIDI channel selection for the given track.
- **INST#** - Instrument number to be used for the given track.
- **PG CHANGE** - Enable instrument selection via MIDI Program change messages.
- **MODE** - 3 different modes to choose from:
    - **MONO** - Mono mode plays all tracks of the same MIDI channel together in unison.
    - **LEGATO** - Same as Mono mode but overlapping notes will not cause the instrument to retrigger.
    - **POLY** - Poly mode utilizes all tracks of the same MIDI channel to enable polyphonic playback.

MIDI Settings View Shortcuts

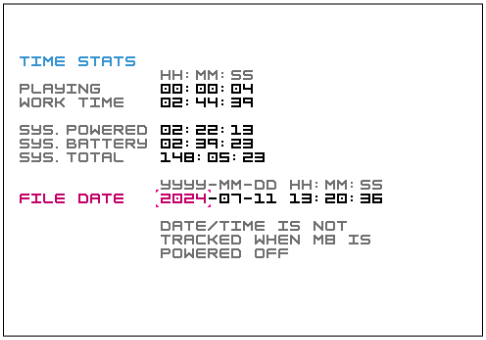
Navigating

- **[DIRECTION]** Move cursor.
- **[OPTION]** Exits view.

Editing

- **[EDIT]+[UP or DOWN]** Edits the selected value incrementing by large steps.
- **[EDIT]+[LEFT or RIGHT]** Edits the selected value incrementing by small steps.
- **[EDIT]+[OPTION]** Delete a mapping.

Time Stats View



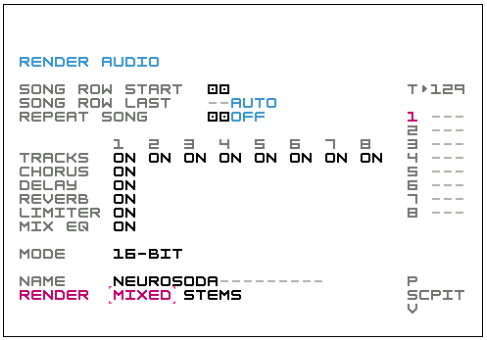
The time stats view is accessible from the Project View. From this view you can view time statistics as well as set the date and time for saving files. Please note that to conserve battery M8 does not keep track of the date and time while it is powered off.

- **PLAYING** - Amount of time elapsed since M8 has started playback.
- **WORK TIME** - Amount of time spent working on the current song.
- **SYS. POWERED** - Amount of time elapsed since M8 has been powered on
- **SYS. BATTERY** - Amount of time elapsed since M8 has had a full battery charge. It may be offset about 30 minutes due to “fullness” detection.
- **SYS. TOTAL** - Total power on lifetime.
- **FILE DATE** - Set the date and time used when saving files to the SD card.

Time Stats View Shortcuts

- **[DIRECTION]** Move cursor
- **[OPTION]** Exits view
- **[EDIT]+[UP or DOWN]** Edits the selected value incrementing by large steps
- **[EDIT]+[LEFT or RIGHT]** Edits the selected value incrementing by small steps.

Render View



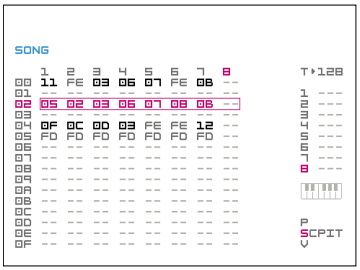
The render view is accessible from the project view. Rendering allows you to export sections, tracks (“STEMS”), or the entire song (“MIXED”) as a 16-bit 44.1kHz stereo wav file located in “/Renders”.

- **SONG ROW START** - The first song row to start rendering from.
- **SONG ROW LAST** - The last song row that will be rendered.
- **REPEAT SONG** - Repeat the song a given number of times.
- **TRACKS** - Selectively choose which tracks to render.
- **CHORUS** - Enable the chorus send effect in the render.
- **DELAY** - Enable the delay send effect in the render.
- **REVERB** - Enable the reverb send effect in the render.
- **LIMITER** - Enable the limiter effect in the render.
- **MODE** - Set render bit depth to 16 or 32-bit.
- **NAME** - Choose a name for the rendering.
- **MIXED STEMS** - “MIXED” creates one wav file with all tracks mixed together whereas “STEMS” creates a file for each enabled track that has chains within the selected range.

Render View Shortcuts

- **[DIRECTION]** Move cursor
- **[OPTION]** Exits view
- **[EDIT]+[UP or DOWN]** Edits the selected value incrementing by large steps
- **[EDIT]+[LEFT or RIGHT]** Edits the selected value incrementing by small steps.
- **[EDIT]+[OPTION]** Deletes / Resets the selected parameter.

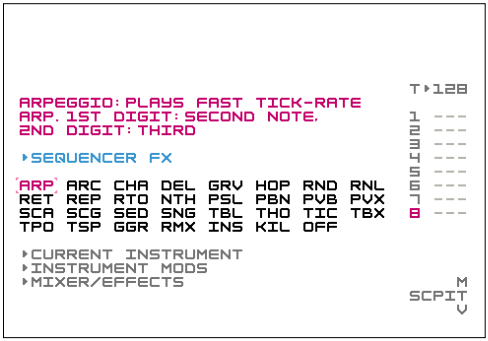
Selection to Sample



From the Song View, after making a selection ([SHIFT]+[OPT]), double tap [EDIT] to bring up the dialog to create a sample from the selection (cancel by pressing [OPT]). Once rendering is complete a new instrument containing the sample is created. The new instrument will be the default instrument when entering a new note. Below is a description of the available options.

- **QUICK RENDER** - Off-line renders the selection to a sample, any sound from the line-in or USB input is not recorded.
- **REALTIME** - All selected tracks and Line-in / USB input set from the Mixer View will be recorded.
- **EXTERNAL ONLY** - Records the first External Instrument found in the selection. If none is found it will record the Line-Input and USB mixed in from the Mixer View.

Effect Command Help View

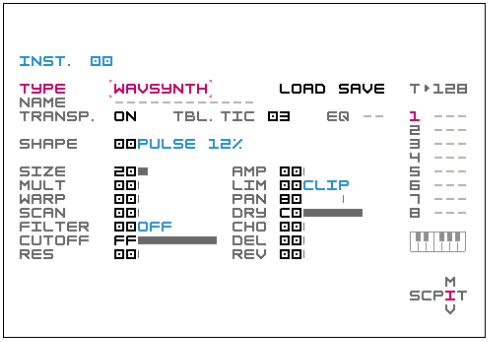


The effect command help view can be accessed by holding down [EDIT] and pressing [UP or DOWN] on any FX command column on the phrase or table view. The view allows you to select an FX command by using any [DIRECTION] key. A small description of the highlighted effect is displayed at the top. Insert the selected command by releasing the [EDIT] key.

(Draw a picture or list your favorite plant species below)

Instruments

Wavsynth



Wavsynth is a wave table synthesizer and noise generator. The wave table is an 8-bit sample buffer that is generated in realtime from one of 9 basic shapes that can be repeated, skewed/biased, mirrored, filtered and overdriven.

After the 9 base shapes there is an additional 61 built-in wave tables. Each wave table consists of 64 individual waveforms that can be smoothly morphed using the “SCAN” parameter. Refer to the Wave table index.

Wavsynth Parameters

- **SHAPE** - This selects from several standard shapes:
  - **PULSE 12% TO 75%** - 4 Pulse width options. For pulse width modulation (PWM) set the shape to “PULSE 50%” and adjust the “MIRROR” parameter. Smoothness of the PWM is determined by the “SIZE” parameter.
  - **SAW** - Saw wave.
  - **TRIANGLE** - Triangle wave.
  - **SINE** - Sine wave.
  - **NOISE PITCHED** - Classic LFSR Noise with an in-tune tonal pitch.
  - **NOISE** - Classic LFSR noise.
  - **WT** - Wave tables. Refer to the Wave table index.
- **SIZE** - Horizontal size of the waveform (number of samples).
- **MULT** - Multiplies the waveform by adding more and more repeats of the selected shape. This can sound like a “hard sync” effect.

Wavsynth Parameters (Continued)

- **WARP** - Push the shape to one side of the wave table.
- **SCAN** - On shapes 0 to 8 mirror the waveform at the specified position, the value range is from 0 to 200%. On wave tables scan through the 64 waveforms from the current wave table.

Multi-mode Filter Parameters

- **FILTER** - Filter type - Lowpass, Highpass, Bandpass, Bandstop, and LP>HP (Lowpass with RES controlling the frequency of a 1-pole highpass filter). ZDF (zero delay feedback) Lowpass, ZDF Highpass.

  Wavsynth has 4 extra modes which apply the filter into the waveform: “WAV LP” - Lowpass, “WAV HP” - Highpass, “WAV BP” - Bandpass, and “WAV BS” Bandstop.
- **CUTOFF** - Filter cutoff frequency.
- **RES** - Filter resonance amount.

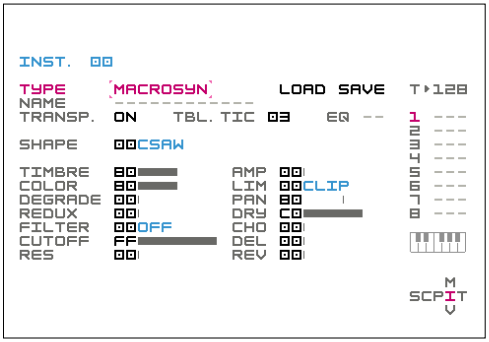
Amplification Parameters

- **AMP** - Amplifies the waveform. Any value higher than the maximum level allowed is handled according to the “LIM” setting.
- **LIM** - Set the limit / clipping behavior of the amplified signal.
    - **CLIP** - Any value higher than the maximum level is clipped.
    - **SIN** - The waveform is fed through a sine function.
    - **FOLD** - Any value higher than the maximum level is folded back into itself.
    - **WRAP** - Any value higher than the maximum level is vertically wrapped.
    - **POST** - The amplification is applied with hard-clipping after the filter stage.
    - **POST:AD** - Post filter The amplification is applied with soft-clipping
    - **POST:W1-W3** - Post filter folding distortions.

Mixer Parameters

- **DRY** - Dry volume sent to the mixer channel.
- **CHO** - Chorus send effect volume.
- **DEL** - Delay send effect volume.
- **REV** - Reverb send effect volume.

Macrosynth



The Macrosynth contains 44 different models or “SHAPES”. From basic analog to 2-op FM, physical modeling, and percussive sounds. The two parameters “TIMBRE” and “COLOR” control the overall characteristics and change depending on the shape selected. Refer to the Macrosynth Models section in the appendix for details.

Macrosynth Parameters

- **SHAPE** - Select one of the 44 different engines. Refer to the Macrosynth Models section in the appendix for details.
- **TIMBRE** - First parameter of the Macrosynth shape.
- **COLOR** - Second parameter of the Macrosynth shape.
- **DEGRADE** - Sample rate reduction effect.
- **REDUX** - Bit rate reduction effect.

Multi-mode Filter Parameters

- **FILTER** - Filter type - Lowpass, Highpass, Bandpass, Bandstop, and LP>HP (Lowpass with RES controlling the frequency of a 1-pole highpass filter). ZDF (zero delay feedback) Lowpass, ZDF Highpass.
- **CUTOFF** - Filter cutoff frequency.
- **RES** - Filter resonance amount.

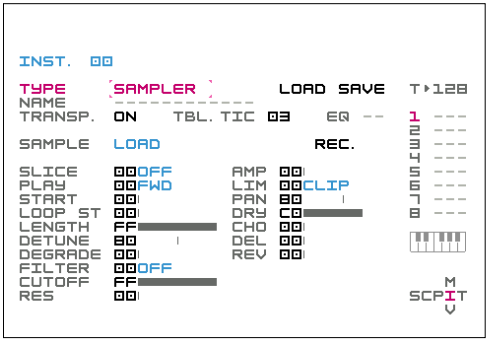
Amplification Parameters

- **AMP** - Amplifies the waveform. Any value higher than the maximum level allowed is handled according to the “LIM” setting.
- **LIM** - Set the limit / clipping behavior of the amplified signal.
    - **CLIP** - Any value higher than the maximum level is clipped.
    - **SIN** - The waveform is fed through a sine function.
    - **FOLD** - Any value higher than the maximum level is folded back into itself.
    - **WRAP** - Any value higher than the maximum level is vertically wrapped.
    - **POST** - The amplification is applied with hard-clipping after the filter stage.
    - **POST:AD** - Post filter The amplification is applied with soft-clipping
    - **POST:W1-W3** - Post filter folding distortions.

Mixer Parameters

- **DRY** - Dry volume sent to the mixer channel.
- **CHO** - Chorus send effect volume.
- **DEL** - Delay send effect volume.
- **REV** - Reverb send effect volume.

Sampler



Sampler is a sample player, editor and recorder. Only 1 or 2 channel (stereo) PCM ".wav" files are supported. When a sample is not present, to the right of "SAMPLE" press **[EDIT]** on "LOAD" to browse for a sample to load, or "REC." to record a new sample. See the next section on the Sample Editor for sampling and editing files. Due to streaming from the SD card, to prevent issues with playback there is an upper-pitch limitation enforced based on bit-depth and mono/stereo samples. You can reduce this limitation by either converting to mono, dropping the bit depth, or downsampling via the Sample Editor.

Sampler Parameters

- **SLICE** - "slices" the sample into equal length sections and maps each slice starting from the lowest octave (C-1).
- **PLAY** - Sets the play direction and loop mode.
  - **FWD** - Forward playback with no loop.
  - **REV** - Reverse playback with no loop.
  - **FWDLOOP** - Looping forward playback.
  - **REVLOOP** - Looping reverse playback.
  - **FWD PP** - Ping-pong looping forward - Plays forward and reverse back and forth.
  - **REV PP** - Ping-pong looping reverse - Plays reverse and forward back and forth.
  - **OSC** - Oscillator forward mode - "Oscillator" modes ignore start position and do not start from the beginning when retriggered.
  - **OSC REV** - Oscillator reverse mode.
  - **OSC PP** - Oscillator ping-pong mode.
  - **REPITCH/BPM** - Pitches the sample based on the current song tempo. Use the STEPS/BPM parameter below to adjust the original sample's pitch/timing.

Sampler Parameters (Continued)

- **START** - Sample start position. This parameter is ignored when in “OSC” play modes.
- **LOOP ST.** - Loop start position. When in a looping play mode, sample will loop back to this position after it reaches the end.
- **LEN** - Sample length.
- **DETUNE** - Detune sample with “80” being the center frequency. First digit increments semitones, second increments 1/16 semitone.
- **DEGRADE** - Sample rate reduction effect. Any value above “00“ disables sample interpolation.

Multi-mode Filter Parameters

- **FILTER** - Filter type - Lowpass, Highpass, Bandpass, Bandstop, and LP>HP (Lowpass with RES controlling the frequency of a 1-pole highpass filter). ZDF (zero delay feedback) Lowpass, ZDF Highpass.
- **CUTOFF** - Filter cutoff frequency.
- **RES** - Filter resonance amount.

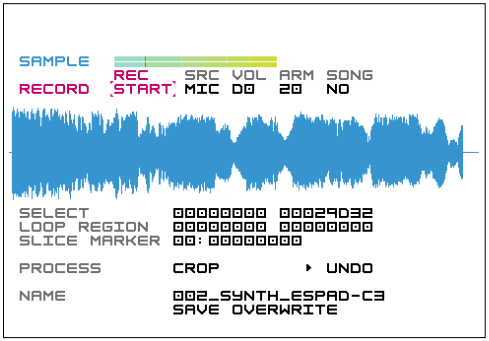
Amplification Parameters

- **AMP** - Amplifies the waveform. Any value higher than the maximum level allowed is handled according to the “LIM” setting.
- **LIM** - Set the limit / clipping behavior of the amplified signal.
    - **CLIP** - Any value higher than the maximum level is clipped.
    - **SIN** - The waveform is fed through a sine function.
    - **FOLD** - Any value higher than the maximum level is folded back into itself.
    - **WRAP** - Any value higher than the maximum level is vertically wrapped.
    - **POST** - The amplification is applied with hard-clipping after the filter stage.
    - **POST:AD** - Post filter The amplification is applied with soft-clipping
    - **POST:W1-W3** - Post filter folding distortions.

Mixer Parameters

- **DRY** - Dry volume sent to the mixer channel.
- **CHO** - Chorus send effect volume.
- **DEL** - Delay send effect volume.
- **REV** - Reverb send effect volume.

Sample Editor



The sample editor can be accessed in the Instrument View by selecting “SAMPLER” as the instrument type and pressing **[EDIT]** on “REC.” (or “EDIT” if there is a sample loaded). Exit the sample editor view by pressing **[OPTION]**.

Recording Audio

Record by pressing **[EDIT]** on “START” or use the power button to avoid key-clicking sounds when recording with the Microphone. Once you have finished recording you can process the sample and give it a name. Save the sample before exiting this view.

- **START** - Starts recording audio.
- **SRC** - Input source - L&R (Line-in), MIC (Model:02 only), USB, INL (Line-in left), INR (Line-in right), U-L (USB left), U-R (USB right), ALL (Line-in and USB), TR[1-8] (Track 1 to 8 for recording External Instruments)
- **VOL** - Input volume
- **ARM** -Set the threshold to arm and start recording based on input volume
- **PLAY** - Start playing the song at the song row position indicated. This is useful for recording external music gear that is being controlled from a MIDI Out Instrument.

Sample Editor Actions

- **SELECT** - Selects a start and end range using the two values provided. Using **[EDIT]+[UP or DOWN]** in large increments with **[EDIT]+[LEFT or RIGHT]** displaying a zoomed in view for small increments. **[OPT]+[UP or DOWN]** will snap the marker to the song’s tempo in beats.
- **LOOP REGION** - Edits the start and end loop points which are stored within

the wav file. The settings are used when the sampler “PLAY” mode is set to loop with “LOOP ST” and “LENGTH” set to their default values. Using **[EDIT]+[UP or DOWN]** in large increments with **[EDIT]+[LEFT or RIGHT]** displaying a zoomed in view for small increments.

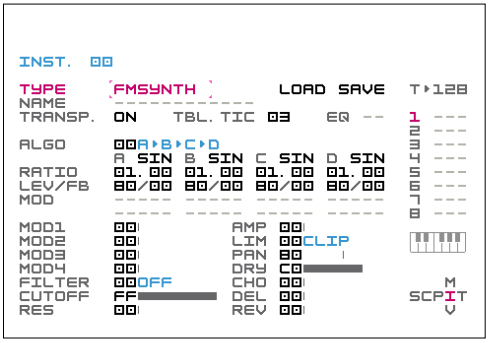
- **SLICE MARKER** - Add up to 128 markers that are stored within the wav file. The markers can be played back when “SLICE” is set to “01 FILE” starting from C-1. They can also be cued by using the “SLI” effect command.
- **PROCESS** - Choose a process by using **[EDIT]+[LEFT or RIGHT]** to select and tap **[EDIT]** once more to perform the selected action:
    - **CROP** - Trims the waveform to the selected range
    - **DELETE** - Deleted the selected range.
    - **DUPLICATE** - Duplicates the selected range.
    - **NORMALIZE** - Adjusts the selected range’s overall volume to its maximum without clipping.
    - **SILENCE** - Silences the selected range.
    - **REVERSE** - Reverses the selected range.
    - **INVERT** - Flips the selected range vertically.
    - **FADE IN/OUT** - Fades in or out the selected range.
    - **XFADE LOOP** - Creates a cross fade loop inside the selected range.
    - **MONO: MIX/LEFT/RIGHT** - Converts stereo samples to mono by summing the left or right channels.
    - **DOWNSAMPLE** - Halves the current sample rate of the sample.
    - **16-BIT/8-BIT** - Reduce the sample’s bit rate to 16 or 8-bit.
    - **SLICE:AUTO** - Sets the slice markers using transient detection.
    - **SLICE:SILENC** - Sets the slice markers using silence detection.
    - **SLICE:[0-128]** - Sets the slice markers into evenly distributed divisions.
- **NAME** - Give the sample a name before saving.
- **SAVE / OVERWRITE** - Save or overwrite the current sample.

Sample Editor Shortcuts

Editing

- **[EDIT]+[UP or DOWN]** Edits the selected value incrementing by large steps.
- **[EDIT]+[LEFT or RIGHT]** Edits the value incrementing by small steps.
- **[EDIT]+[OPTION]** Clear / Reset value
- **[OPTION]+[UP or DOWN]** Edits the value incrementing by 4 steps (tempo based).
- **[OPTION]+[LEFT or RIGHT]** Edits the selected value incrementing by single steps (tempo based).
- **[EDIT or OPTION]+[TOUCHSCREEN]** Edits selected value
- **[PLAY]+[EDIT]** Tap edit during playback while cursor is on slice to add slice markers at play-head (Lazy chop).

FM Synth



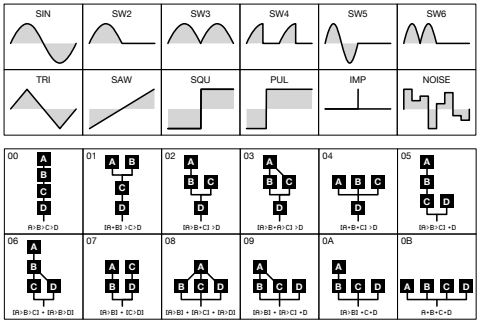
FM Synth is a uniquely simple four operator 12 algorithm FM (frequency modulation) synthesizer. Each of the four operators can have one of 12 base shapes with ratio, level, feedback, and two modulation slots for assigning one of the four modulation macros to control the parameters.

Each set of OP parameters can be copied and pasted using the common copy and paste shortcuts. When the cursor is in an OP region, **[SHIFT]+[OPT]** to copy, **[SHIFT]+[EDIT]** to paste.

FM Synth Parameters

- **ALGO** - Select one of 12 algorithm (oscillator routing) configurations. Use the last algorithm to use “additive mode”- 4 oscillator subtractive synth. See the algorithm diagram on the next page.
- **A / B / C / D** - The operator letter with optional shape. See the shapes diagram on the next page, for the wavetable shapes “W” and onward, refer to the wavetable index.
- **RATIO** - Frequency ratio relative to the currently playing note. Ex: “2.00” will play an octave up, “0.50” will play an octave lower.
- **LEV/FB** - Volume and Feedback for each operator.
- **MOD** - Two modulation slots that assign MOD[1 to 4] to control a destination on the given operator.
    - **LEV** - Controls the level from “00” to the currently set level.
    - **RAT** - Adds 0.00 to +16.00 to the current ratio.
    - **PIT** - Adds to the note pitch in semitones for the current operator.
    - **FBK** - Controls the feedback from “00” to the currently set feedback.
- **MOD[1-4]** - The modulation source values that are freely assigned to the operators via the “MOD” slots described above.

FM Synth Algorithms and Shapes



Multi-mode Filter Parameters

- **FILTER** - Filter type - Lowpass, Highpass, Bandpass, Bandstop, and LP>HP (Lowpass with RES controlling the frequency of a 1-pole highpass filter). ZDF (zero delay feedback) Lowpass, ZDF Highpass.
- **CUTOFF** - Filter cutoff frequency.
- **RES** - Filter resonance amount.

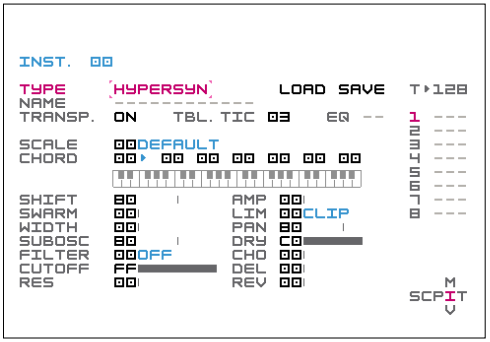
Amplification Parameters

- **AMP** - Amplifies the waveform. Any value higher than the maximum level allowed is handled according to the “LIM” setting.
- **LIM** - Set the limit / clipping behavior of the amplified signal.
    - **CLIP** - Any value higher than the maximum level is clipped.
    - **SIN** - The waveform is fed through a sine function.
    - **FOLD** - Any value higher than the maximum level is folded back into itself.
    - **WRAP** - Any value higher than the maximum level is vertically wrapped.
    - **POST** - The amplification is applied with hard-clipping after the filter stage.
    - **POST:AD** - Post filter The amplification is applied with soft-clipping
    - **POST:W1-W3** - Post filter folding distortions.

Mixer Parameters

- **DRY** - Dry volume sent to the mixer channel.
- **CHO** - Chorus send effect volume.
- **DEL** - Delay send effect volume.
- **REV** - Reverb send effect volume.

Hypersynth



Hypersynth is a 6 note saw wave chord synthesizer. It features 16 chord banks of up to 6 intervals. Each note/interval is a set of two saw waves that can be detuned using “Swarm” and spread in the stereo field by adjusting “Width”. Along with the 6 intervals is a square wave sub-oscillator that can be tuned 1 or 2 octaves below the root note.

Hypersynth Parameters

- **SCALE** - Select one of the song’s scales to use or “00” to use the song/track scale settings.
- **CHORD** - The chord bank and intervals for the selected bank. Copy and Paste is possible using the common shortcuts: **[SHIFT]+[OPTION]** to copy, **[SHIFT]+[EDIT]** to paste when a value is highlighted.
- **SHIFT** - Cross-fade volume between the first 3 intervals and second 3
- **SWARM** - Detune oscillators relative to their interval
- **WIDTH** - Stereo width of the oscillators from mono “00” to full stereo “FF”.
- **SUBOSC** - Mix in sub-oscillator 2 octaves below root (when below “80”), or 1 octave below (when above “80”)

Multi-mode Filter Parameters

- **FILTER** - Filter type - Lowpass, Highpass, Bandpass, Bandstop, and LP>HP (Lowpass with RES controlling the frequency of a 1-pole highpass filter). ZDF (zero delay feedback) Lowpass, ZDF Highpass.
- **CUTOFF** - Filter cutoff frequency.
- **RES** - Filter resonance amount.

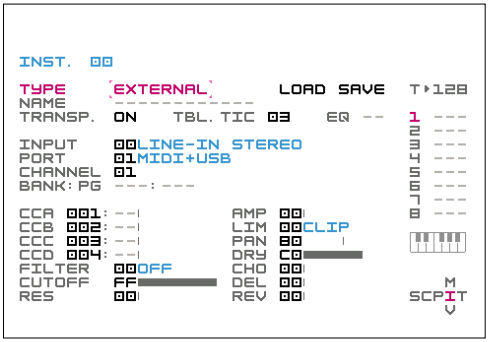
Amplification Parameters

- **AMP** - Amplifies the waveform. Any value higher than the maximum level allowed is handled according to the “LIM” setting.
- **LIM** - Set the limit / clipping behavior of the amplified signal.
    - **CLIP** - Any value higher than the maximum level is clipped.
    - **SIN** - The waveform is fed through a sine function.
    - **FOLD** - Any value higher than the maximum level is folded back into itself.
    - **WRAP** - Any value higher than the maximum level is vertically wrapped.
    - **POST** - The amplification is applied with hard-clipping after the filter stage.
    - **POST:AD** - Post filter The amplification is applied with soft-clipping
    - **POST:W1-W3** - Post filter folding distortions.

Mixer Parameters

- **DRY** - Dry volume sent to the mixer channel.
- **CHO** - Chorus send effect volume.
- **DEL** - Delay send effect volume.
- **REV** - Reverb send effect volume.

External Instrument



External Instrument is a hybrid MIDI output and audio input device. Notes and MIDI FX commands will be sent out to the selected MIDI port and channel, while audio will come back in through it's filter and amp stage.

Signal Path / Mixer

If you have previously set audio input volumes in the Mixer View, you may want to mute them to prevent doubling up the input volume and cause confusion - Audio from this device will be sent to the instrument's playing track.

Recording Audio

Rendering audio input using Song View selection-render or the Render View is not possible due to the real-time input processing. However, you can record the track using the Sample Editor View by selecting the playing track as the input source and setting a song position when sampling.

External Instrument Parameters

- **INPUT** - Audio input selection: Line-in (Stereo, Left, Right), USB (Stereo, Left, Right), or both line-in and USB.
- **PORT** - Set the MIDI Output port: MIDI and USB, MIDI only, USB only, or Internal for use with Track MIDI Input or sending global MIDI CCs configured in the MIDI Settings View.
- **CHANNEL** - MIDI Channel selection 1 to 16.
- **BANK:PG** - Optional MIDI Bank select and Program change. Program change messages can also be sent as an FX command.
- **CC[A-D] CC:VAL** - Up to 4 custom MIDI CC numbers with optional default values can be assigned. If a default value is present, it will be sent with the note on command after program change messages.

Multi-mode Filter Parameters

- **FILTER** - Filter type - Lowpass, Highpass, Bandpass, Bandstop, and LP>HP (Lowpass with RES controlling the frequency of a 1-pole highpass filter). ZDF (zero delay feedback) Lowpass, ZDF Highpass.
- **CUTOFF** - Filter cutoff frequency.
- **RES** - Filter resonance amount.

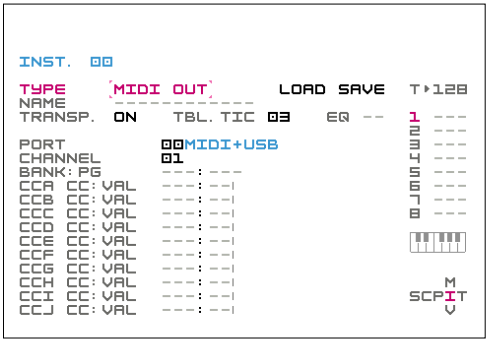
Amplification Parameters

- **AMP** - Amplifies the waveform. Any value higher than the maximum level allowed is handled according to the “LIM” setting.
- **LIM** - Set the limit / clipping behavior of the amplified signal.
    - **CLIP** - Any value higher than the maximum level is clipped.
    - **SIN** - The waveform is fed through a sine function.
    - **FOLD** - Any value higher than the maximum level is folded back into itself.
    - **WRAP** - Any value higher than the maximum level is vertically wrapped.
    - **POST** - The amplification is applied with hard-clipping after the filter stage.
    - **POST:AD** - Post filter The amplification is applied with soft-clipping
    - **POST:W1-W3** - Post filter folding distortions.

Mixer Parameters

- **DRY** - Dry volume sent to the mixer channel.
- **CHO** - Chorus send effect volume.
- **DEL** - Delay send effect volume.
- **REV** - Reverb send effect volume.

MIDI Out



Control external devices with the MIDI Out instrument either by USB MIDI or the built-in TRS (type A) MIDI output.

MIDI Out Parameters

- **PORT** - Set the MIDI Output port: MIDI and USB, MIDI only, USB only, or Internal for use with Track MIDI Input or sending global MIDI CCs configured in the MIDI Settings View.
- **CHANNEL** - MIDI Channel selection 1 to 16.
- **BANK:PG** - Optional MIDI Bank select and Program change. Program change messages can also be sent as an FX command.
- **CC[A-J] CC:VAL** - Up to 10 custom MIDI CC numbers with optional default values can be assigned per MIDI instrument. If a default value is present, it will be sent with the note on command after program change messages.

USB Features

USB Audio & MIDI

The M8 is USB audio and MIDI compliant. Audio input and output is 16-bit 2 channel stereo only. It can work with any host computer including iOS and Android devices as long as the power provided via USB is sufficient (500mA USB standard).

USB Audio into the M8 can be monitored in the Mixer view by adjusting the volumes under “USB”. It can be recorded and saved in the Sample Editor view and Selection to Sample in Song view. USB input and output routing configuration can be changed in System Settings.

USB MIDI behaves the same way as the physical TRS MIDI connections allowing sync, remote control, and sequencing. See MIDI Settings and the MIDI OUT Instrument views.

Remote Host Display

It is possible to stream the M8 display directly to a remote host computer via USB for screen capturing and editing with the comfort of a large display. Please see the full list of suggested host programs at https://dirtywave.com/support.

Appendix

Troubleshooting

The M8 will not turn on
Plug into a standard USB charger or host computer using the cable provided. Ensure the plug is capable of providing sufficient power. If the unit is still non-responsive contact support@dirtywave.com.

The M8 is non-responsive after updating the firmware
Make sure to not use a USB hub when flashing the M8 firmware. Some hubs under certain conditions cannot reliably transfer the firmware without issue.

1. Gently insert a SIM card removal tool (or bent paper-clip, etc) into the center hole located on the bottom of the M8 about an inch below the serial number. You should feel a click as the reset button located inside actuates.
2. Press the power button for 2 seconds to ensure unit is powered on and hold down the reset button for approximately 15 seconds.
3. Remove the tool and a dim red light should appear though the USB port and audio jacks. After another 10 seconds the red light will turn off. The M8 is now ready for you to retry the firmware update process.

USB Audio and MIDI is not working
Use the micro USB cable provided with the M8 or try another cable. Some cables do not support USB data.

The M8 is not charging
Ensure the USB port provides enough power. The M8 requires USB standard 5V 500mA.

The microSD card is stuck
If the SD card is stuck you may attempt to free the card using a pair of tweezers, or if you are using Model:01 - loosen the two screws on the left side of the case using a #2 metric hex tool.

Samples are not listed in the file browser
Ensure that you are in the Sample Load view and not the Instrument Preset view. See the instructions on the Sampler section.

Samples octave/note range is limited
Notes above C-4 are limited based on the sample's bit-depth and number of channels. If you find the range limited or not working, consider dropping the bit-depth in the Sample Editor. The recommended sampler bit-depth is 16-bit.

Samples “failed to load”

Check that the following are true:

- Sample is 8,16, 24, or 32 bit and is mono or stereo.
- Sample is “PCM” or “PCM Raw”. Compressed samples do not work.
- The entire path length of the sample is under 128 characters.

The microSD card is not working

If the card you are using is the factory card that came with the M8, try reinserting it. If it still does not work contact support@dirtywave.com. If you are using your own card make sure it is formatted as described in the section about SD cards.

“CPU TOO BUSY” message

The cause of this message is almost certainly caused by the SD card being overworked. Please refer to the section about SD cards.

The start-up sound is annoying

You can edit the start-up sound by opening the “STARTUP“ song file in /System. Deleting or moving the file skips the intro entirely.

Key Shortcuts

Navigation

Move Cursor
UP or DOWN or LEFT or RIGHT

Screen Navigation
Hold SHIFT + [UP or DOWN or LEFT or RIGHT]

Editing

Change Value (fine)
Hold EDIT + [LEFT or RIGHT]

Change Value (coarse)
Hold EDIT + [UP or DOWN]

Cut Value (cut or set to default value)
EDIT + OPTION

YES (when prompted)
EDIT

NO (also exit sub-views)
OPTION

Play

Play All Tracks (outside song view)
Hold SHIFT + PLAY

Mute Current Track
Hold OPTION + SHIFT
Latch mute by releasing OPTION first

Solo Current Track
Hold OPTION + PLAY
Latch solo by releasing OPTION first

Clear All Mutes/Solos
Hold OPTION + hold SHIFT + PLAY

Phrase View

Create (new instrument)
On instrument column, EDIT (double-tap)

Clone and Paste (instrument)
Hold SHIFT + OPTION then EDIT

Jump to Track (left or right)
Hold OPTION + [LEFT or RIGHT]

Jump to Phrase (previous or next)
Hold OPTION + [UP or DOWN]

Interpolate (selection)
With a single column selected, hold SHIFT + EDIT

Nudge (within a selection)
In selection mode hold EDIT + [UP or DOWN]

Note Fill (selection)
In selection mode (note column):
• FILL Modes: OPTION + LEFT
• Random Fill: OPTION + RIGHT
• Random Note Pitch: OPTION + [UP or DOWN]

Selection

Enter Selection Mode
Hold SHIFT + OPTION
Tap OPTION to cycle through modes

Copy Selection (and exit)
OPTION

Paste Selection
Hold SHIFT + EDIT

Song View

Cue Row (while playing)
Hold LEFT + PLAY

Create (new chain)
Double-tap EDIT

Clone and Paste (chain alone)
Hold SHIFT + OPTION then EDIT

Clone and Paste (chain & phrases)
Hold SHIFT + OPTION then double-tap EDIT

Solo Tracks (left or right)
Hold OPTION + [LEFT or RIGHT]

Jump 16 Rows (up or down)
Hold OPTION + [UP or DOWN]

Move Selection
In selection mode, hold EDIT + [UP or DOWN]

Render Selection
In selection mode, double-tap EDIT

Chain View

Create (new phrase)
Double-tap EDIT

Clone and Paste (phrase)
Hold SHIFT + OPTION then EDIT

Jump to Track (left or right)
Hold OPTION + [LEFT or RIGHT]

Jump to Chain (previous or next)
Hold OPTION + [UP or DOWN]

Instrument View

Preview Instrument
Hold EDIT + PLAY

Copy and Paste
Hold SHIFT + OPTION to copy
Hold SHIFT + EDIT to paste

Jump to Instrument (previous or next)
OPTION + [LEFT or RIGHT]

Touchscreen Interaction
EDIT + [Touchscreen LEFT or RIGHT] to edit
OPTION + [Touchscreen LEFT or RIGHT] to map

Table View

Interpolate Values
While in selection mode, hold SHIFT + EDIT

Jump to Table (previous or next)
OPTION + [LEFT or RIGHT]

Mixer View

Create / Recall Snapshot
Hold SHIFT + OPTION to create
Hold SHIFT + EDIT to recall

File Browser

Sort Directory
SHIFT + OPTION

Delete Selected File
OPTION + EDIT

Relative and Absolute FX Commands

Relative commands relate to the current value of an instrument parameter. For example, if your instrument parameter is “10”, and you use an FX command value of “10”, that parameter’s value becomes “20”. If you use the same FX command with a value of “10” again, that parameter’s value will now be “30”.

Relative commands stay relative until a note is triggered either with a RET command or with an instrument number present in the “I” column. At which point all parameters are reset to the instrument’s assigned values.

Relative FX commands between “01” to “7F” will add to the value, while values between “FF” to “80” will subtract. Ex: If the instrument parameter has a value of “10”, and an FX command for that parameter is set to “FF”, the parameter will now be “09”.

The point of relative values is to be able to finely adjust the current value a given parameter is currently set to, whatever that may be. It allows for smoother, less step-wise results.

If the FX command is absolute, then assigning a value of “10” will set that parameter value to “10” no matter its value in instrument settings.

Sequencer FX Commands

ARP XY (Arpeggio)
Produces a rapid 3 note arpeggio. The currently playing note is the base note with X representing the first note interval in semitones, and Y as the second. Ex: “ARP37“ on note C-4 plays C-4, D#4 (+3), and G-4 (+7).

ARC XY (Arpeggio Config)
ARP Configuration. Set the APR mode (X) and speed in ticks (Y).

CHA XY (Chance)
In a phrase: Individually set the probability to the left (X) or right (Y) side of the command. The value range is from 0 (never) to F (always). Ex: “CHA1F” will give the note a ~10% chance of triggering, and all other FX commands 100%.
In a table: Set the probability for everything to the left that “CHA” is on from 00 (never) to FF (always).

DEL XX (Delay)
In a phrase: Delays the entire row the command is on by a given number of ticks (XX). In a table: Delays the table play head by given number of ticks.

Sequencer FX Commands (Continued)

GRV XX (Groove)
Sets the groove number (XX) for the current track. “GRV” is held until a new groove command is triggered.

GGR XX (Global Groove)
Sets the groove number (XX) for all tracks.

HOP XY
In phrase: Jumps the play position to row Y on the next phrase in the song. HOPFF stops playback of the current track. In table: Jumps the play position to row Y for X number of times.

INS XX (Trigger / Change Instrument)
Sets/changes the instrument number as a FX command.

KIL XX (Kill Note)
Stops the currently playing instrument after a given number of ticks (XX).

RND XY (Random)
Randomizes the previously active FX command in a phrase/table. Independently control the range’s left (X) and right (Y) values from 0 (no randomness) to F (full range).

RNL XY (Randomize Left Command)
Randomizes the FX command to the left in a phrase/table. Independently control the range’s left (X) and right (Y) values from 0 (no randomness) to F (full range). In the first column RNL will randomize the note and instrument number in phrase, or note and velocity in table.

RET XY (Retrig)
Retrigger the current row with volume ramping at a given number of ticks. If Y is not zero, Y sets the number of ticks to retrig while X changes the volume. An X value of 0 to 7 decreases and 8 to F increases the volume on each retrig. If Y is zero, RET is in single retrig mode where X sets the number of ticks to wait.

REP XX (Repeat)
Repeat the last FX command, incrementing by a given amount per step (XX). REP will continue to be active until a new command stops it. It does not need to be present on every successive row. On new instrument triggers, the value will maintain it’s position and continue to repeat. To stop “REP” either put a new command or “REP00” in the FX column. Note: A double-caret “^^“ will appear next to a FX lane when a REP is currently active from a previous phrase.

Sequencer FX Commands (Continued)

RTO XX (Repeat to)
Use after REP (Repeat) to set the min or max value that repeat should stop at.

RMX XY (Remix)
Set the phrase play-head position (Y) of tracks to the left of the current track. Select which tracks are affected using the first digit X.

NTH XY (Nth trigger)
NTH is a conditional trigger based on loop count. Skips either everything to the left (X) or right (Y) side of the FX command in phrase, or everything to the left (XX) in table. Skipping is determined by the value and how many times the phrase or table has looped.
Refer to the help text at the bottom of the screen when editing the value.

PSL XX (Pitch Slide)
Enables portamento for the currently playing instrument. The value (XX) is in ticks.

PBN XX (Pitch Bend)
Enables a continuous pitch slide up (00-7F) or down (80-FF) by the given amount.

PVB XY (Vibrato)
Apply vibrato to the currently playing instrument. Speed is set by X, and depth by Y.

PVX XY (Extreme Vibrato)
Same as PVB (Vibrato) above with a high and more extreme depth and rate.

SCA XY (Track Scale)
Sets the key signature (X) and scale number (Y) to use for the given track.

SCG XY (Global Scale)
Sets the key signature (X) and scale number (Y) to use for the song.

SNG XX (Song Hop)
Sets the play position for the given track to a relative song row from it's current position. If the given song position is not playable the command is ignored.

SED XX (Random Seed)
Set the random seed (XX) for the current track. This will reset all random values to a specific state.

Sequencer FX Commands (Continued)

TBL XX (Table)
Set the table number (XX) for the current instrument.

THO XX (Table Hop)
Hop/jump to a specific table position (0X). This command hops all columns when used inside a table.

TIC XX (Table Tick)
Set the table tick rate for the current instrument. In a table this allows each FX command column to run at independent rates. You can also place this command on the last table row. Refer to the section on Table View for information on the tick value.

TBX XX (Aux Table)
Assign a table (XX) to play along with the current track (in parallel with any Instrument tables). A “00” value will stop the auxiliary table. If a TIC FX command is present in the same row as a TBX, it will affect the auxiliary table’s tick rate.

TPO XX (Tempo)
Set the song tempo in BPM. Refer to the help text at the bottom of the screen to translate the hex value to decimal.

TSP XX (Global Song Transpose)
Transposes the entire song - Identical to the transpose value in the Project View.

NXT XX (Trigger Instrument on Next Track)
Plays an Instrument (XX) using the currently playing note and velocity on the track to the right of the active track. Does not work on track 8.

OFF XX (Note Off)
Stops the currently playing instrument after a given number of ticks (XX). If there is an ADSR envelope configured in the Instrument Modulation view, OFF will trigger the release stage of the envelope.

Mixer & Effects Commands

EQM XX, EQI XX (Mix and Instrument EQ)
Assign the main song EQ (EQM) or the current instrument (EQI) to a EQ slot.

VMV XX (Main Volume)
Set the main song volume. Changes the value located in the Mixer view.

XCM XX (Send Effect: Chorus Mod Depth)
Set the chorus mod depth. Changes the value located in the Send Effects settings view.

XCF XX (Send Effect: Chorus Mod Frequency)
Sets the chorus mod frequency. Changes the value located in the Send Effects settings view.

XCW XX (Send Effect: Chorus Stereo Width)
Sets the chorus stereo width. Changes the value located in the Send Effects settings view.

XCR XX (Send Effect: Chorus to Reverb Mix)
Sets the chorus reverb send amount. Changes the value located in the Send Effects settings view.

XDT XY (Send Effect: Delay Time)
Sets the left (X) and right (Y) delay times in large increments. Changes the value located in the Send Effects settings view.

XDF XX (Send Effect: Delay Feedback)
Sets the delay feedback amount. Changes the value located in the Send Effects settings view.

XDW XX (Send Effect: Delay Stereo Width)
Sets the delay stereo width. Changes the value located in the Send Effects settings view.

XDR XX (Send Effect: Delay to Reverb Mix)
Sets the delay reverb send amount. Changes the value located in the Send Effects settings view.

XRS XX (Send Effect: Reverb Room Size)
Sets the reverb room size. Changes the value located in the Send Effects settings view.

XRD XX (Send Effect: Reverb Decay)
Sets the reverb decay. Changes the value in the Send Effects settings view.

XRM XX (Send Effect: Reverb Mod Depth)
Sets the reverb mod depth. Changes the value in the Send Effects settings view.

XRF XX (Send Effect: Reverb Mod Frequency)
Sets the reverb mod frequency. Changes the value in the Send Effects settings view.

XRW XX (Send Effect: Reverb Stereo Width)
Sets the reverb stereo width. Changes the value in the Send Effects settings view.

XRZ XX (Send Effect: Reverb Freeze)
Freezes the reverb. Freeze is enabled with a value greater than “00”, otherwise it is disabled.

VCH XX (Chorus Volume)
Sets the chorus volume. Changes the value located in the Mixer view.

VDE XX (Delay Volume)
Sets the delay volume. Changes the value located in the Mixer view.

VRE XX (Reverb Volume)
Sets the reverb volume. Changes the value located in the Mixer view.

VT[1-8] XX (Track [1-8] Volume)
Sets the track volume. Changes the value located in the Mixer view.

DJC DJR DJT XX (DJ Filter)
Set the DJ Filter cutoff (DJC), resonance (DJR), and type (DJT).

IVO ICH IDE IRV XX (Line Input Mixer Controls)
Sets the Volume (IVO), Chorus (ICH), Delay (IDE), and Reverb (IRE) settings for the analog input.

IV2 IC2 ID2 IR2 XX (Line Input Mixer Controls: 2nd Input)
In dual-mono input mode configured in the Mixer View sets the Volume (IV2), Chorus (IC2), Delay (ID2), and Reverb (IR2) settings line input “right” channel.

USB XX (USB Input Volume)
Set the USB input volume.

Instrument FX Commands

Almost all parameters for a given instrument type have an FX command associated to it. Check the FX command help view with the desired instrument in use to see the full list. Note that highlighting an instrument parameter in the instrument view and navigating back to the phrase or table will set the default FX command to the selected parameter.

Below is a list of common FX commands for instruments.

VOL XX (Volume)
Offset the instrument volume.

PIT XX (Pitch)
Offset the note pitch in semitones.

FIN XX (Fine tune)
Offset the note pitch from -1 to +1 semitones.

EA[1-2] XX (Envelope Amount)
Offset the Envelope amount.

AT[1-2] XX (Envelope Attack)
Offset the Envelope attack time.

HO[1-2] XX (Envelope Hold)
Offset the Envelope hold time.

DE[1-2] XX (Envelope Decay)
Offset the Envelope decay time.

ET[1-2] XX (Envelope Retrigger)
Retrigger the Envelope. Any value (XX) greater than “00” will retrigger the envelope.

LA[1-2] XX (LFO Trigger)
Offset the LFO amount.

LF[1-2] XX (LFO Frequency)
Offset the LFO frequency.

LT[1-2] XX (LFO Retrigger)
Retrigger the LFO. The value (XX) sets the desired phase offset (start position) of the LFO.

Macrosynth Models

CSAW
This model is inspired by a quirk/defect of the Yamaha CS80 sawtooth wave shape, consisting of a fixed-width “notch” after the raising edge. The width of the notch can be controlled by **TIMBRE**; and its depth and polarity can be controlled by **COLOR** - producing phasing effects.

MORPH
This model produces the classic waveform trajectory from triangle to sawtooth to square to pulse found in synthesizers such as the RSF Kobol or the Moog Voyager. **TIMBRE** sweeps through the waveforms. **COLOR** morphs from several tonal characters by increasingly removing the high-frequencies with a 1-pole filter, and recreating them with a waveshaper.

SAW SQUARE
This model blends a sawtooth wave with dephasing control, with a square wave with PWM. **TIMBRE** controls the dephasing amount or pulse width, and **COLOR** morphs the waveshape from sawtooth to square.

SINE TRIANGLE
This model is built with sine and triangle oscillators sent into a wavefolder. **TIMBRE** controls the wavefolder strength, and **COLOR** controls the balance between the sine and triangle signals sent to it.

BUZZ
This digital synthesis algorithm generates a smooth sequence of waveforms, transitioning from a sine wave to a Dirac comb, as controlled by **TIMBRE**. The intermediary steps are reminiscent of a single formant. Two such waveshapes are blended together, with the detuning amount controlled by **COLOR**.

SQUARE SUB / SAW SUB
A single square or saw wave oscillator with width modulation controlled by **TIMBRE** and a sub oscillator that can be -1 or -2 octaves below the primary oscillator controlled by **COLOR**.

SQUARE SYNC / SAW SYNC
Two oscillator hard-sync with both oscillators emitting square or saw waves. Note pitch controls the main frequency, with **TIMBRE** controlling the synced frequency. The mix is controlled by **COLOR**.

TRIPLE (SAW, SQUARE, TRIANGLE, and SIN)

Three sawtooth (or square, triangle, sine) oscillators which can be individually tuned. **COLOR** and **TIMBRE** control the relative frequency of the second and third oscillator with respect to the main oscillator. These two controls are quantized to “snap” on musical intervals like octaves or fifths.

TRIPLE RING

Three sine wave oscillators are ring-modulated together, and colored by a waveshaper. The main oscillator frequency controls the frequency of the first sine wave, and **TIMBRE** and **COLOR** control the relative frequency of the second and third sine waves.

SAW SWARM

This model simulates a swarm of 7 sawtooth waves. **TIMBRE** controls their detuning, and **COLOR** applies a high-pass filter to the resulting sound.

SAW COMB

This model generates a sawtooth waveform, and sends it into a comb filter (tuned delay line). The frequency of the delay line tracks the frequency of the sawtooth oscillator, with a transposition controlled by the **TIMBRE** knob. **COLOR** selects the feedback amount and polarity: at 80 no feedback is applied. From 80 to FF, positive feedback is increasingly applied. From 80 to 00, negative feedback is progressively applied.

TOY

This model traverses a space of timbres typical of (circuit-bent) electronic musical toys. **TIMBRE** simulates an alteration of the toy’s clock rate, while **COLOR** creates glitches or short-circuits on a converter or memory chip’s data lines.

DIGITAL FILTER (LP, PK, BP, and HP)

This family of models directly synthesize in the time-domain the response of a low-pass, peaking, band-pass or high-pass filter excited by classic analog waveforms. Rather than synthesizing the waveform and filtering it (which is what a VA synthesizer would do), this approach directly aims at building the filtered waveshape from scratch. This technique has been used in the Casio CZ or the Roland D series, but is extended here to cover different filter types and waveshapes. **TIMBRE** controls the cutoff frequency of the filter. **COLOR** continuously modifies the waveshape, from saw to square to triangle.

VOSIM

This model uses a combination of 3 oscillators arranged in a clever ring-modulation/hardsync patch to emulate formant synthesis - a technique named VOSIM and described by Kaegi and Tempelaars. **COLOR** and **TIMBRE** control the relative frequencies of the two formants.

VOWEL, VOWEL FOF

Both models synthesize vowel sounds. VOWL is a faithful recreation of early computer speech synthesis programs. VFOF uses a simplified version of Rodet's FOF synthesis technique. Both have the same control layout: **TIMBRE** controls the vowel, morphing between a, e, i, o, u. **COLOR** shifts the formants in frequency. Main oscillator frequency and COLOR can be used altogether to simulate age and gender transformations.

HARMONICS

This model uses additive synthesis, by summing 12 sine harmonics. **COLOR** modifies the distribution of the amplitudes of each harmonics, around a central frequency set by **TIMBRE**.

FM, FEEDBACK FM, CHAOTIC FEEDBACK FM

Three flavors of 2-operator phase-modulation synthesis. **TIMBRE** controls the modulation amount. **COLOR** controls the relative frequency interval between modulator and carrier. FM is a well-behaved implementation. FEEDBACK FM uses feedback from the carrier to itself to produce harsher tones. CHAOTIC FEEDBACK FM uses two feedback paths, from carrier to modulator and carrier to itself to achieve droning, unstable tones.

PLUCKED

Raw plucked string synthesis. **TIMBRE** controls the damping, **COLOR** the plucking position.

BOWED

Bowed string modeling. **TIMBRE** controls the friction level, **COLOR** the bowing position. A trigger or gate signal is required. Note that this model does not include a body filter - which would be necessary to simulate an actual string instrument.

BLOWN / FLUTED

Reed instrument model. **TIMBRE** controls the air pressure, **COLOR** the geometry of the instrument. Note that this model does not include a filter - which would have been necessary to simulate an actual instrument.

STRUCK BELL

This model established by Risset uses additive synthesis to recreate the tone of a bell. **TIMBRE** controls the damping of the sound; and **COLOR** the inharmonicity of the sound.

STRUCK DRUM

This variant of the BELL model uses different parameters (partials frequencies and amplitudes) to generate a sound reminiscent of a metallic drum. **TIMBRE** controls the damping and **COLOR** the brightness.

KICK

This model is a simulation of the TR-808 bass drum circuit. **TIMBRE** controls the decay time, while **COLOR** controls the brightness ("tone") of the sound. The main oscillator frequency controls the tuning of the bridged-T filter.

CYMBAL

Raw material for cymbal sound synthesis, as inspired by the TR-808 circuits. **COLOR** controls the balance between a droning sum of square waves and noise. **TIMBRE** controls the cutoff of a band-pass filter applied on the resulting signal.

SNARE

This model is a simulation of the TR-808 snare drum circuit. **TIMBRE** controls the balance between the two modes of the resonator ("tone"), and **COLOR** controls the amount of noise ("snappy").

WAVETABLES

Wavetables is a classic implementation of wavetable synthesis. **TIMBRE** sweeps the wavetable, and **COLOR** selects one of the 20 wavetables to play with. The waveforms are interpolated when traveling through a wavetable, but not when switching from one table to another.

WAVE MAP

Wave Map is a two-dimensional implementation of wavetable synthesis. 256 waveforms have been laid out in a 16x16 grid, so that adjacent waveforms are similar sounding. The **TIMBRE** parameter scans the table in the X direction, and the **COLOR** parameter scans the table in the Y direction, with smooth interpolation across the two directions.

WAV LINE

Wav Line allows one dimensional scanning through the entirety of Braids' wavetables. **TIMBRE** moves through the waves, while **COLOR** selects the interpolation method. When COLOR is set to 00, no interpolation is applied. When COLOR is at 40, interpolation is applied between samples, but not between waves. When COLOR is at 80, interpolation is always applied. When COLOR goes past 80, interpolation is applied between waves, but the resolution of the playback resolution is decreased.

WAV PARAPHONIC

This mode is a 4-voice variant of WAV LINE. **TIMBRE** morphs through a small selection of 16 waves. **COLOR** selects the harmonic structures between the 4 voices - from a predefined set of chords. When COLOR is set to 00, all voices are playing the same note with a variable amount of detuning, creating a thick chorus effect.

FILTERED NOISE

This model filters white noise with a state-variable filter. The main oscillator frequency controls the cutoff frequency of the filter. **TIMBRE** controls the resonance of the filter. **COLOR** performs a crossfade between the low-pass and high-pass outputs of the filter.

TWIN PEAKS NOISE

This “Twin Peaks” model generates white noise and process it with two band-pass filters (resonators). **TIMBRE** controls the Q factor of the filters, and **COLOR** changes their spacing. The frequency of both filters track the main frequency.

CLOCKED NOISE

This model generates random samples at a given rate, determined by the main pitch control. **TIMBRE** controls the periodicity of the generator (up to a 2 samples cycle), and **COLOR** its quantization level (from 2 distinct values to 32 distinct values).

GRANULAR CLOUD / PARTICLE NOISE

These granular synthesis models create natural textures by mixing short grains of windowed sine waves (CLOUD) or short decaying “pings” (PARTICLE). The frequency of the grains is controlled by the main frequency control, but is randomized by an amount proportional to the **COLOR** control. **TIMBRE** controls the density and overlap of the grains.

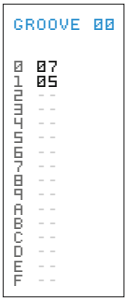
DIGITAL MOD

This model generates - in the audio frequency range - the kind of modulated signals used in digital telecommunication systems. The main oscillator frequency is the carrier frequency. The bit-rate is controlled by TIMBRE. COLOR sets an 8-bit value which is modulated into the carrier using QPSK modulation.

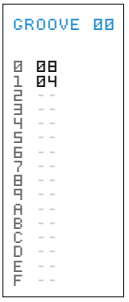
Common Groove Examples

Here are a few Groove examples to get an idea of the possibilities:

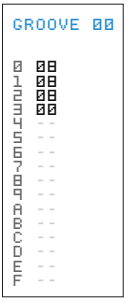
Swing 1



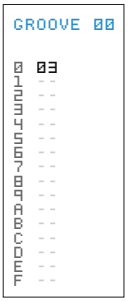
Swing 2



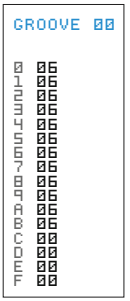
Triplets



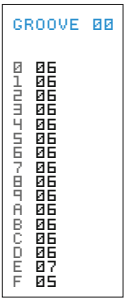
2x Speed



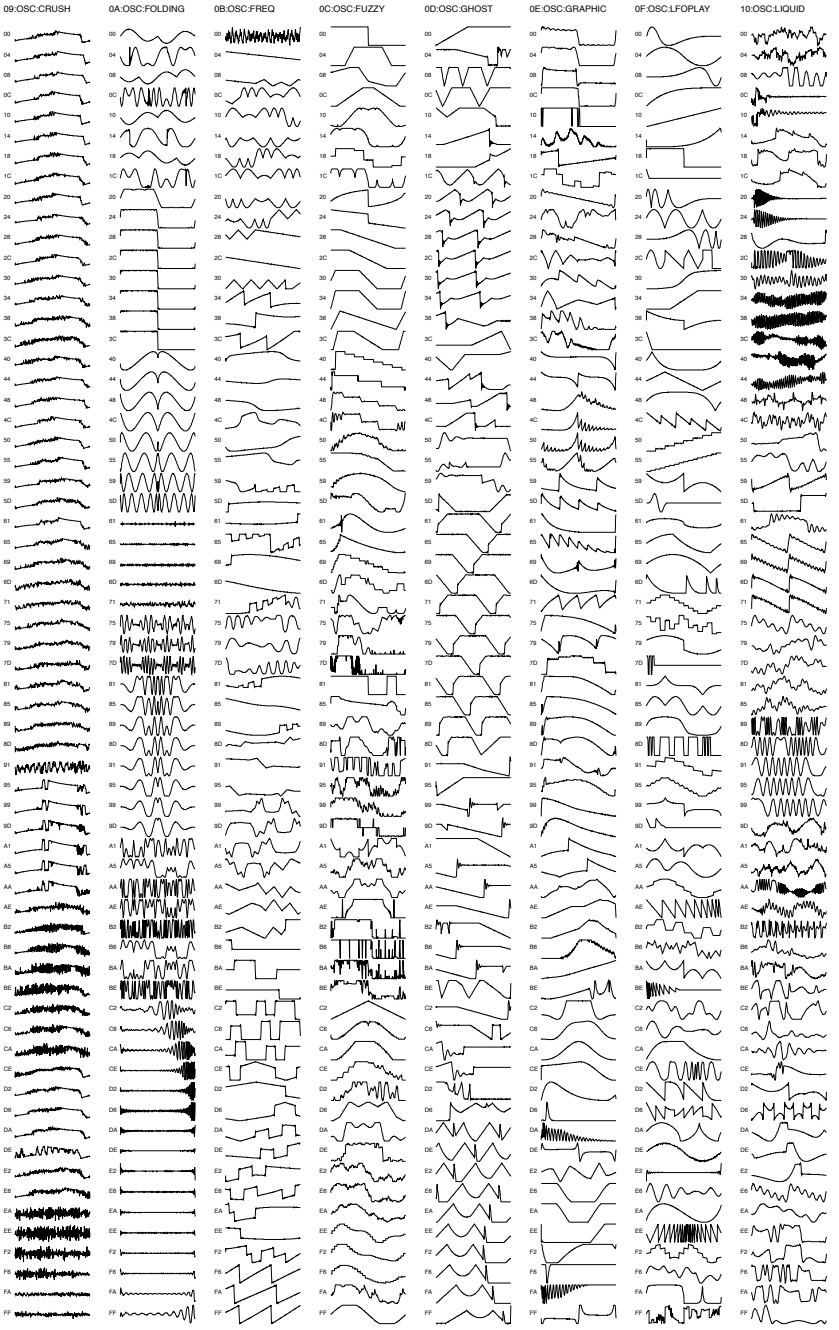
3/4 Time



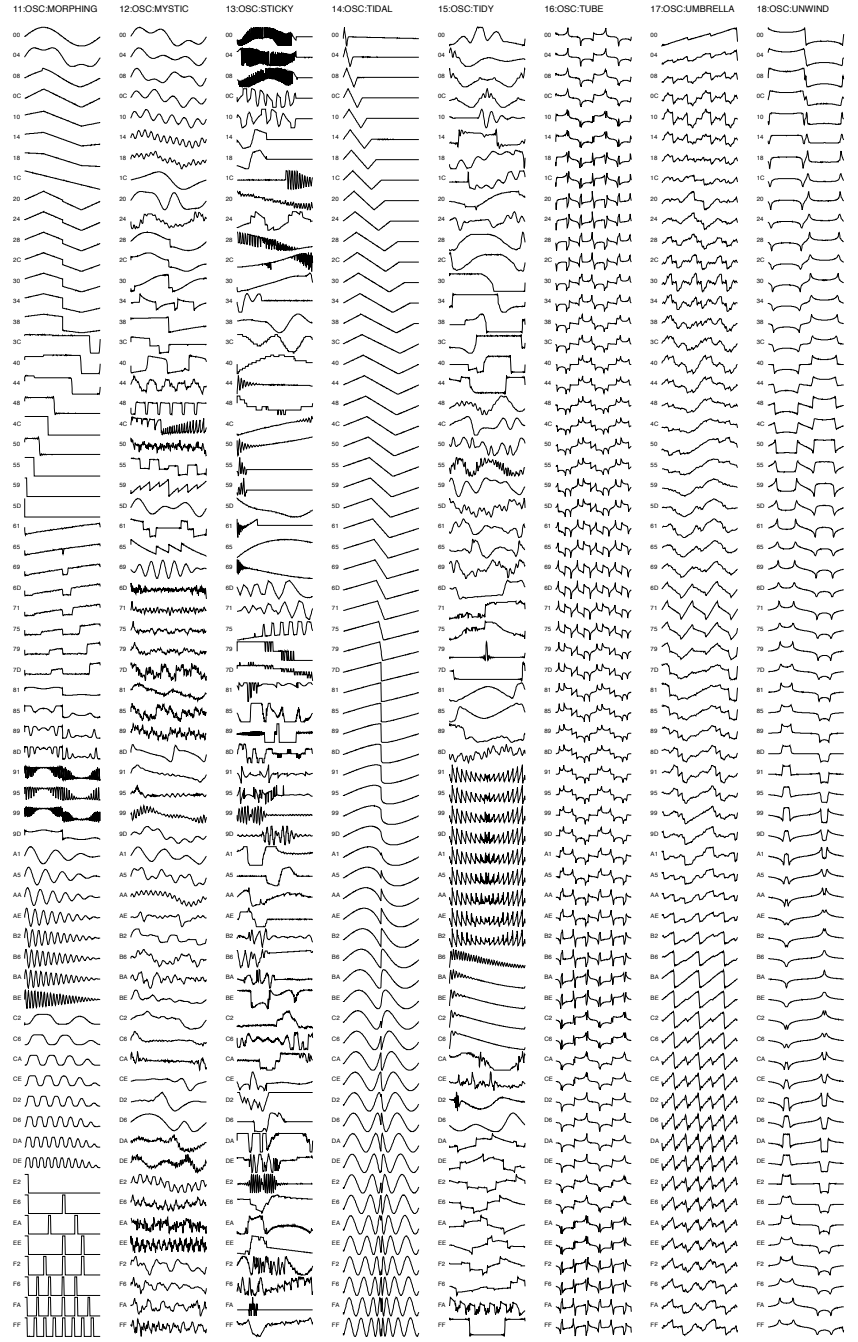
Swing Last Step



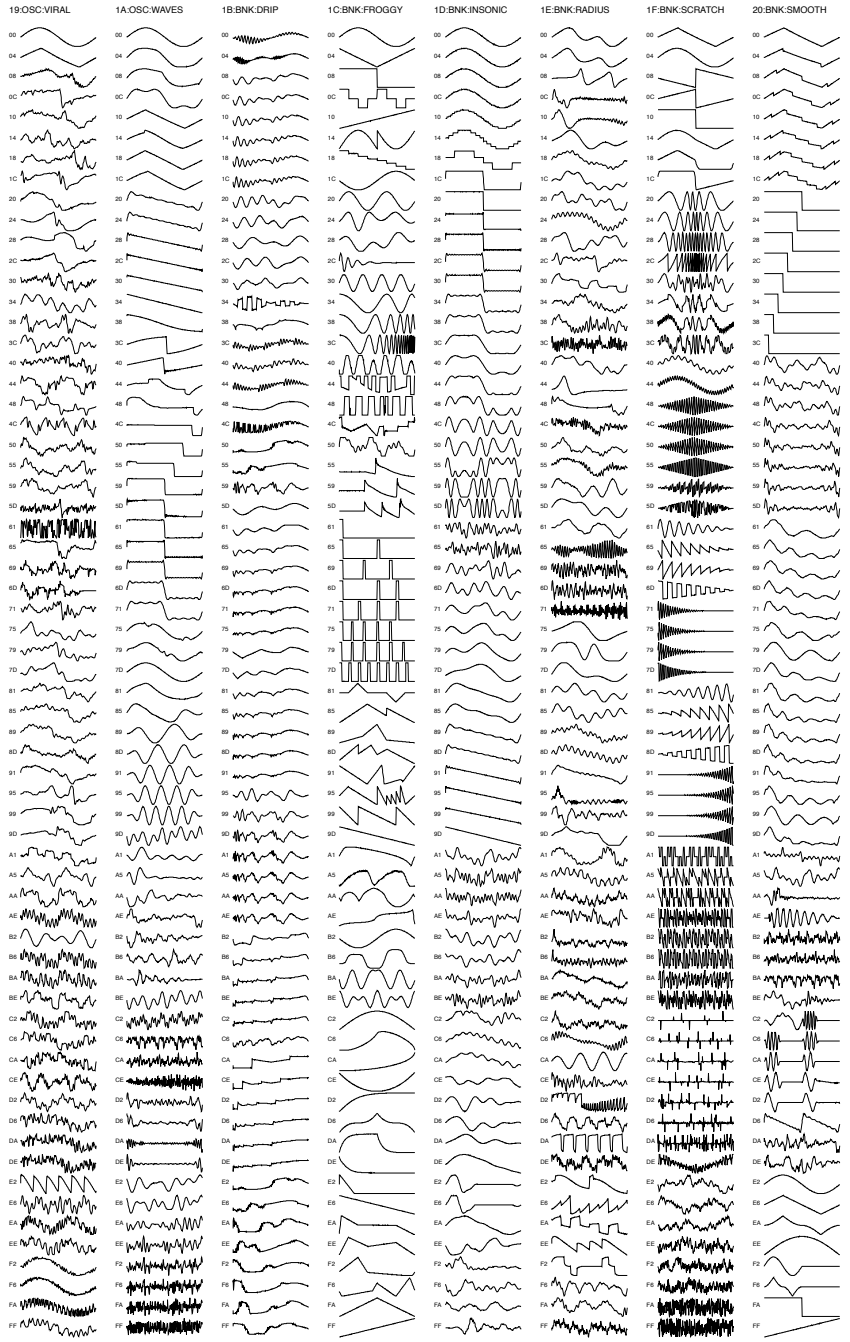
Wavsynth: Wave Table Index



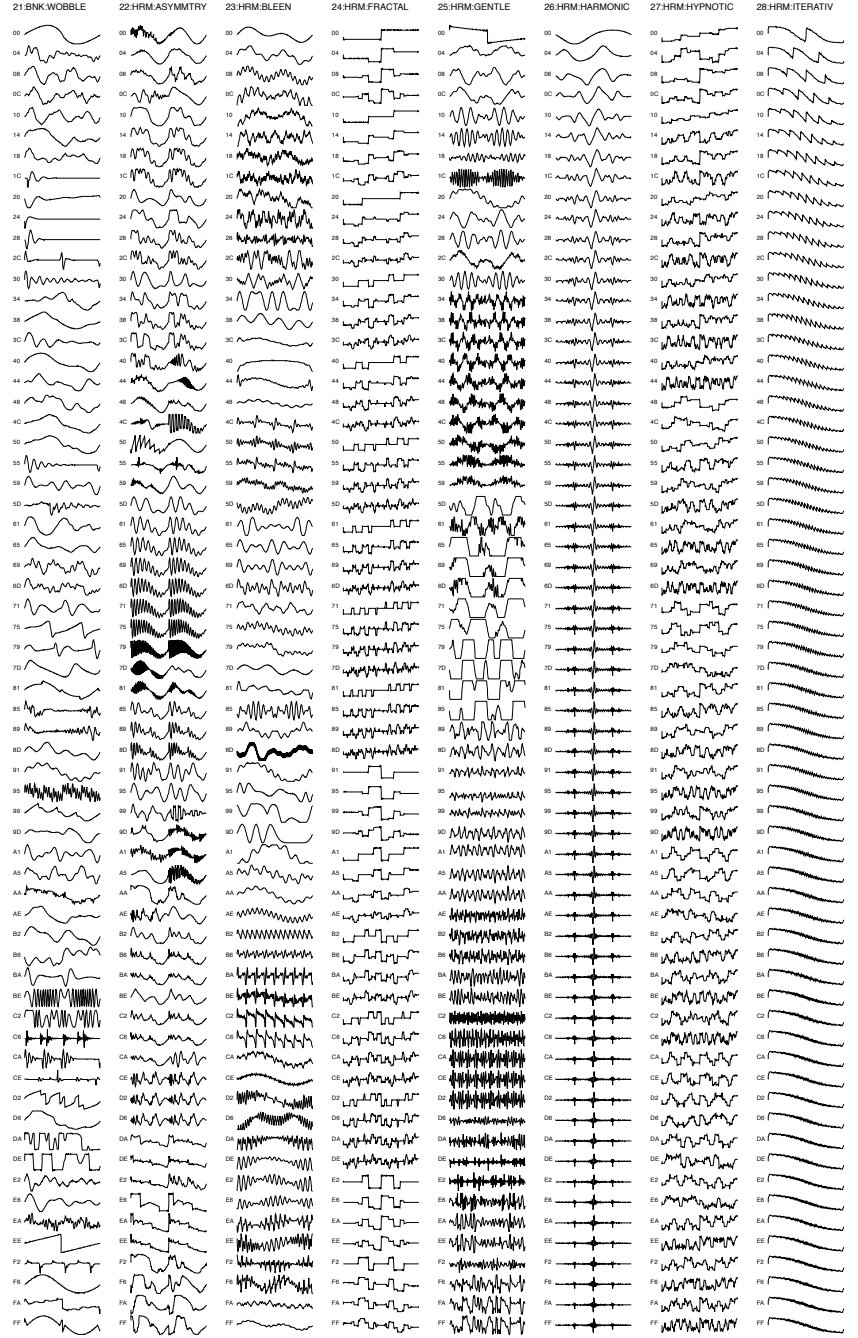
Wavsynth: Wave Table Index (Continued)



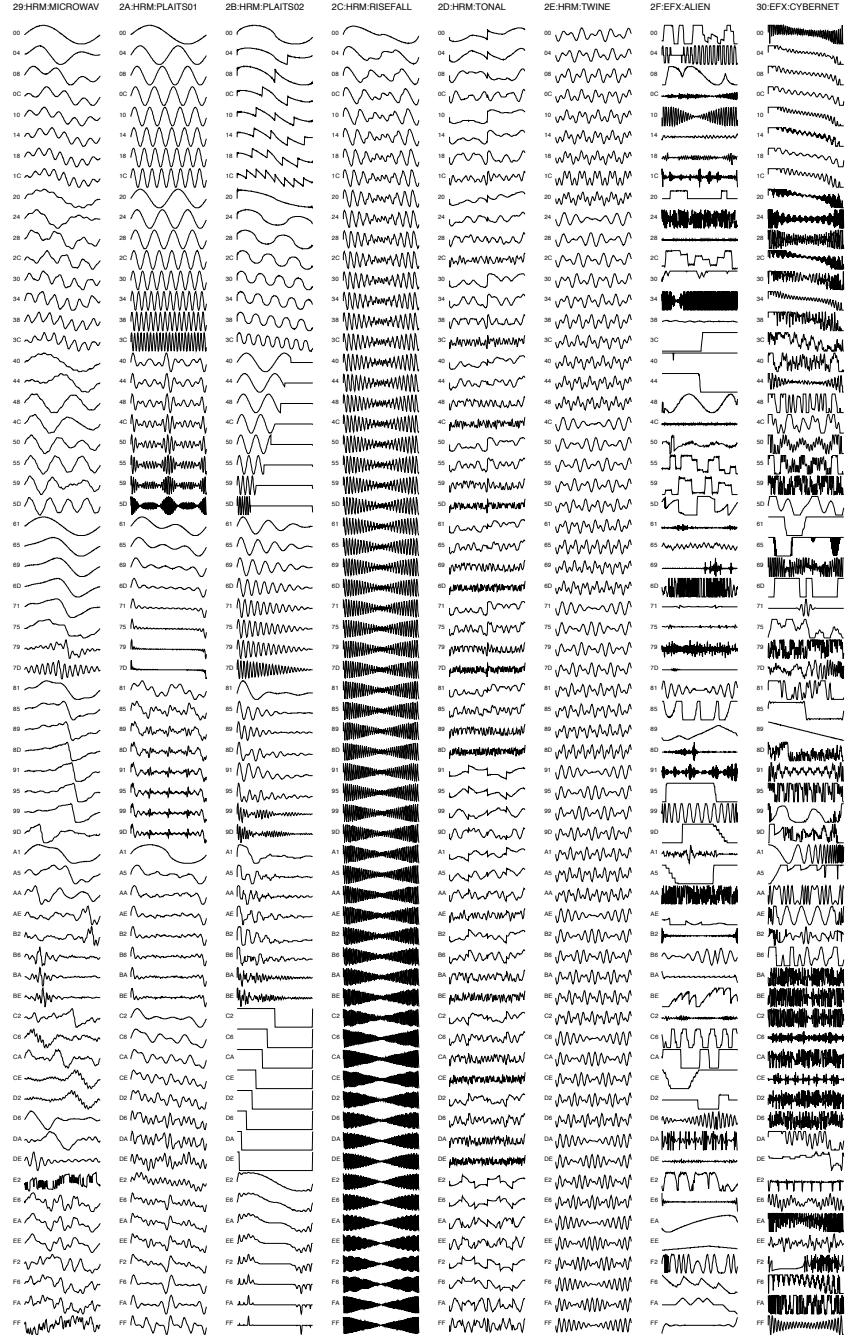
Wavsynth: Wave Table Index (Continued)



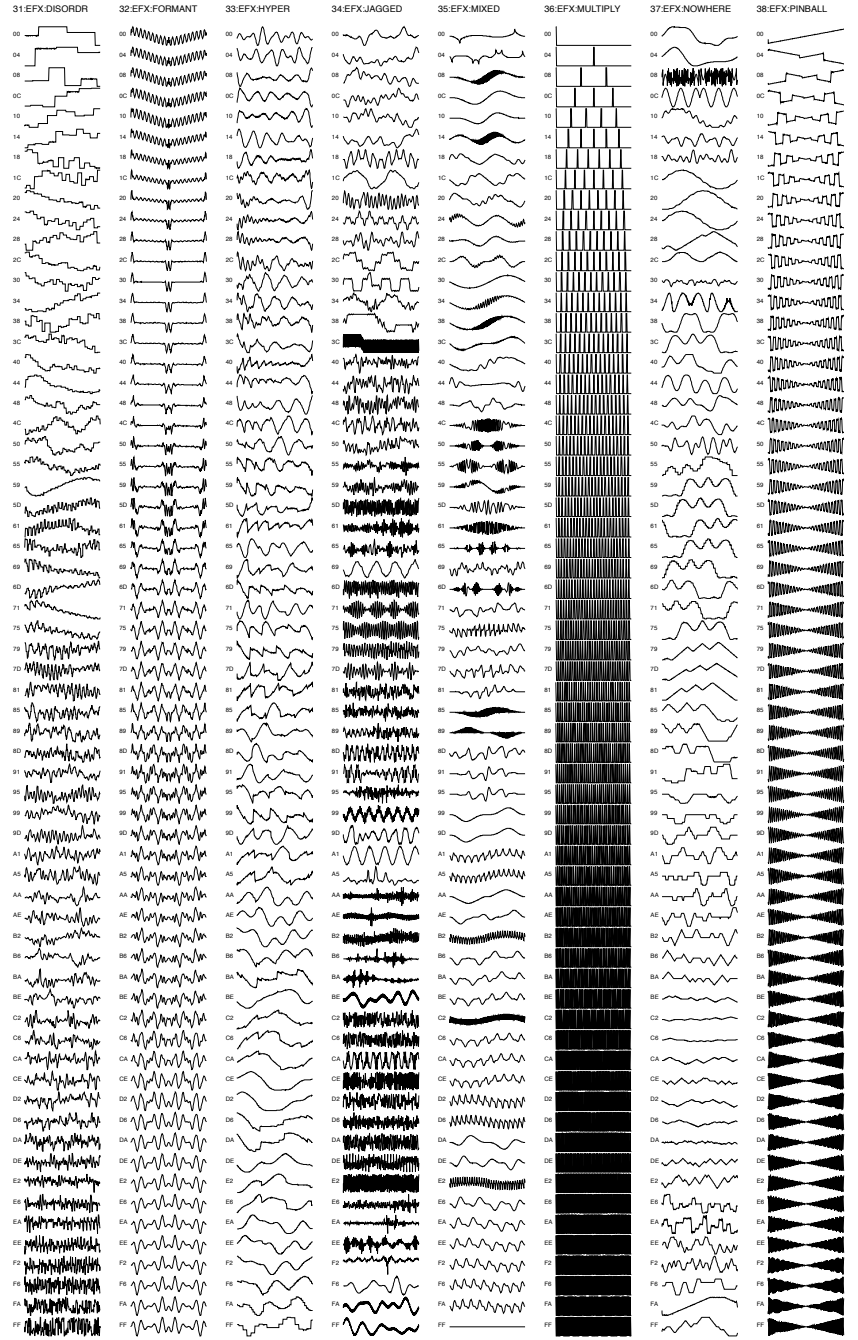
Wavsynth: Wave Table Index (Continued)



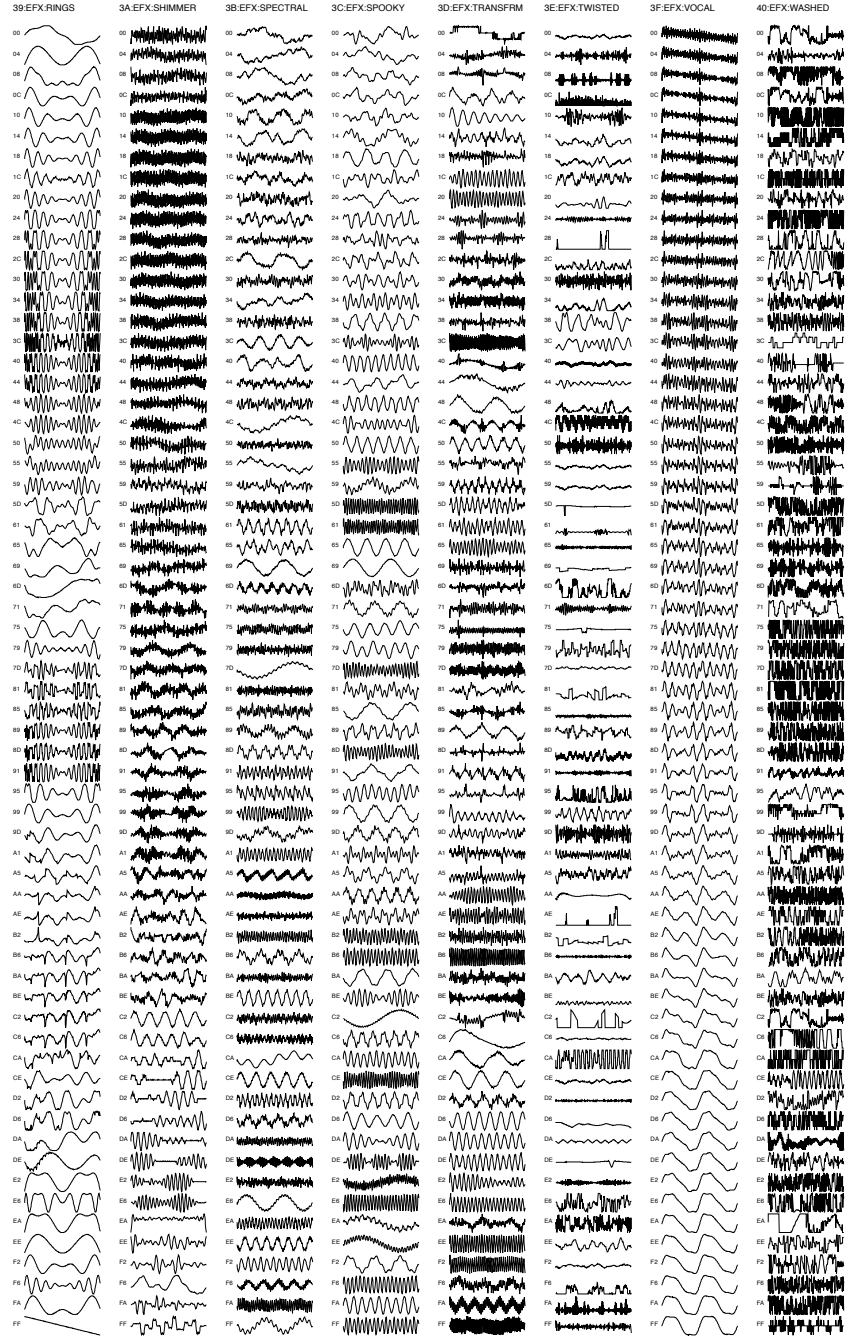
Wavsynth: Wave Table Index (Continued)



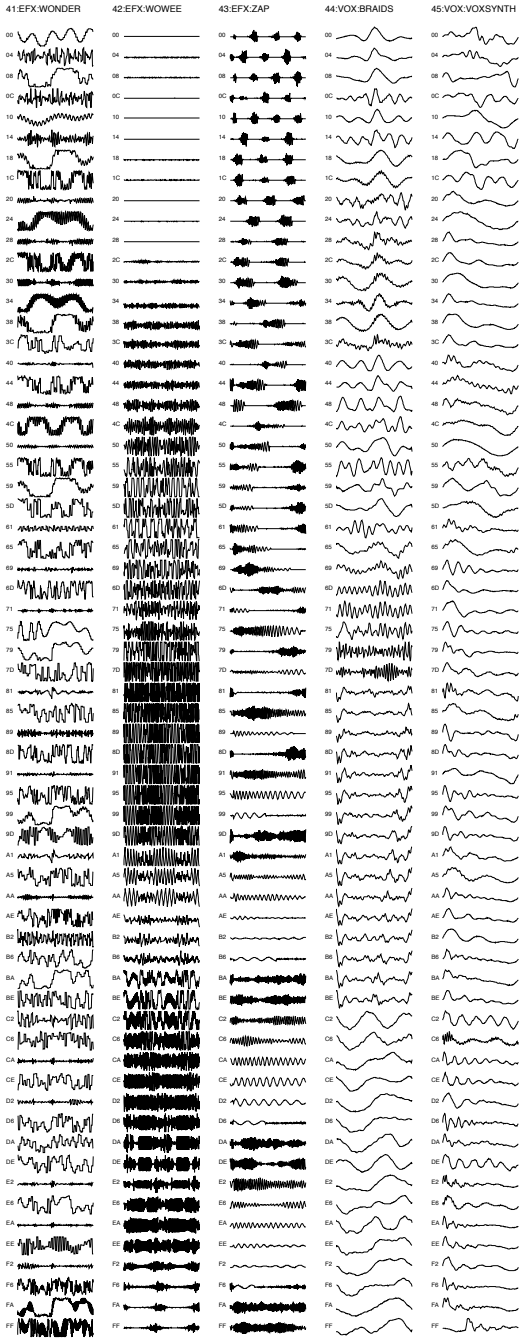
Wavsynth: Wave Table Index (Continued)



Wavsynth: Wave Table Index (Continued)



Wavsynth: Wave Table Index (Continued)



Hexadecimal Table

Abs	Rel	Hex	Abs	Rel	Hex	Abs	Rel	Hex	Abs	Rel	Hex
0	-	00	**16**	-	10	**32**	-	20	**48**	-	30
1	-	01	**17**	-	11	**33**	-	21	**49**	-	31
2	-	02	**18**	-	12	**34**	-	22	**50**	-	32
3	-	03	**19**	-	13	**35**	-	23	**51**	-	33
4	-	04	**20**	-	14	**36**	-	24	**52**	-	34
5	-	05	**21**	-	15	**37**	-	25	**53**	-	35
6	-	06	**22**	-	16	**38**	-	26	**54**	-	36
7	-	07	**23**	-	17	**39**	-	27	**55**	-	37
8	-	08	**24**	-	18	**40**	-	28	**56**	-	38
9	-	09	**25**	-	19	**41**	-	29	**57**	-	39
10	-	0A	**26**	-	1A	**42**	-	2A	**58**	-	3A
11	-	0B	**27**	-	1B	**43**	-	2B	**59**	-	3B
12	-	0C	**28**	-	1C	**44**	-	2C	**60**	-	3C
13	-	0D	**29**	-	1D	**45**	-	2D	**61**	-	3D
14	-	0E	**30**	-	1E	**46**	-	2E	**62**	-	3E
15	-	0F	**31**	-	1F	**47**	-	2F	**63**	-	3F

Abs	Rel	Hex	Abs	Rel	Hex	Abs	Rel	Hex	Abs	Rel	Hex
64	-	40	**80**	-	50	**96**	-	60	**112**	-	70
65	-	41	**81**	-	51	**97**	-	61	**113**	-	71
66	-	42	**82**	-	52	**98**	-	62	**114**	-	72
67	-	43	**83**	-	53	**99**	-	63	**115**	-	73
68	-	44	**84**	-	54	**100**	-	64	**116**	-	74
69	-	45	**85**	-	55	**101**	-	65	**117**	-	75
70	-	46	**86**	-	56	**102**	-	66	**118**	-	76
71	-	47	**87**	-	57	**103**	-	67	**119**	-	77
72	-	48	**88**	-	58	**104**	-	68	**120**	-	78
73	-	49	**89**	-	59	**105**	-	69	**121**	-	79
74	-	4A	**90**	-	5A	**106**	-	6A	**122**	-	7A
75	-	4B	**91**	-	5B	**107**	-	6B	**123**	-	7B
76	-	4C	**92**	-	5C	**108**	-	6C	**124**	-	7C
77	-	4D	**93**	-	5D	**109**	-	6D	**125**	-	7D
78	-	4E	**94**	-	5E	**110**	-	6E	**126**	-	7E
79	-	4F	**95**	-	5F	**111**	-	6F	**127**	-	7F

Abs	Rel	Hex	Abs	Rel	Hex	Abs	Rel	Hex	Abs	Rel	Hex
128	-128	80	**144**	-112	90	**160**	-96	A0	**176**	-80	B0
129	-127	81	**145**	-111	91	**161**	-95	A1	**177**	-79	B1
130	-126	82	**146**	-110	92	**162**	-94	A2	**178**	-78	B2
131	-125	83	**147**	-109	93	**163**	-93	A3	**179**	-77	B3
132	-124	84	**148**	-108	94	**164**	-92	A4	**180**	-76	B4
133	-123	85	**149**	-107	95	**165**	-91	A5	**181**	-75	B5
134	-122	86	**150**	-106	96	**166**	-90	A6	**182**	-74	B6
135	-121	87	**151**	-105	97	**167**	-89	A7	**183**	-73	B7
136	-120	88	**152**	-104	98	**168**	-88	A8	**184**	-72	B8
137	-119	89	**153**	-103	99	**169**	-87	A9	**185**	-71	B9
138	-118	8A	**154**	-102	9A	**170**	-86	AA	**186**	-70	BA
139	-117	8B	**155**	-101	9B	**171**	-85	AB	**187**	-69	BB
140	-116	8C	**156**	-100	9C	**172**	-84	AC	**188**	-68	BC
141	-115	8D	**157**	-99	9D	**173**	-83	AD	**189**	-67	BD
142	-114	8E	**158**	-98	9E	**174**	-82	AE	**190**	-66	BE
143	-113	8F	**159**	-97	9F	**175**	-81	AF	**191**	-65	BF

Abs	Rel	Hex	Abs	Rel	Hex	Abs	Rel	Hex	Abs	Rel	Hex
192	-64	C0	**208**	-48	D0	**224**	-32	E0	**240**	-16	F0
193	-63	C1	**209**	-47	D1	**225**	-31	E1	**241**	-15	F1
194	-62	C2	**210**	-46	D2	**226**	-30	E2	**242**	-14	F2
195	-61	C3	**211**	-45	D3	**227**	-29	E3	**243**	-13	F3
196	-60	C4	**212**	-44	D4	**228**	-28	E4	**244**	-12	F4
197	-59	C5	**213**	-43	D5	**229**	-27	E5	**245**	-11	F5
198	-58	C6	**214**	-42	D6	**230**	-26	E6	**246**	-10	F6
199	-57	C7	**215**	-41	D7	**231**	-25	E7	**247**	-9	F7
200	-56	C8	**216**	-40	D8	**232**	-24	E8	**248**	-8	F8
201	-55	C9	**217**	-39	D9	**233**	-23	E9	**249**	-7	F9
202	-54	CA	**218**	-38	DA	**234**	-22	EA	**250**	-6	FA
203	-53	CB	**219**	-37	DB	**235**	-21	EB	**251**	-5	FB
204	-52	CC	**220**	-36	DC	**236**	-20	EC	**252**	-4	FC
205	-51	CD	**221**	-35	DD	**237**	-19	ED	**253**	-3	FD
206	-50	CE	**222**	-34	DE	**238**	-18	EE	**254**	-2	FE
207	-49	CF	**223**	-33	DF	**239**	-17	EF	**255**	-1	FF

Specifications

Sequencer

- 8 Monophonic Tracks/Voices
- 255 Patterns/Phrases & chains
- 128 Instruments per song
- 256 Instrument Tables

Instruments and Effects

- Wavsynth engine for classic console & computer chip emulation.
- Macrosynth engine - Over 40 synthesis types based on Mutable Instruments Braids
- Sample Playback engine - 8/16-bit mono or stereo wav files. Streamed from SD - No memory/length limitation.
- FM Synth engine - Unique 4-op 12-algorithm FM synthesis with feedback per op.
- Hypersynth - 6 note stereo chord synthesizer
- MIDI Output engine with 10 user defined CCs per instrument.
- External Instrument - MIDI output with analog or USB input for use with built-in filters and effects.
- Global reverb, chorus, delay, multi-mode filter, EQ, and a main bus limiter.
- Sample recording of any reasonable length.

Hardware

- 3.5mm TRS MIDI (Type A) input and output.
- Stereo audio input (effects routed) and headphone/main output.
- USB MIDI and Audio Class 1 compliant.
- SDHC microSD slot for storage. FAT32 / exFAT compatible.
- Model:01
    - 1200mAh battery with up to 4 hours of use.
    - High quality 2.8” IPS display with capacitive touch.
    - Dimensions: 96 x 133 mm.
    - Weight: 218 grams.
- Model:02
    - Built-in MEMS microphone
    - 4300mAh battery with up to 12 hours of use.
    - High quality 3.5” IPS display with capacitive touch.
    - Dimensions: 92 x 129 mm.
    - Weight: 290 grams.