

Vector Sequencer



User Guide

v3.0



Getting Started

The Vector Sequencer is a digital sequencer in the Eurorack modular format. It provides a flexible sequencing engine with support for eight independent parts. Parts may be monophonic, chord, or drum types. There are two sub-sequencers per part for internal modulation, as well as chance operations and presets with a playlist function. The Vector has both MIDI and CV connections for interfacing with a wide variety of electronic musical instruments. An optional Jack Expander module adds support for more analog voices, trigger outs, and MIDI In and Out.

This manual covers both the MkI and MkII versions of the Vector and Expander modules.

Installation

Take the Vector out of its protective anti-static bag and have a look at the back. The power connector is on the right side of the circuit board and is labeled 'Power'. Connect a 16-pin Eurorack power cable if you have not already, red stripe DOWN per usual.

If you have the Jack Expander (MkI or MkII) module, you should connect it to your Vector before adding them to your case. Lay both the Vector and the Expander face down in front of your case, with the Expander just to the left or the right of the Vector. Identify the two 20-pin connectors on the Vector labeled 'J20' and 'J13'. On the Expander, the matching connectors are 'J200' and 'J130'. Using the two ribbon cables that come with the Expander, connect J20 to J200 and J13 to J130. Make sure to keep the orientation of the red strip UP for these connections.

Now add the Vector (or Vector/Expander combo) to your Eurorack-format case. Don't forget to power down first! The Vector consumes 140mA on +12V, 20mA on -12V. The Expander adds 30mA on both +12

and -12. Anything plugged into the USB A 'to device' jack may draw additional current on +12V. Most controllers (including Launchpads) pull less than 100 mA, but a cellphone or tablet may pull up to an additional 210 mA.

Firmware Updates & Support

It is a good idea to check regularly for firmware updates at <https://vector.five12.com>. For questions & support, and to be added to a mailing list for announcements (firmware, videos, etc.), email info@five12.com.

Limited Warranty

Five12 warrants the Vector Sequencer to be free of defects in assembly or materials for one year from the date of purchase by the owner. This warranty does not cover damage due to misuse, such as: incorrect power supply voltages, extreme heat or moisture, modified firmware, or physical damage. Determination of misuse is at Five12's discretion. During the warranty period, defective products will be repaired or replaced as determined by Five12. To return the Vector for repair, contact info@five12.com for further instructions. The owner is responsible for shipping fees to Five12.

Acknowledgments

A very special thank you goes to Joe Grisso, without whom this could not have happened. Many thanks also to Joshua Baker, Jason Fink, Phil Grossblatt, Michael Koehler, Henry Jackson, Jason Lazzara, Judy Marquez, Chris Meyer, Cody Murray, Bryan Noll, Shanda Nunez, Eric Williamson, David Small, Michael Stearns, Ron Sunsinger, Steve Turner and Andy Yih. Also, a shout-out to Robert Rich for help with alternate tunings.

Front Panel Tour

USB A 'To Device'
Plug in a MIDI Keyboard for programming sequences, or send MIDI to a synth. Devices only, no hubs!

USB B 'To Host'
Hook up to a computer or iOS device for MIDI I/O. Hold down Shift on startup to run in Disk Mode.

The 9th Encoder
Edits values for all steps in most edit modes. Select steps to edit just those steps as a group.

Globals
Tempo and sync settings, default key and scale, part names and types, output assignments.

Parts
View part activity, switch between parts, mute and solo parts. The current part name is shown top-left of second OLED.

Shift : Sequence Ops
Use Shift + other buttons to trigger operations global to a sequence. Shift+Pitch to reset all pitch values to their defaults, ditto for gate, velocity, etc. Use Shift + [skip|mute|select] to *un*-[skip|mute|select] all steps.

Run, Clock, Reset
Sync In or Out, Triggers In or Out, Set operating mode in Global.

Mod CV In
-5 to +5V, set mapping in Modulation.

CV and MIDI Outputs
Flexible output assignments, set up in Globals.

Sequence Editing
Main edit pages for sequences: Rec, Pitch, Gate, Velocity, etc.

Presets & Scenes
Per-part presets, and a preset playlist w/ looping. Use Scene mode for ad-hoc arrangements.

Two HiRez OLEDs
Status readouts across the top, values for the current edit page along the bottom.

Eight Encoders
Twist to edit values displayed on-screen. Shift + Twist for quantized value jumps.

One-Octave mini-keyboard
Use for step-recording & transposing in Rec mode. Use white keys for skip, mute and select in other modes.

Skip, Mute, Select
In most sequence editing modes, sets the behavior of the white keys in they keyboard. This sub-mode is displayed top-center of the 1st OLED.



Sequence Editing



For your first sequence, connect the **Pitch1** and **Gate1** outputs of the Vector to other modules in your system, such as an oscillator for pitch and an envelope generator for gate. If you want to connect via MIDI, use one of the included 3.5mm to DIN MIDI adapters to connect **MIDI-1** on the Vector to a MIDI synthesizer.

Press **Pitch** to see the pitch values for the sequence. The pitch values appear darker, denoting that those steps are muted. To unmute them, press any of the eight main encoders. To set the pitch values for each step, just turn the encoders.

Now press **Gate** and turn the encoders on this page to edit the note lengths for each step. By default, all the gates for all parts are off, but pushing the encoders will set the gate length to 50% of the step. Pushing an encoder again will mute the step but leave the gate value alone. Now is a good time to note that the 'push' behavior for the main eight encoders can be customized; more on that in the section on **GLOBALS**.

The most common parameters for sequence editing are accessed via the **Pitch**, **Gate**, **Velocity**, **Len/Rpt/Rtch** buttons. Repeatedly pressing those buttons will cycle into secondary pages such as **Glide** and **Groove**. The current edit mode is shown top-left of the first OLED, and each page has a distinctive graphic value readout that makes it easy to keep track of where you are. Use **Next** & **Prev** to edit steps other than the first eight.



Pitch: Sets the pitch value for each step in semitones from C1 to C9.

Glide: For monophonic parts, sets the glide time for pitch from 0% to 100%. Use longer gate times for smooth glides.

Chord: For chord-based parts, sets the output chord from unison through all dyads to an octave, then triads and seventh chords. To set a part to chord mode, see **Parts** on page 16.



Gate: Sets the gate time for each step, from muted, to very short, up to a tied (legato) note. When the gate is off, no MIDI notes are generated.

Groove: Adjusts the time of the step forward or backward just a touch.

TIP: On the Pitch page, hold the **Shift** button while turning the encoders to change pitch by octaves. For **Gate**, **Shift+Twist** will move between 1%, 50% and 99% gate values. Also, if you hold **Shift** and push the **Pitch** button, it will 'normalize' all pitches to their starting values. The same goes for all the other edit pages: **Gate**, **Velocity**, etc.

Seq Editing / Seq Controls



Velocity: Sets the velocity CV output level and MIDI note velocity. To mute a note, use a zero gate or mute the step. By default, Velocity is indicated graphically. To move to a numeric readout, change the Velocity Readout setting in the fifth SEQ CTL page.

CC1, CC2, CC3: Sets the value for up to three lanes of MIDI CC outputs (Chord Parts only have two CC lanes). If a CC number is set for a lane (see **Sequence Controls** on the next page), a CC message is generated for every step that is not muted.

Step Len: Sets the length of a step in multiples of the base step time. The step divisions here are chosen to be most useful when the sequence rate is set to quarter notes (one step per beat).

Repeat: Sets the step to repeat up to eight times.

Ratchet: Sub-divides the step up to four times.

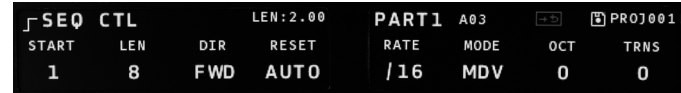
Chance-1, Chance-2: Per-step chance operations; see pg 12 for details.

On the **Step Len** and **Seq Ctl** pages, the Vector calculates the length of the sequence in beats and displays it in the top-right corner of the 1st OLED.

TIP: Hold SHIFT and press any Edit button to normalize the values for that setting.

Sequence Controls

Press the yellow **Control** button above the 2nd OLED to access the **Seq Ctl** pages. These are overall settings for the sequence, such as sequence length and rate. There are several pages here; turn encoder 9 to move between them. The most commonly accessed settings are on the first page. These main eight parameters can be set using **CUE** mode: Push the encoder to enter **CUE** mode, turn to select the value, then push again to latch the value.



START, LEN: Sets the starting step and pattern length within the maximum sequence length for the part.

DIR: Sets the sequence direction: Forwards, backwards, alternate with or without repeating the ends, or run randomly.

RESET: Sets the sequence to reset automatically, every n beats, or externally (EXT). For external reset, see **Tips & Tricks** on page 29.

RATE, MODE: The default rate for sequences is set using common musical divisions (**MDV**), but there are several alternate modes:

MDV: Musical Division	X16, X8T, X8: Crossfade modes
PCT: % of a beat	P16, P8T, P8: Phase modes
SPD: Speed, higher is faster	1/1 - 32/32: Fractions of a beat

Seq Controls



The X and P modes are phase-based, where the rate deviates (faster or slower) from a default rate of 16th, 8th note triplets or 8th notes. The X modes have a wider range than the P modes.

OCT, TRANS: Add an octave or semitone transposition to all notes.

TIP: On the first Seq Ctl page, the mini-keyboard can be used to set the transposition. Use Prev and Next to shift the keyboard down or up an octave.

Sequence Controls: Page 2



GEN: Sets the algorithm for pattern generation. See page 13 for details. Some generator algo's have a parameter, which will show up in column 2.

EVO: Sets the style of evolve operation, which you can trigger by holding SHIFT and pressing the fourth white key. Low, Medium or High makes increasingly complex changes to the current sequences, including introducing new pitches. SWIZ uses a 'swizzle' algorithm to mix up the pitch, gate and velocity values of sequences without adding any new pitches or steps. SW-P, SW-G, and SQ-V swizzle Pitch, Gate and Velocity values only.

Fill Enable: Sets whether Fills are enabled for this Part. For more details, see Fills on page 23.

Mask: This setting enables an advanced feature called Masked Modulation. When a modulation source is selected to be masked, that modulation will only be applied to selected steps (using 'Select' edit submode). This is very useful both for preprogrammed changes and live-performance improvisation. Masked modulation only works (and makes sense) for per-step modulation targets, such as Pitch, Gate, Velocity, and Ratchet.

Sequence Controls: Page 3



Free Run: These parameters allow you to set different run lengths for specific sequence parameters, including Pitch, Gate, Velocity, Ratchet, Chance1, and Chance2 on the Vector MKII, and Gate and Velocity on the MkI. This is an easy way to add continuing variation to a sequence, particularly when using odd-numbered free run values against an 8 or 16-step main pattern.

Sequence Controls: Page 4



RANDOMIZE Velocity & Timing: Add random variations to Velocity and Timing (groove).

Seq Controls : 3



Key, Scale: Override the global settings for key and scale. See page 6 for details, including information on User Scales.

TIP: The master tempo for the Vector and the default key and scale settings for all parts are in Globals.

TUN: Sets the tuning. See the page 7 for details.

Sequence Controls: Page 5



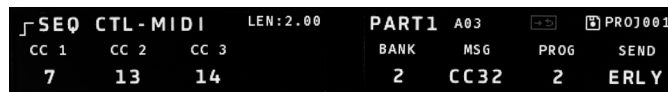
Preset Sync: Sets whether presets change immediately, on the next beat, the next bar, or at the end of the sequence pattern.

Reset On Preset Change: Determines if the sequence resets when you change presets.

Velocity Readout: Controls display of Velocity. BAR is the standard setting, NUM will display velocity as numeric values. **TIP:** Use EDIT+Twist to edit Velocity values in smaller increments in NUM mode.

Chance Bar Mode: Sets whether the settings on the CHNC BAR page count by musical bars or by pattern repeats.

Sequence Controls: MIDI



CC 1-3: Sets the CC numbers for the three CC lanes in the Velocity pages. These are all Cue-mode settings.

SPR CH: Spread MIDI Channels. This setting only appears for Chord and Drum parts. If it is on, MIDI notes from those parts will be spread across four MIDI channels, starting with the one assigned for the MIDI output on the Routing page. For example, if you have a Chord part and the MIDI output references channel 10, the four voices will be spread across MIDI channels 10 through 13.

Bank & Prog Change: Use these preset-specific settings to send MIDI Bank & Program Change messages when the current preset is triggered. Once you select a BANK value, you can then set whether it sends as CC 0 or CC 32. For Program Change messages, you can set if they are sent when the preset changes (good for synths) or a bit early (good for sequencers).

Sequence Controls: Drum Map

This page only appears for Drum Parts. Use this page to set the MIDI notes generated for each of the four drum voices. Use encoder 1 to set the voice to work with, encoder 2 to select the MIDI note, and encoders 3 & 4 to set a two-character name for the voice. That name will appear in the title of the DRUM edit page for the current drum lane.

Keys, Scales & Tunings



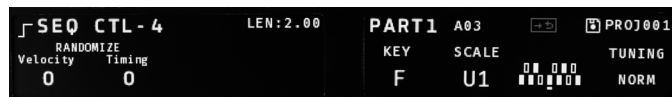
Keys & Scales:

On the Vector, all pitch values are stored internally as either a note number (similarly to MIDI), or an offset from a default note number. **Key** sets the default note for a sequence. For the key of C, that note is MIDI note number 60, which becomes 2V from a Pitch CV out. Pitches within a sequence are actually stored as offsets from the default note, which makes it easy to change or offset the default note for a sequence. You can set the global Key (and Scale) for your project on the first page of **Globals** or also per-Part on the second **Seq Ctl** page.

A **Scale** limits the note/pitch offsets available in a sequence. In the Chromatic scale, all notes are available; in other scales, some are not. When you select a new scale, all pitch values for the sequence are adjusted to fit the new scale. The built-in scales on the Vector are those commonly used with 12-tone Equal Temperament tunings:

CHR: Chromatic	HM: Harmonic Minor
MAJ: Major	MM: Melodic Minor
MIN: Minor	WT: Whole Tone
DOR: Dorian	O1: Octatonic 1,2
PHY: Phrygian	O2: Octatonic 2,1
LYD: Lydian	PT: Major Pentatonic
MIX: Mixolydian	PTM: Minor Pentatonic
LOC: Locrian	BLU: Blues
	M7: Major 7th Chord
	D7: Dominant 7th Chord

User Scales:



In addition to the built-in scales, there are eight user scales, named U1 to U8. When you select one of these scales, a keyboard graphic will appear next to the scale setting. Use the mini-keyboard to add and remove notes in the scale. If a note is allowed, it will appear solid; if not, it will be hollow. As you modify a user scale, the notes in the sequence will be quantized on output to fit in the scale. The sequence itself will not be re-quantized until you start to edit it.

User scales are global, so if two Parts are set to U1, then any changes to U1 will apply to both parts. User scales are stored in PREFs, making them available to all your projects.

Alternate Tunings & Notation:

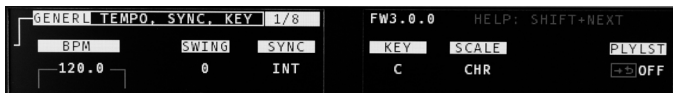
A Tuning assigns a voltage value to each note for pitch CV outputs. The default tuning is 12-tones per octave, equal temperament.

You can set an alternate tuning on the fourth page of **Seq Ctl** settings. There are several options built-in and you can load tunings in the MIDI Tuning Specification (MTS) format. Many of the built-in tunings use alternate numeric notations. For full details on available tunings, refer to the TUNING-INFO.txt file included with all Vector 3.X Firmware releases.

Globals & Tempo



The **GLOBALS** pages have a wide range of configuration options for the Vector. There are three main sections: **GENERAL**, **PARTS**, and **ROUTE**. Use **Prev & Next** to move between the sections and encoder **9** to dial through the pages within each section. This page of the manual covers general settings, while Routing is a couple pages over, and Parts are covered in detail on page 16.

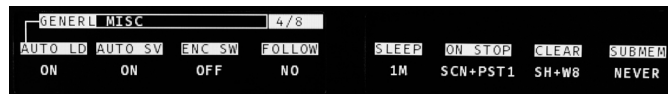


1: TEMPO, SYNC, KEY: Set the global tempo, swing amount, sync mode, key, and scale. This is also where you turn the Preset Playlist on and off. For more on sync, see **External Sync** on page 21.

2: Fills: covered on page 23.

3: TUNING: You can load up to two tunings in MTS format from the SD card. For more on tunings, see page 7.

4: MISCellaneous settings:



AUTO LD: Automatically load the previous project on power-up.

AUTO SV: Automatically save the current project each time the Vector is stopped.

ENC SW: Behavior when pushing Encoders: **NORM:** follow the submode (skip/mute/select), **GATE:** gate on/off, always SKIP, always MUTE, always SELECT, select the current PART, and OFF.

FOLLOW: Auto-Scroll sequence pages as the sequence plays.

SLEEP: Sets the time before the OLED displays are put to sleep in minutes. '5-NR' sets a sleep time of 5 minutes when not running and leaves them on when running.

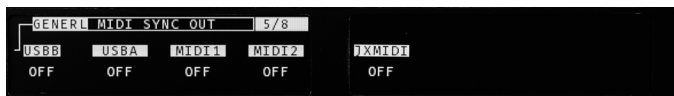
ON STOP: Sets what happens with presets when the transport stops. **AS-IS:** Don't change any Presets; **SCENE1:** Set all presets as they are in the first Scene; **SCN+PST1:** Set all Parts to the first preset.

CLEAR: Sets the button command to fully clear a preset. **SH+W8** (white key 8): The default command to clear a preset; **S+E+W8** (Shift+Edit+White Key 8): An alternate combo to make it harder to accidentally clear a preset.

Globals / Routing



SUBMEM: Turns on edit sub-mode memory. With this on, the Vector keeps track of which Edit sub-mode you were on recently (Glide, Groove, etc.). When you return to that page, the Vector will take you to the sub-mode page you were last on.



5: **MIDI SYNC OUT:** MIDI Clock on/off for all MIDI outputs.

6: **MIDI PROG IN:** Enable reception of MIDI program change or note number messages to change Presets and Scenes on the Vector. MIDI Channels 1-8 control parts 1-8, channel 16 is for scenes. **NN48** mode starts with note number 48 (C4), **NN60** starts with note 60 (C5).

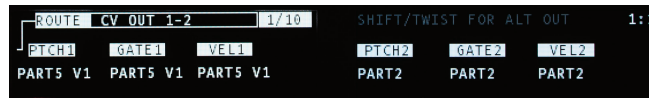
7: **BACKPLANE:** Shows any other modules, such as a QV-L, connected to the Five12 Backplane connectors on the back of the module. The Five12 Backplane enables sync and data communication between modules without patching on the front panel.

8: **USB STATUS:** Connection status for both USB ports. To connect an iOS device, use Apple's Camera Adapter. If you experience any strange behavior with your connected MIDI device ensure that it has been identified correctly on this page.

Routing

The Vector sequencer has very flexible routing options that are saved with each Project. For every CV or MIDI output, you can set which Part that output 'listens' to. You can also set a CV output to listen to a USB MIDI input, an easy way to setup a MIDI-to-CV routing. MIDI outputs can listen to up to all eight Parts, while CV outputs can only listen to any single Part. The trigger jacks on the Vector (labeled Run, Clock & Reset) and on the Expander (Trigger 1-8) are a bit special. They can output clock signals at a variety of rates, as well as gate and reset outputs from a Part. Some can also be used as inputs. Run, Clock & Reset can be used for sync input (see previous page), and the first three triggers on the Expander MkII can be used as inputs to manually clock sequences.

To access the Routing pages, press **Global**, then **Next** twice. Then use Encoder **9** to move between the pages of this section. There are six pages for the Vector and three more if you have a Jack Expander connected.



CV OUT: On the Vector MkII, there are two sets of Pitch, Gate, and Velocity outputs, as well as two general purpose X and Y CV outputs. Both Expanders have four Pitch outputs and four Velocity outputs. On the MkII Expander, the Velocity outputs can also be used for Pitch. For any output, use the encoders to select any Part or USB MIDI Source. For Chord and Drum parts; (which are polyphonic), hold **Shift** and twist the encoder to set which voice to output.

Routing / Recording



Velocity outputs can also be set to directly output one of the two sub-sequencers for a part. Hold Shift and twist the encoder to select those alternate outputs. The notation for them is 'S1' and 'S2'.

RUN, CLOCK, RESET: When not used for sync, these jacks can generate clock pulses from a wide range of rates based on the main tempo. They can also generate step triggers (ST), gates (GT), and sequence reset (RS) triggers from a Part. These output modes are labeled ST_x, GT_x, and RS_x where *x* is the Part number. These outputs, as well as Trigger outs, use a 'CUE' based editing system: Turn the encoder to select a new value, then push the encoder to activate that new value.



J-EXP TRIGS: For the Expander modules, these are set to output clock divisions by default. Just like the R/C/R jacks, these triggers can also be set to output Part-based triggers. The first three triggers can be configured as inputs; see page 29 for more details.



MIDI, USB: Each MIDI Output (USB A, USB B, MIDI-1, MIDI-2, and Expander JX MIDI Ports) has eight 'slots' to output up to all eight parts. Shift + Twist an encoder to set the MIDI channel for that slot.

Recording

On the Rec page, you can enter or modify sequences using the built-in one-octave keyboard, a Launchpad, any USB MIDI Class-compliant host or device, or a MIDI Device connected to the Jack Expander.

The first setting turns REC mode on and off and is global for all Parts on the Vector so that you can have REC mode running for more than one Part. The second parameter sets the **REC MODE** for the current Part. The third param sets the **REC SOURCE**:

VKBD: The one-octave keyboard on the Vector.

USBA: The USB A 'to device' connection.

USBB: The USB B 'to host' connection.

JEXP: The MIDI IN jack on the Expander.

When using the mini-keyboard, the Next and Prev buttons shift the keyboard up and down by octaves. The current octave is always shown in the top-middle of the first OLED display. If you have a Launchpad connected, select USB A as the source to allow recording from the keyboard page of the Launchpad mapping.



Recording



REC MODES: The right OLED will change based on the recording mode you have selected. The recording modes are:

OFF: No recording activity for this Part.

STEP: MIDI notes are used to program the pitch values for each step of the sequence one by one. The second OLED will display the notes being programmed, but you can also switch to the **Pitch** page to see them. The next step to be programmed will be highlighted by a 'cursor', which can be moved with Encoder 9. On the **Pitch** page, use **Shift+Encoder 9** to move the cursor. **STEP REC** is available for Mono and Chord parts and is particularly useful for programming in custom chords.

ST+T: Step+Thru: This mode combines step recording and the behavior of the **THRU** mode described below.

TRANS: Incoming MIDI notes are used to transpose the sequence. MIDI note number 60 is used as the center point.

THRU: Incoming MIDI notes are sent directly to the outputs for the current part, both CV and MIDI. They also override any notes generated by the sequence for that Part. Use this mode to have the Vector act as a MIDI to CV converter. In this mode, the second OLED displays a log of the incoming MIDI messages.

RT-G: Realtime Grid: This mode is available for Mono and Drum parts. As the sequence plays, pitch values are assigned to steps in real time as you enter them on the source keyboard. For a Mono Part, if you hold a note across steps, the Vector will tie the gates for those steps together.

ARP-I : Arpeggiate Inline: In this mode, any time you play a note or chord on the **SRC** keyboard while the Vector is running, the Vector will write a sequence to play the arpeggiated notes. It will write Pitch values and set the length of the sequence, but it will not change any other parameters, so you can still use Gate, Velocity, Chance Ops, etc., to modify how the arpeggiated notes will be played.

Three additional parameters allow you to customize how the arpeggio is written. Turn **LATCH** on to have the arpeggio keep playing when you release notes. Use **OCT** to set how many octaves to use, and use **MODE** to control the order in which notes play.

ARP-P : Arpeggiate Preset: In **ARP-P** mode, instead of overwriting the current Preset, the arpeggio will be written to the last Preset for this Part.

Chance Ops



Chance operations allow you to add variability to a pattern, such as randomly skipping or muting a step, jumping to another step, or changing the pitch. For each step in a sequence, you can pick an operation and the probability that it will happen. You can also set the operation to happen only on even bars, odd bars, or every third or fourth bar. Vector MkII has two sets of Chance Ops, while the MkI has one set.

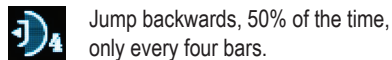
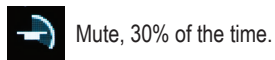
Chance operations are represented by icons. Their probability of occurring ranges from 0% to 100% and is represented by a circle around the operation icon. The bar setting is represented by a letter or number below and to the right of the operation icon.

There are three pages for chance ops, use the Chance button to cycle between them.

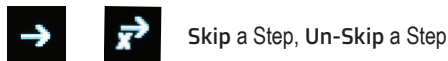
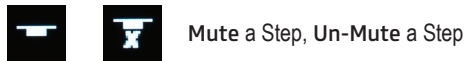
CHANCE PROB: Set the probability that op will happen.

CHANCE TYP: Pick an operation (the default is mute).

CHANCE PTN: Limit the operation to specific pattern repeats or bars.



All Operations:



			Jump: Backwards, Anywhere, Forwards	
			Velocity: Less, More, Max	
			Gate: Shorter, Longer, Tie	
			Ratchet: 2, 3, 4	
		...		Pitch Up: Random, Random Shift Up, Shift Up by Semitone
		...		Pitch Down: Random, Random Shift Down, Shift Down by Semitone
		...		Jump: To a Specific Step
				Mute One or More: (Drum Parts only), Mute one or more random voices
		...		Mute Voice: (Drum Parts only), Mute one or more specific voices
		...		Swap Voice: (Drum Parts only), Swap any two voices

Sequence Ops, Generate & Evolve



Sequence Operations

A variety of sequence transformations can be triggered by holding down the **Shift** key and pushing any of the white keys on the mini-keyboard. The names for these operations are printed vertically just to the right of each button.

Db1: Doubles the current pattern.

Inv: Invert all pitches, using the base pitch as the center point.

Gen: Generates a new sequence; see details below.

Evo: Modifies (evolves) the current sequence. Set the style of variation on the second **Seq Ctl** page.

Sh-L: Shifts the sequence one step to the left.

Sh-R: Shifts the sequence one step to the right.

Mute: Mutes the current part. This is the same as muting a part on the **Part** page.

Clear: Restores all parameters of a sequence to their original value and marks the current preset as 'empty'.

Generator Algorithms

To set the algorithm used for sequence generation look at the second **SEQ CTL** page.

ACD1: Acid 1: Generates a 16 step sequence at 1/16th notes with a variety of pitch tones, including minor seconds and tritones. Gates and Velocity steps are set to %50, and a few accents are added.

ACD2: Acid 2: similar to **ACD1**, but adds a few pitch glides.

ACD3, ACD4 : Similar to **ACD1 & 2**, but no changes to **SEQ CTL**

settings.

BRL1: Berlin School 1: Generates an 8-step sequence at 1/8th notes, emphasis on octaves and fifths.

BRL2: Similar to **BR1**, but no changes to **SEQ CTL** settings.

357: Generates a 'cell' based pattern that is 3, 5, or 7 steps long, repeated out to the full length of the sequence.

OBL1: Obliq 1: Generates a cell-based pattern is anywhere from 2 to 7 steps long, repeated out to seq length and evolved; affects Pitch, Gate, Velocity, and Step Length.

OBL2: Obliq 2: Generates more radical sequences than **OBL1**.

RND1: Randomize Pitch and Gate.

RND2: Randomize Pitch, Gate, Velocity.

RND3: Randomize Pitch, Gate, Velocity, Step Length, and Ratchet.

ECLG: Euclidean Gate: Applies a Euclidean pattern to just gate values.

TEK1, TEK2: Tekno: Random patterns using a minimal set of pitches. TEK2 adds some tied notes. Use Density to control the number of notes.

BM1, BM2: Broken Mirror: Patterns based on cells of 2, 4, or 8 pitches, but with some note order changes to break the symmetry of the pattern. Use Density to control the number of notes.

TIP: You can push generated sequences in very different directions by pre-adjusting unaffected parameters, such as **Glide** and **Rate**. For continuous variation, use lots of **Chance Ops**. To widen the pitch range, set a **Sub Sequencer** to modulate semitones or octaves.

Sub Sequencers



In addition to the main sequence, each Part on the Vector Sequencer has two simpler CV-only sub-sequencers for internal modulation. These sequencers are limited to a maximum length of eight steps and a range of speeds based on standard musical divisions. They can be used to modify the transposition, rate, length, and other parameters of the main sequence. You can also assign any of the **Velocity** outputs on the Vector to one of the modulation sequencers for direct output of the sub-sequencer's CV values.

There are five pages in the **Mod** section, two for each sub-sequencer and one for setting up external modulation. Turn encoder 9 to move between them. The first page for a sub-sequencer has settings for length, direction, rate, and target parameter, while the second has settings for the value of each step.

To set up modulation of a parameter:

MOD- SUBSEQ1				PART1		A01		PROJ002	
LEN	DIR	RATE	PARAM	MIN	MAX	ENABL			
8	FWD	1/4	NONE	-50	50	OFF			

1. Set the length and rate of the sub-sequence.
2. Select the parameter you want to modulate. The **Min & Max** values will automatically update to match the range of the target parameter. Also, the initial values of the sub-sequence will be set to the current value of that parameter.

3. Enable the parameter modulation by turning encoder 8 to ON.
4. Turn encoder 9 to page over to the steps for the sub-sequence so you can edit them. There are three rows of numbers here. Step numbers are on the top row. The bottom row has the sub-sequence actual values, which will be offset amounts. The values in the middle row, which are gray, will show the calculated, modulated value of the target parameter.

MOD- SUBSEQ1				PART1		A01		PROJ002	
1	2	3	4	5	6	7	8		
0	0	0	0	0	0	0	0		
0	0	0	0	0	0	0	0		

Parameters targeted by sub-sequence modulation will display a superscript **S1** or **S2** to indicate their values are modulated by a sub-sequencer.

TIP: To directly route the output of a sub-sequencer to a velocity output, navigate over to the **Route** page in **Globals**, and use encoder 9 to move to the page with the velocity output you want to assign. Turn the encoder to select the Part, then hold **Shift** and turn the encoder again to select **S1** to output the first sub-sequence or **S2** for the second sub-sequence.

CV Modulation



The Vector Sequencer has two CV inputs (**Mod1** and **Mod2**) that can be used to control a variety of parameters, such as gate time, velocity scaling, or the probability for chance operations. The input voltage range is -5 to +5V. Each of the eight parts of the Vector has two modulation busses that can listen to either or both of the external modulation inputs.

To navigate to the external modulation page, press Mod, then turn encoder 9 to navigate over to the fifth modulation page.

MOD- EXT CV IN			1:1	PART1 A01			+5	PR0J002
SRC	TARG	AMNT		SRC	TARG	AMNT		
NONE	GATE	100		NONE	GATE	100		

To set up external modulation for a Part:

1. Select a mod source (**EXT1** for Mod1, **EXT2** for Mod2, or **OFF**).
2. Select a target parameter.
3. Set the amount of modulation, which ranges from -100% to 100%. For most parameters, 50% is a good starting point. At 100% the amount of modulation will be enough to range from the smallest value for the parameter to the largest.

Modulation Targets:

PIT2: Pitch mod, 2 octave range.
PIT5: Pitch mod, 5 octave range (approx 1V/oct).
POCT: Pitch mod, octaves only.
P712: Pitch mod, fifths and octaves only.
VELN: Velocity mod, narrow range.
VELW: Velocity mod, wide range.
GATE: Gate time.
STLN: Step Length.
STRP: Step Repeat.
RCHT: Number of ratchets.
PROB: The probability amount for **Chance Ops**.
STRT: Start step.
LEN: Sequence length.
DIR: Sequence direction.
RATE: Sequence rate.

For all targets, modulation is calculated at the start of each step. The current value for the modulated param is read and then adjusted up or down based on the input voltage and modulation amount. Parameters with CV modulation will display a superscript **X1** or **X2**.

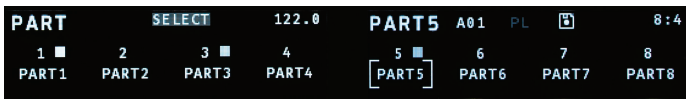
TIP: For best results, it helps to know what the voltage range of your modulation source is. Attenuator modules (or cables) and level shifters (for bipolar voltages) can be handy for getting a CV source into the -5 to +5V range of the Vector's modulation inputs.

TIP: Using a VCA controlled by a pitch or velocity CV from the Vector can be both a handy and interesting way to control the voltage level of a CV.

Parts



The Vector sequencer has eight Parts, each of which has a main note-based sequencer and two sub-sequencers for modulation. All of the sequencers for all Parts start and stop with the **Run** button (or external sync) and they all share a common tempo but are otherwise independent. They can have independent run rates, lengths, directions, etc. Each Part also has its own set of Presets and Playlist settings. Parts 5-8 can be configured as polyphonic Chord or Drum sequences. For an overview of how all this fits together, look at the diagram on the back cover of this manual.

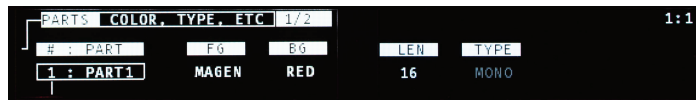


Use the **Part** button to view the names and activity for all eight Parts on the Vector at once. On this page, the white keys of the mini-keyboard can be used to **SELECT** which Part you are currently editing. The **PART** page can also run in **MUTE** or **SOLO** sub-modes. Use the gray buttons between steps 4-7 to select which of the three modes to use.

TIP: From any sequence edit page, hold down the **Part** button and press one of the white mini-keyboard keys to directly jump to the other Part.

PART SETUP

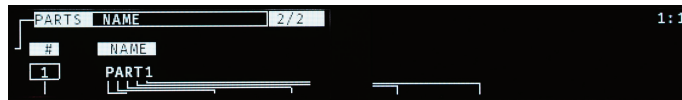
To edit the name, colors, maximum length, or type of a Part, look in **GLOBALS**: Press **Global** and use **Next/Prev** to find the second page, titled **PARTS**. There are two sub-pages here, use encoder 9 to move between them.



On the first **PARTS** page, use encoder 1 to select the Part you want to modify. Use 3 and 4 to set the LED colors for the foreground (current step) and background (other steps).

The main sequence for each Part has a maximum length of 16, 32, or 64 steps, but longer sequences mean fewer Presets. To change the max length, use encoder 5. Parts 5-8, can also be set to chord or drum types (encoder 6). When you change the max length or type of a Part, you will be prompted to use **Shift+Clear** to initiate the change, and then the **Next** button to confirm. Warning: this process will erase ALL existing Presets for that Part!

To rename a Part, use encoder 9 to move to the second **PARTS** sub-section in **GLOBAL**. On this page, use encoder 1 to select the Part you want to rename, and encoders 2-6 to edit the name.



PARTS & ROUTING

The routing options for CV and MIDI outputs are very flexible. For details on setting up Part assignments for outputs, see **Routing** on page 9.

Chord & Drum Parts



In addition to the default monophonic sequences, Parts 5-8 can be formatted as four voice Chord or Drum sequencers. This can be done on the 2nd **GLOBALS** page: Press **Global**, then **Next**, the page title will be **PARTS**. Turn encoder **1** until you are viewing Part 5 or higher, turn encoder **6** until it says **CHORD** or **DRUM**, then hold **Shift** and press **Clear** to initiate the change. Press **Next** to confirm. All data that was in that part will be erased and it will be reformatted into the new sequence type.

CHORD PARTS

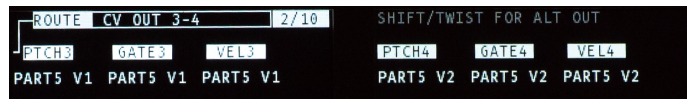
All the edit pages for a Chord Part are just like a Mono Part, except for the **PITCH** page. Here, Chord Parts display a base note for each step and either a single superscript indicator for the type of built-in chord or three semitone offsets for a custom chord. A small, vertical gray cursor always appears to the left of one of these editable values. Use encoder **9** to move the cursor, which sets the value to be changed with any of the eight main encoders. Push encoder **9** to switch to selection mode to edit all steps at once.

The base note is always the lowest note of the built-in chords. By default, the chord type is 'unison', which means one note only. To edit the chord type, turn encoder **9** to move the cursor to the right of the base note, and turn an encoder to select one of the built-in chords. These chords progress through all dyads (two note chords) up to an octave, represented by semitone values from **1** to **12**, followed by triads (**M**: major, **m**: minor, **A**: augmented, **D**: diminished, **S2**: sus2, **S4**: sus4), then seventh chords (**M7** : maj 7th, **D7**: dominant 7th, **m7**: min 7th, **h7**: half-diminished, **d7**: fully diminished).

If you want to make a custom chord, which allows much greater flexibility in both note selection and pitch range, hold the **Edit** button and push the encoder for any sequence step, or push encoder **9** to convert all chords to custom. Repeat the process to convert back to the built-in chord selection. In a custom chord you can edit up to three semitone offset values for each chord. Offsets greater than an octave (12 semitones) are indicated with small arrows to the right of the semitone value. The maximum offset is 60 semitones. Offsets can also be negative.



To set up CV outputs for a Chord Part, navigate to the 3rd page of **GLOBALS**: Press the **Global** button, then **Next** twice, to the page titled **ROUTE**. Turn encoder **9** to get to the appropriate sub-page, such as **CV OUT 3-4** or **CV OUT 5-6**. Turn the encoder for the desired output to pick a Part. Then hold **Shift** and turn the encoder again to pick the Voice. The base note for the chord is Voice 1, and, depending on the chord type, up to three more Voices can be generated.



To set up a MIDI output for a Chord Part, use encoder **9** to scroll to one of the MIDI outputs on the **ROUTING** page, then turn any encoder to select the Part.

Chord & Drum Parts



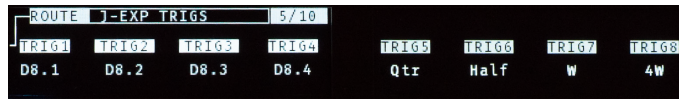
DRUM PARTS

As with Chords, Drum Parts have four voices (a.k.a. 'lanes'), but no pitch value; instead, each Voice has a velocity level, which you can edit on the **PITCH** page (re-titled **DRUM** on the display). The level values are indicated by four columns on each sequence step, one per voice. Below the value columns is a horizontal cursor, which indicates the current Voice to edit. It works similarly to a Chord Part: Turn encoder 9 to move the cursor and push encoder 9 to switch to selection mode. You can also use the **MUTE** sub-mode to edit the pattern using the white keys on the mini-keyboard.



There are several ways to set up CV outputs for a Drum Part. You can use four Gate and Velocity outputs on the Jack Expander module, use four trigger outputs only, or even combine four trigger outputs with four velocity CVs. Setting up a Gate or Velocity output for a Drum Part is the same as for a Chord Part, except there is no need to route for pitch.

To set up a Trigger out to work with a Drum Part, use encoder 9 to scroll to the **ROUTING** sub-page for **RUN**, **CLOCK**, **RESET**, or **J-EXP TRIGS**. Hold **Shift** while turning the encoder for the trigger you want to map, and turn until you see **D5.1** (about four clicks depending on where the trigger was set initially). The 'D' is for drums, '5' is for Part 5, and '1' is the first Drum Voice. From there, release the **Shift** key and turn the encoder to select the Drum Part and Voice you want the trigger to output. Then push the encoder to 'latch' the mapping change.



To set up a MIDI output for a Drum Part, use encoder 9 to scroll to one of the MIDI outputs on the **ROUTING** page, then turn any encoder to select the desired Drum Part.

To set which MIDI notes are output for each Drum Voice, Go to the **SEQ CTL** page for the Drum Part. Then turn encoder 9 until you get to the **DRUM MAP** page. Turn encoder 1 to select the Drum Voice, then turn encoder 2 to set the note, and turn encoders 3 and 4 to choose a two-letter name.

Drum Parts also come with their own set of generator algorithms, as listed below. Cell-based algorithms use short, randomly generated patterns, typically 2-8 steps long, repeated out to the full length of the sequence, and then evolved in various ways.

CEL1, CEL2, CEL3: Cell-based algorithms with increasing levels of pattern density and complexity.

MAL1, MAL2: Two dual-cell algorithms.

ECL1: Euclidean with random 'k' amount per part, up to 16.

ECL2: Euclidean with less density on voices 1 and 2, plus velocity randomization.

HYB: Hybrid, voices 1 and 2 use a cell-based algorithm, voices 3 and 4 are euclidean.

SPRS: Sparse: A cell-based algorithm tuned for longer patterns.

RND1, RND2, RND3: Increasing amount of randomization.

Projects



Global

PROJECTS

The Vector stores Projects on a microSD card located on the back of the module. By default, Projects are auto-loaded when the Vector is powered on, and auto-saved each time the transport is stopped. To adjust those settings, see **Globals**. There is an icon for the SD card near the top-center of the second OLED. When a Project is changed, the icon will have a dot in its center. For a saved Project, the icon will show a solid rectangle.

To manually save a Project, hold down the **Shift** button and press **Part**. Use encoders **1-7** to edit the Project name, then push **Next** to save. If you change the name of a Project to the name of another existing Project, you will see an overwrite warning.



Each Project gets its own folder on the SD card. The Vector keeps the most recently saved version of a Project, along with several backups. Projects that are saved manually end in the extension **.VSM**, autosaves use **.VSA**.

To load a Project, hold **Shift** and press **Global**. Use encoder **9** to select the project and **Next** to load it. To make a new Project, use **Shift+Global** and pick 'New Project'. A name for the new Project will be automatically generated.



DISK MODE

Running the Vector in disk mode allows you to mount the contents of the SD card onto your computer, which makes it very quick and easy to back up copies of your Projects and calibration files, and for loading new firmware.

To run the Vector in disk mode, connect it to your computer (Mac, PC, Linux) with a USB A - B 'Printer' cable, and hold down the **Shift** button while powering up. The Vector will start with large 'Disk Mode' titles on both OLED screens. After a few seconds the Vector's SD card will mount onto your computer. Look in the **F12_VS** folder for the PROJECT folder, PREFS and calibration files.

For information on firmware updates, visit <https://vector.five12.com>.

Calibration Files

The Vector sequencer comes with one or two data files that store calibration data for the Pitch CVs. The **VSCAL.DAT** is for the Vector, **EXCAL.DAT** is for the expander. If you purchased your Vector and Expander together, the two files may be pre-loaded. If you purchased an Expander separately, you can download the file from <http://vector.five12.com>.

About SD Cards

Your Vector Sequencer comes with a high quality SD card that has been tested to work both speedily and reliably. SD cards from SanDisk and Transcend are recommended, in sizes from 8GB to 32GB.

Presets, Playlists & Scenes



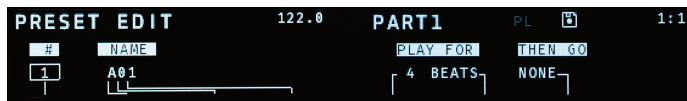
PRESETS



Each Part on the Vector MkII supports up to 44 Presets, depending on the maximum length of the sequence. Press the **Preset** button to see the Presets for the current Part in a grid. Empty Presets are shown as "..", non-empty Presets are shown by name. To select a new Preset on the current row, use the white mini-keyboard buttons. To change rows, use encoder 9.

Use **Shift+Preset** to duplicate the current Preset into an empty Preset 'slot'. Use **Shift+Clear** to empty out a Preset. Preset changes are quantized to bars by default. This setting, called **Preset Sync** can be changed on the fifth **Seq Ctl** page to either **BEAT** (beats) or **PTN** (patterns).

PLAYLISTS



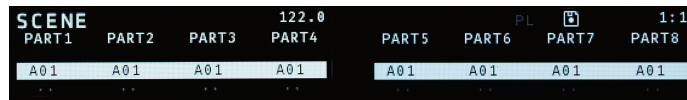
To edit the name and Playlist settings for a Preset, push **Preset**, then **Prev** or **Edit**. Alternatively, use **Prev/Next** to move between Preset Edit, Preset, and Scene pages.

The Playlist is simple in concept, but very flexible. Each Preset can:

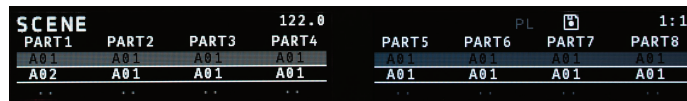
- Play forever (by default).
- Play for x beats/bars then go to a later Preset.
- Play for x beats/bars then go to an earlier Preset and repeat y times.

Use encoders 4-8 to edit the Playlist settings for a Preset. The master on/off switch for all Playlists is on the first **GLOBALS** page.

SCENES



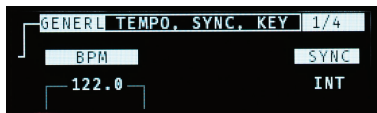
The Scene page displays the current Presets for all eight Parts. You can directly set the Preset for a Part in the current Scene using the eight main encoders. Use encoder 9 to move between Scenes. To trigger a new Scene, use the **Cue** button or push encoder 9. Scene changes are always quantized to a bar. Dialing a Preset all the way left will generate a rest symbol indicating no Preset will be played for that Part within this Scene.



External Sync



With a high resolution internal clock and flexible options for generating CV and MIDI sync, the Vector makes an excellent primary sync source for your system. It can also sync to a variety of sources. For external sync, the best option is to use MIDI or a CV source that can generate a RUN Signal and a 24 PPQN (parts per quarter note) clock, such as a Pamela's New Workout. The Vector can also sync to a 16th note clock with a Reset trigger, but that limit's its flexibility with regard to sequence lengths. For all sync sources, the Vector will internally up-rez the signal to 480 PPQN for accurate rendering of features like Pitch Glide, Groove, and Ratcheting. Sync settings are on the first page of **GLOBALS**.



Run & Clock at 24 PPQN:

1. Connect a RUN CV to the Run Jack on the Vector, and a 24 PPQN Clock to the Clock jack.
2. Select 'RC24' for sync via the Run and Clock jacks, then start the transport from the sync source.

MIDI Beat Clock:

1. Connect a MIDI Clock source to the Vector via the **USB A** or **B** jacks on the front panel, or use the mini-jack connector on the MkII Expander with an adapter.
2. In **Globals**, page 1, select 'USB-A' for sync via the USB 'to device' jack, 'USB-B' for sync via the USB 'to host' jack, or 'jxMIDI' for sync via the MIDI Input on the Jack Expander.
3. Start playback from your MIDI Clock source.

External Clock:

1. Connect a clock pulse (gate or trigger) running at either 1 or 4 pulse(s) per beat (PPQN) to the **Clock** jack on the Vector. Optionally connect a reset pulse to the **Reset** jack.
2. Select 'CR/1' (for a 1 PPQN incoming clock) or 'CR/4' (for a 4 PPQN clock) to use the **Reset** input as a global reset for all parts, or use 'Cr/1' or 'Cr/4' for optional reset. To set a part to reset in Cr/1 or Cr/4 sync modes, on the **Control** page for that part, pick 'EXT' for **Reset**.
3. Start and stop the Vector using the **Run** button.

TIP: For primary sync, the Vector will track smooth tempo changes well, but for random or 'patterned' triggering of sequences, see page 29,

External Resets & Triggers.

The Dashboard



On the **Seq Ctl** page for any part, you can edit eight parameters at a time for a single Part. The Dashboard is a series of pages that let you edit one parameter for all eight Parts at once. The Dashboard provides an efficient way to modify parameters on the fly during recording or performances.

To get to the Dashboard, press **Part** to go to the **PART** page, and then press **Next**. The top-left of the first OLED will list the parameter being edited (**START** step), the top-left of the second OLED will be **D-BRD**, for Dashboard. Each of the values for the eight encoders will list the Part name and the current value for the parameter.

To change the parameter being edited, you can turn encoder **9**, or press any of the white keys on the mini-keyboard. The white keys will page through the parameters in the same order that they appear on the **Seq Ctl** page: **START**, **LEN**, **DIR**, etc.

In addition to the eight parameters from **Seq Ctl**, there are three additional parameters only available in the Dashboard. You can reach them using encoder **9**, or by pressing **Next**. These parameters are:

GATE SCL: Scale all gate values.

VEL SCL: Scale all velocity values.

CHAN SCL: Scale the probability for all chance operations.

Keep in mind: These scale values affect every step for that Part.

TIP: Launchpad integration allows for speedy navigation between Dashboard pages using the bottom row of the Session screen.

START	SELECT			1:1	D- BRD	A01	PROJ002
PART1	PART2	PART3	PART4	PART5	PART6	PART7	PART8
1	1	1	1	1	1	1	1

RATE	SELECT			1:1	D- BRD	A01	PROJ002
PART1	PART2	PART3	PART4	PART5	PART6	PART7	PART8
/16	1/8	16T	/16	.16	/64	.8TH	/16

GATE SCL	SCL	SELECT		1:1	D- BRD	A01	PROJ002
PART1	PART2	PART3	PART4	PART5	PART6	PART7	PART8
80	0	0	30	0	0	0	0

Fills



On the Vector Sequencer, a Fill is a temporary variation on a sequence. Although fills are typically associated just with Drum parts, on the Vector, they can be set so that they work for pitched parts as well.

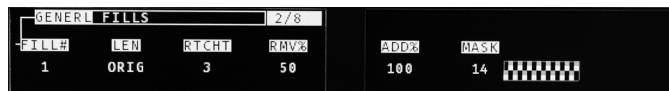
Fills can be customized. They can be set up to be subtle, like a live drummer adding a few extra hits to the end of a 4 bar sequence, but they can also be fast and intense.

Triggering a fill is easy: Hold **CUE** and press any white key on the mini-keyboard. Each white key maps to one of eight Fill Presets stored in Global Prefs. When you release the keys, Fill mode will stop. If you hold **SHIFT** while releasing **CUE**, the fill will latch and stay on. These key commands work on any sequence edit page other than **SEQ CTL**, as well as the **GLOBALS** edit page for Fills.

Fill mode is global: It will affect all Parts for which Fills are enabled. To enable Fills for a Part, navigate to **SEQ CTL** page 2, and turn on Fill Enable. Since Fills are disabled by default for all Parts, you have to enable Fills on at least one Part to hear them.

To modify the Fill presets, look at page 2 of **GLOBALS**. Here you can customize the default Fill presets. Use encoder 1 to select the Fill to edit, then modify the settings as you like. Each Fill preset includes some parameters for modifying the current sequences, as well as a mask for determining which steps in the sequence can be filled with new hits.

Fill Parameters:



FILL#: Which Fill Preset to edit. There are eight in total, one for each white key on the mini-keyboard.

LEN: Length: sets a temporary override for the sequence length.

RTCHT: Ratchet turns on ratcheting for all steps.

RMV%: Sets the chance a note will be removed. This only applies to notes already in a sequence.

ADD%: Sets the percentage chance that a note will be added. Where notes can be added is determined by the Mask:

MASK: Sets a mask that will be used for a fill. The mask is a 4-track, 16-step set of on/off toggles – you can think of it as the 'bones' of a 16 step drum pattern. Mask patterns interact directly with **ADD%**: If a pattern is set, only notes that match the pattern will be added, and only via the probability set with **ADD%**. If **ADD%** is 50, half of the possible notes from the pattern will be added to the existing pattern. This allows you to use the Mask both to direct where changes occur – which steps, and, for drum patterns, which lanes. If **ADD%** is 100, all of the notes in the pattern will be added.

Since **RMV%** only applies to notes already in the sequence, you can use **RMV%** and **ADD%** to balance between the original pattern and added fill notes. If **ADD%** is 100 and **RMV%** is 100, then the Fill Pattern will completely replace the existing pattern.

Launchpad: Session



Connecting a Launchpad

If you connect a recent-model Novation® Launchpad® to the Vector, you can use it as a preprogrammed control surface. Supported models include the Launchpad X, Mini Mk3, and Pro Mk3. For all models, be sure to first update the firmware on the Launchpad Connect website. Then, connect the Launchpad via USB to the Vector, and after a few seconds, it will 'sync up' and display the Session page.

The diagrams on these pages directly map to the buttons on the Launchpad Mini Mk3 and X, though the names printed on those buttons differ slightly. On the Pro Mk3, the arrow buttons are moved over a bit, so the Session button starts in the third column instead of the fifth.

Session Page

The session page provides top-level control of the Vector project. Use the top row to select a Part, the second row to enable per-Part REC modes, and the third row to mute or unmute them. If you have any Parts formatted as Chord or Drum parts, you can use buttons on rows 4 and 5 to mute individual voices for those Parts.

On rows 6 and 7, you can select a Scene. The current Scene is yellow, the selected/next Scene is red, and the rest are purple. If you have not created any Scenes, you'll just see one yellow box. Row 8 gives you direct navigation to the first eight pages of the Dashboard.

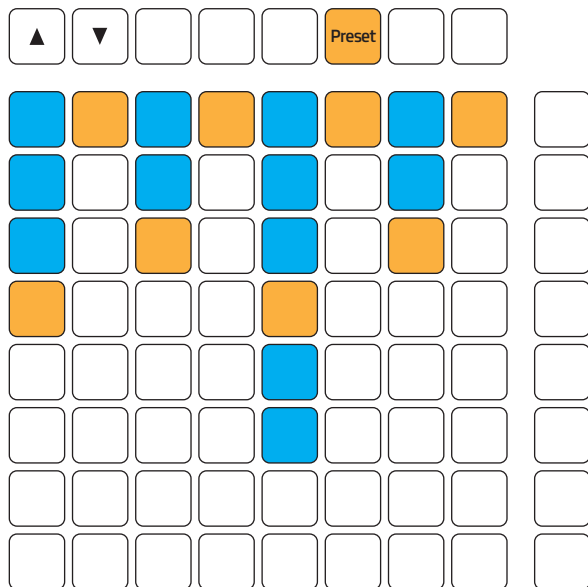
Session Page

				Session	Preset	Keys	Edit	
Part Selection								Run
Part Rec Enable								Master Rec
Part Mutes	Active	Muted						
Per-Voice Mutes for Chord and Drum Parts	5.1	5.2	5.3	5.4	6.1	6.2	6.3	6.4
	7.1	7.2	7.3	7.4	8.1	8.2	8.3	8.4
Scene Selection	1	2	3	4	5	6	7	8
	9	10	11	12	13	14	15	16
Dashboard Navigation	Start	Length	Dir	Reset	Rate	Mode	Oct	Trans

Launchpad: Presets & Keys

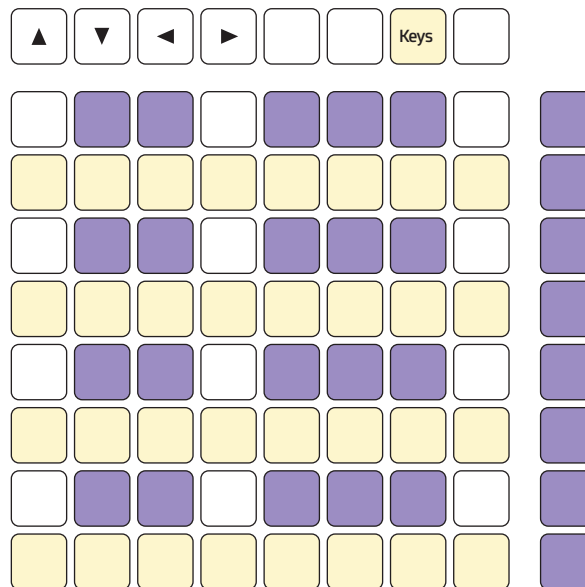


Preset Page



The Preset page is arranged in columns and lets you select Presets for each Part. Active Presets are amber, while all others that exist are blue. Use the Up and Down buttons to scroll to presets other than the first eight. Use buttons in the rightmost column to select all Presets in that row.

Keys Page

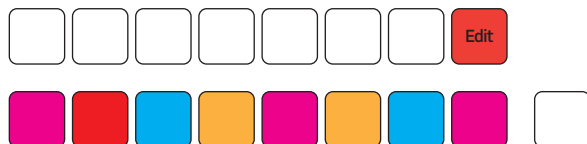


The Keys page offers two keyboard layouts for use with the Vector's REC modes: a 4 octave traditional keyboard, and a fretboard-style layout. Use the left and right arrow buttons to switch between them. The buttons to the right of the main grid set velocity. Use the up and down buttons to transpose the whole keyboard.

Launchpad: Edit



Nav Page



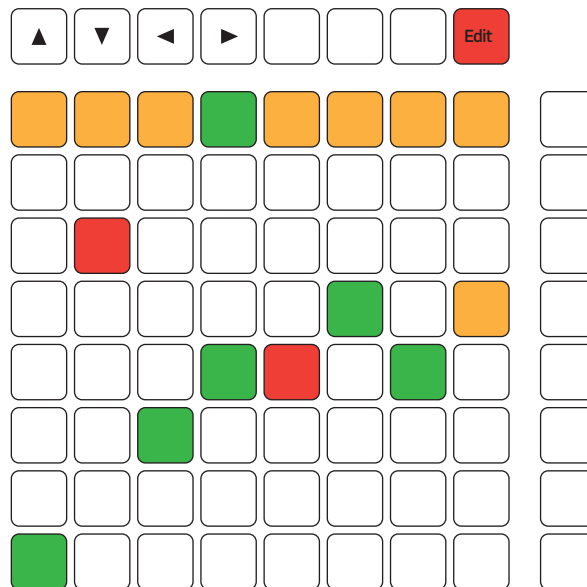
The Edit pages allow you to select and edit a Part independently of the Vector's main UI. For instance, you could be editing a monophonic pitched part on the Vector, while editing a Drum part on the Launchpad.

The first of the Edit pages is for navigation: It displays one row of buttons, colored to match the Parts on the Vector. Push one of them to edit that Part. To return to the Nav page at any time, push the Edit button again.

Editing Mono Parts

For editing pitched parts, the top row of the grid is used for selecting the octave within which you wish to enter notes, while the lower seven rows are used for entering pitches. Each column is one step, and each row is one pitch value, starting with the unison (scale degree I) pitch on the bottom row, then proceeding through scale degrees as you go up: II, III, IV, V, VI, VII. To enter a sharped or flatted note, hold the pad for that note, then press the pad above or below it. Pitches that are in the current octave are shown in green. As you shift the octave around, pitches below the current octave will be red, pitches above will be amber.

Edit Mono/Chord Page



In addition to the buttons on Row 1, you can use the up and down buttons to change octave. Use the left and right arrow buttons to scroll through longer sequences.

Launchpad: Edit



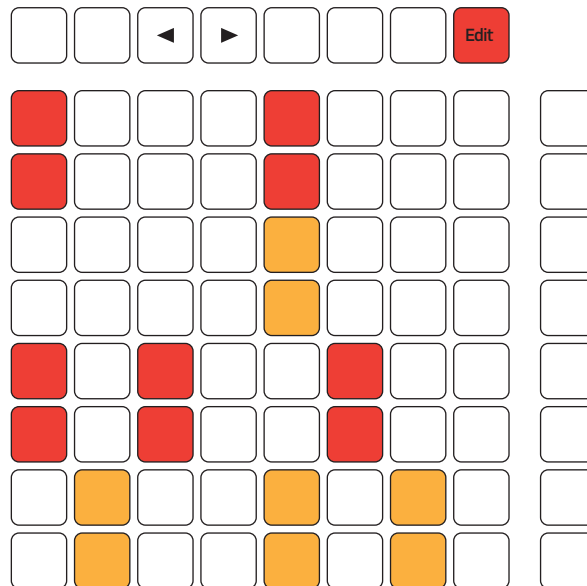
Editing Chord Parts

Chord Parts are edited one voice at a time. Use the bottom four buttons in the rightmost column to select the voice. The current voice will be blue, the others will be light pink. Notes that belong to the current voice will show up in the same colors as for a Mono Part, while the other notes will be light pink. In a Chord Part, the first voice must always be the lowest. If you try to program a note in voices 2-4 below the first one, it will be placed on octave higher.

Editing Drum Parts

The edit page for Drum Parts allows you to edit 16 steps across four voices. Each voice is allocated two rows with alternating colors. Voices 1 and 3 are red, 2 and 4 are amber. Use the left and right arrow keys to page through sequences longer than 16 steps. Drum sequences progress left to right across the first row per voice, and then move to the second row before moving to the adjacent page for Patterns longer than 16 Steps.

Drum Edit Page



Tips & Tricks



Shift + Prev : Reset All

Hold **Shift + Prev** and the Vector will reset all internal sequences (including sub-sequences) to step 1 when crossing the next barline.

Copy & Paste

You can copy a preset from one 'slot' to another: Hold **Edit** and press **Select** to copy the Preset. Then, move to the other Preset using one of the white keys on the mini-keyboard. Hold **Edit** and press **Skip** to paste the Preset. You can also copy and paste Presets between Parts, as long as the destination Part has the same sequence type (**MONO**, **CHORD**, **DRUM**) and size (**16**, **32**, **64**) as the source Part.

Use **Edit + Skip** to insert a Preset. This combination will duplicate the current Preset to the next preset slot, while moving all the following Presets out of the way.

Those same key combinations also work for Scenes: Use **Edit + Select** to copy the currently selected Scene, then **Edit + Skip** to paste it to a new location. You can also use **Edit + Skip** to insert a blank Scene.

Shift+Twist

Holding the **Shift** key while turning an encoder will usually allow you to jump quickly around the range of values available. For pitch values, it increases or decreases the pitch by one octave. Gate and velocity jump between low, medium, and high values. When naming Parts and Projects, **Shift+Twist** will jump between vowels, the number 0, the

symbol +, and a space character. **Shift+Twist** is especially helpful for assigning the output of trigger jacks, which have a very wide range of parameters.

Warm Reboot

Press and hold Encoder **9** for five seconds to restart the Vector. This is very handy for getting into and out of disk mode without having to power cycle your entire system.

Disk Mode

Hold **Shift** while starting up and the Vector will run in **Disk Mode**. Then connect the Vector to a computer via USB to access the contents of the SD card without having to remove the Vector from your case.

Presets for Skip, Mute, Select

This is a very esoteric trick, but one that is great for live performance, once you are comfortable with the key combinations. For each Part, you can store a set of steps as muted, skipped, or selected, then recall them at will. Start in any 'step edit' mode (Pitch, Gate, etc) with some steps skipped, muted, or selected. Use **Shift + Cue + (Skip/Mute/Select)** to save the preset, then **Cue + (Skip/Mute/Select)** to recall it. You can also use **Edit + (Skip/Mute/Select)** to 'invert' the currently skipped / muted / selected steps.

Tips & Tricks



Follow On-The-Fly

Hold **Cue** and push **Encoder 9** to turn Follow mode on and off. When follow is active, the Vector display will follow the current step of a sequence as it plays.

External Resets & Triggers

The **Reset** jack and triggers **T1 - T3** on the Jack Expander MkII can be used to reset individual Parts. First, on the **ROUTING** page in **GLOBALS**, set the mode for the jack to be **EXT**. Then, on the **Seq Ctl** page for the Part, set **Reset** to **EXT** (for the Reset jack) or **T1 - T3** for jacks on the Expander.

The **T1 - T3** triggers on the Jack Expander MkII can be used to manually step a sequence from an external source. On the MkI Expander, the first 6 triggers can be used. Set the mode for the trigger to **EXT**, then on the **Seq Ctl** page for a Part, set the **Rate Mode** to **T1 - T3**. The Vector will use the **Rate** setting to estimate gate lengths. On the MkI Expander, when using **RC24**, **CR/1** or **Cr/1** sync modes, triggers 5 and 6 on the Expander can only be used as outputs.

Firmware Updates

To find the latest firmware updates, visit <https://vector.five12.com>.

- Download and unzip the Vector firmware file.
- Press and hold the Shift button while powering up the Vector to enter USB Disk mode.
- Use a USB 'A to B' cable to connect the Vector to your computer. After a few seconds, the SD Card for the Vector will show up as a new disk.
- Unzip the firmware archive. On a Mac, the Finder may do that automatically. Do not double-click on VECTOR2.BIN, which the Finder will try to decompress into something not useful.
- Make sure the filename is VECTOR2.BIN, and copy it to the root directory of Vector's SD Card – Delete or move any previous VECTOR2.BIN firmware files. For MkI Vectors, the filename must be VECTOR.BIN.
- Now is also a good time to backup your Vector's PROJECT directory.
- Unmount/Eject the Vector's SD Card from your computer, and power off your eurorack system.
- Hold down the **Rec** button on the Vector while powering up your system.
- Press **Next** to load the new Firmware, which takes about 20 seconds.
- Verify the Firmware is the correct version in **Globals** -- first page, second OLED, top-left corner.

Shortcuts



Modifier	+	Button	=	Action	Seq Edit	Seq Ctl	Presets / Playlists	Globals
Shift		Next		Help	Y	Y	Y	Y
Shift		Prev		Reset All (on next downbeat)	Y	Y	Y	Y
Shift		Global		Load Project	Y	Y	Y	Y
Shift		Part		Save Project	Y	Y	Y	Y
Shift		Preset		Dup Preset	Y	Y	Y	Y
Shift		Edit Button *1		Normalize Values	Y			
Shift		White Key *2		Sequence Ops (pg 13)	Y		Y	Y
Cue		Prev		Undo Edits (for current preset)	Y	Y	Y	
Cue		Next		Save Edits	Y	Y	Y	
Cue		Encoder 9		Follow Mode on / off	Y			
Cue		White Key		Fill Mode (pg 23)	Y	*3	Y	Y
Edit		Skip		Paste				Y
Edit		Mute		Insert				Y
Edit		Select		Select				Y
Edit		White Key		Length Override	Y	*3		
		Encoder 9		Push and hold 5 seconds to reboot.				
		Rec		Push and hold on startup for Firmware Update Mode.				
		Shift		Push and hold on startup for Disk Mode.				

*1 : Edit buttons: Pitch, Gate, etc.

*2: White Key: any white key on the mini-keyboard below the encoders.

*3: Disable the mini-keyboard in Seq Ctl pg 2 to enable Cue and Edit shortcuts in Seq Ctl Pages.

Vector Sequencer Project - All projects stored on micro-SD Card

Part - Eight parts per project

Preset - Up to 44 presets per part depending on sequence length

Note Sequence - 16, 32, or 64 steps long

Sub-Seq 1

Sub-Seq 2

Ext Mod

**Preset
Playlist**

Scenes

Globals - Tempo, Key, Scale, Sync, Output Routings, etc.