Elixir cheat sheet

drum machine firmware for the M-VAVE FM-1 · 1 of 6

Black keys numbered 1–11 and white keys 1–16, left to right

A BEAT IN A MINUTE

HOME grid · black **1** (D1) · white 1 5 9 13 · black **4** (SN) · white 5 13 · black **6** (CH) · white 1 3 5 … 15 · **PLAY**. Turn **PRESETS** for kits, **OCT+** loads one.

KEYS AND KNOBS

White 1–16	Steps of the bar on screen · patterns (pattern page) · rolls and effects (PERF)
Black 1–7	Track: D1 D2 D3 SN CY CH OH (CH and OH share a voice)
Black 8–11	Bar 1–4 · banks on pattern, song, save and load pages · repeat length in PERF
OCT–	**SHIFT** (hold): the screen shows what SHIFT (OCT–) + each key does
OCT+	**COPY** (hold) · OK in dialogs · casts a spell
ALGORITHM	Select the track
SELECT	The page; in lists, the row
PRESETS	Kit browser; on a sound page, the sound browser
KNOB 1–4	The four cards at the bottom of the screen
MASTER	Output volume

BUTTONS (PRESS AGAIN FOR THE NEXT PAGE)

HOME	Grid → patterns → song
EDIT	Model → oscillator → FM → transient
ENV	Amp EG → gate → mod EG / velocity
SCL	Filter → shape → insert FX
LFO	LFO 1 → LFO 2 → random per hit → cross mod / choke
GLO	Mixer → config
FX	FX bus → reverb (SELECT for the pages)
SEQ	Track pages (track, generator, action, melody, scale, groove, bounce) → step edit
ARP	PERF: PERFORM → SPELLS → WANDER → GLOBAL MOD
SAVE	Save → load
PLAY · REC	Start / stop · record on / off

SHIFT (OCT–) + …

white 1–7	Play that track's voice
white 8 · 9	KIT: load a kit · MORPH: load the morph target
white 10 · 16	SONG page · PATTERN page
white 11 · 12	PROJECT: load a project · CONFIG
white 13	RELOAD the kit and pattern as saved
white 14	LAST: tap the track's last step (again: all tracks)
white 15	FX
track key	Mute / unmute
bar key	Track length 16 / 32 / 48 / 64
OCT+	**CLEAR**: SELECT a choice, SHIFT (OCT–) + OCT+ again to confirm
GLO	Solo / unsolo the selected track
HOME	PERF RESET: every performance effect off
EDIT	KEYS: the keys play the track's voice
SEQ	The links
PLAY	Play the song from its start
REC · SAVE	Record options · load page

COPY (OCT+) + …

bar key	Copy the shown bar there (on the grid: every track)
track, track	Copy a track
pattern, pattern	Copy a pattern (pattern page)
held + knob	Control All (sound page): the knob on every track; let go, then OCT+ reverts, OCT– keeps

LOCKS

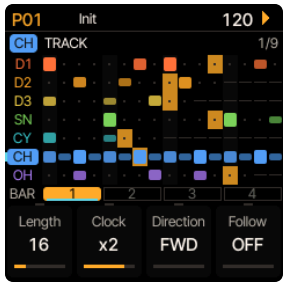
On a sound page, **hold a step key and turn a knob**: that value for that step only. Turning knobs while recording writes locks too.

THE GRID

Bar height: velocity · outline: chance under 100% · notch: flam · tick below: shift · dot top right: lock · dot top left: condition · bar below: ratchet. Knobs: tempo (down to MIDI: follow clock), shuffle, length, volume.

STEP EDIT (SEQ TWICE)

Tap a white key to select a step (again: on / off). SELECT for the pages.



Page	K1	K2	K3	K4
STEP	Note	Length	Velocity	–
TRIG	Chance	Condition	Shift	Flam
LOCKS	Lock 1	value	Lock 2	value
RATCHET	Hits	Shape	Rate	Fade

Length: AUTO, 1/32 … 1/2, 3/4 … 64 BARS, INF (a drone), TIE (slides into the next note). Shape: even or BOUNCE.

SOUND PAGES

Each page has two rows of four knobs: the button again (or SELECT) gives the other row. MODEL picks LXR, Rings, Plaits, CLOUD (a granular voice) or RAIN (its grains on tuned bells) (D1–D3; two Rings or Plaits at once, CLOUD and RAIN not counted), or a MICRO type, NOISE or ENSEMBLE (any track). The title flashes CPU OVERLOAD (and what) if the sound breaks up.

SAVING (SAVE · SHIFT (OCT–) + SAVE LOADS)

KIT	64 slots or the library's 128 · OCT+, name, OCT+
PATTERN	32 · a white key saves to that pattern
SONG	64 · OCT+
MORPH	Saves the mixture you hear; loads as the morph target
SOUND	The library's 128: one track's sound
PROJECT	4 · everything
FACTORY	The 85 factory kits (load only)

Naming: K1 position, K2 letter, K3 case; OCT+ saves, OCT– alone goes back.

PATTERNS AND SONGS (HOME)

Pattern page: white key queues a pattern, bar keys pick the bank. Song page: K1 song, K2 row, K3 the row's pattern (END, LOOP), K4 repeats (x1 … x16).

MIDI

TRACK PAGES (SEQ ONCE, SELECT)

Page	K1	K2	K3	K4
TRACK	Length	Clock	Direction	Follow
GENERATOR	Generator	its settings		
ACTION	Action	Grids map X / Y, chaos · Euclid's second pulse		
MELODY 1	Shape	Spread	Bias	Steps
MELODY 2	Deja vu	Loop	Length	Len var
SCALE	Root	Scale	Follow	Base
GROOVE	Groove	Amount	Humanize	Follow
BOUNCE	Bounce	Bnc pitch	–	–

EACH TRACK ON ITS OWN CLOCK

Clock: /4 · /3 · /2 · 2/3 · 3/4 · **1x** · 4/3 · 3/2 · x2 · x3 · x4. A hat at x2 plays 32nds; 3/4 fits 12 steps in a bar. Add a length of its own (1–64) for polymeters.

FWD · REV	1 2 3 4 1 … · 4 3 2 1 4 …
PING	1 2 3 4 3 2 1 2 … (the ends once)
PING2	1 2 3 4 4 3 2 1 1 2 … (the ends twice)
RAND · WALK	Any step · one step either way

GENERATORS

EUCLID	Length, Hits, Rotate; a second pulse on ACTION (OR, XOR, AND, SUB)
MUTATE	Small changes each time round · Freeze stops it
TURING	Shift register: Length, Lock (127 repeats), Density
CELLULAR	Each time round the next row of rule 0–255
GRIDS	The Grids drum map: Part, Density, Accent

All but EUCLID play a live copy; COMMIT (ACTION page, OCT+) writes it into the pattern.

PERF (ARP): WHITE KEYS ACT WHILE HELD

SHIFT (OCT–) + key latches it. Black keys mute. Bar keys: repeat length 1/4 … 1/32. ALGORITHM picks the throw track.

Key	PERFORM	PERFORM 2
1–7	Roll the track	DRILL: random fast ratchets
8	FILL	HLF: half time
9	RPT: repeat	JIT: jitter
10	FRZ: freeze the delay	CUT: random cuts
11	T.RV: throw to reverb	SHT: decays short
12	T.FX: throw to FX bus	PMP: pump off D1
13	FB+: feedback push	RES: comb resonator
14	STP: tape stop	SPC: reverb pad
15	LP~: low-pass sweep	CRS: crush
16	HP~: high-pass sweep	REV: reverse

PERF PAGES (SELECT)

Page	K1	K2	K3	K4
PERFORM	Tempo	Roll rate	Morph	SRate
MORE	DJ filter	Repeat	Shuffle	Tape time
DENSITY	Density	Ghost vel	Build	Vary
STUTTER	Chance	Size	Length	Vary
RUSH	Rush	Top	Filter	Glide
RUSH SETUP	Roll at	Free at	Flam	Pitch
TRANSPOSE	Degrees	When	Keys	–
2: SETUP 1	Drill	Jitter	Cuts	Pump
2: SETUP 2	Comb	Comb fb	Crush	Reverse

Hold a roll key and turn K2 on PERFORM: a sweep from 1/4 to 1/192.

GLOBAL MOD (ARP FOUR TIMES)

LFO 1–3	Dest, Depth, Speed (1/16 … 256 bars), Wave · Mode, Trig, Phase
MACROS	Four knobs, each a parameter between Min and Max (MACRO SETUP)
LINKS	Eight couplings between tracks: When, Target, Effect, Window

DENSITY (PERFORM: DENSITY)

Density	–100% thins the groove, weakest steps first (off-beat 16ths, then 8ths, quiet before loud); +100% raises chances, then adds
Ghost vel	Velocity of the added notes
Build	What + adds: CHANCE, GHOSTS, RATCH (ratchets)
Vary	OFF the same steps go first; up, a new order each time round

Black keys leave a track out. OCT+ commits it into the pattern.

STUTTER (PERFORM: STUTTER)

Chance	Chance of a burst at each Length (0%: only OCT+ and LFOs)
Size	The slice: 1/8 … 1/64, triplets, RANDOM
Length	How long a burst lasts: 1/16 … 1 bar
Vary	OFF, SHRINK, PITCH DN / UP, REVERSE, RANDOM

OCT+ held on the page stutters now. It repeats the sound itself, tails and reverb included.

LINKS (SHIFT (OCT–) + SEQ)

Up to 8 per pattern, read as a sentence: *When D1 hits, CH chance –60%, on the next step.*

When	A track that hits, accents (vel. over 100) or rests
Effect	DUCK, ONLY, TRIG, RATCH, VEL, PITCH, SHIFT, DECAY
Window	SAME step, NEXT, NEXT 2, the rest of the BAR

MORPH

SHIFT (OCT–) + white 9 loads a second kit as the target; PERFORM's K3 crossfades every sound parameter to it (switches flip halfway). M in the header while it's above 0.

MIXER AND FX

GLO	Volume, pan, FX send, reverb send (2 pages each)
FX send	How much of the voice goes through the FX bus
Reverb send	Feeds the reverb on top of the output
FX	FX bus (delay with TAPE and GRAIN modes, dirt, compressor) → reverb

SPELLS (ARP TWICE)

Changes the sound and pattern of the tracks you pick, at random but in a direction.

1 Targets	Black keys (bar key 1: all / none)
2 Parts	White keys: what may change (below)
3 Spell	K1 on GRIMOIRE
4 Cast	COPY (OCT+); again: a new roll from before the first
5 Undo	SHIFT (OCT–) alone: the pattern and kit as before
Bar keys	1 all / none · 2 keep · 3 save a recipe · 4 knobs reset

THE KNOBS, PAGE BY PAGE

GRIMOIRE: which spell

Spell	NONE, the eleven spells, then your recipes U1–U8
Variation	EXACT casts the knobs as set; higher nudges them a little each cast
Scope	White-key presets: ALL, SOUND, PATTERN, VOICE, SHAPE, SPACE …
Roll	NEW each time; SAME repeats the last roll elsewhere

CAST: how much

Sound	How far the voices move; 100% (FREE) frees the kick and toms
Pattern	How much the steps change (OFF: none)
Density	Fewer hits (left) or more (right); AS IS in the middle
Chaos	Low follows the beats; high anything goes

CHARACTER: which way (names: next column)

K1	The sound's character
K2	The rhythm's character
K3	Evolution: how much keeps changing after the cast
K4	Protection: keeps kick, snare, key, main pulse

LIMITS: the most any spell sets (shared, saved)

Sends	Rev Send, FX Send: cap each target's sends
Levels	Rev Level, FX Mix: cap the shared FX

MOTION: how far the tracks part (needs 15 LEN)

Motion	SAME · ONE track at its own speed or direction · FEW · MANY · FREE
Lengths	BARS 16/32/64 · EVEN +12, 24 · ODD +7, 14, 15, 20

THE SPELLS AND THEIR CHARACTER KNOBS

None	Plain chance: Sound from a nudge to anything	Spread, Detail, Motion, Protect
Poltergeist	Metallic, unstable hits and rattles	Metal, Rattle, Haunting, Preserve
Skeleton	The groove stripped to its bones (pattern only)	Emphasis, Syncope, Variety, Anchors
Glitch Storm	Digital errors, bursts, cuts, fills	Corrupt, Fragment, Unstable, Groove
Haunted Dub	Dark filters, echoes, space; kick dry	Darkness, Echo, Drift, Dry Kick
Forbidden Ritual	All at once: models, steps, links, FX	Alchemy, Disorder, Possess, Protect
Raster Séance	Microsound clicks, grains, silences	Grain, Fragment, Jitter, Backbone
Concrete Drift	Minimal changes over many bars	Texture, Motion, Drift, Stability
Rust Circuit	Industrial metal, drive, cycles	Corrode, Machine, Malfunct, Pulse
Glass Cathedral	Resonant, tuned, glassy, in one key	Brilliance, Harmony, Shimmer, Tuning
Biofeedback	Tracks answering each other	Coupling, Response, Adapt, Freedom
Whispering Motes	Soft microsound dust and chirps	Grain, Scatter, Whisper, Anchors

The screen says what a CHARACTER knob does as you turn it. D1 stays a kick and D2, D3 toms unless Sound is 100%. SHIFT (OCT–) + a white key: only that part.

PARTS (WHITE KEYS)

Sound (white 1–8)		Pattern (white 9–16)	
1 PIT	pitch	9 HIT	which steps play
2 OSC	osc, FM, models	10 ACC	accents
3 TRN	transient	11 PRB	chance, conditions
4 ENV	envelopes, level	12 TIM	timing, flams
5 FLT	filter	13 RAT	ratchets
6 DRV	drive, shaper, bits	14 NOT	notes
7 FX	sends, pan, insert	15 LEN	length, clock, direction
8 MOD	random, LFO 2, xmod	16 LNK	links, generators

WORTH KNOWING

Lost? SHIFT (OCT–) + HOME (PERF RESET) turns every held, latched or running performance effect off. The LFOs, morph and macros stay.

Control All lets you back out. Hold OCT+ on a sound page and turn: every track moves. Let go and it asks: OCT+ reverts the whole kit, OCT– keeps it.

Generators don't touch your pattern (but EUCLID does): MUTATE, TURING, CELLULAR and GRIDS play a live copy. COMMIT keeps what you hear; RESET starts over.

Clocks change time, not steps. A track at 3/4 still has 16 steps; they just take 4/3 of a bar. Give it 12 steps to fit a bar.

KEYS stays on as you change pages: play the voice while you turn knobs. The header shows KEYS. SHIFT (OCT–) + a key plays at the accent velocity.

Recording: REC, then PLAY. Knob moves on sound pages become locks on the steps that are on; SHIFT (OCT–) + CLEAR erases the track's steps as they pass.

Morph and edits: with morph up, a knob moves the target too, so you hear the edit at any amount (CONFIG → MORPH to change it).

Solo isn't saved and the mutes come back as they were when the last solo goes.

Kits: PRESETS lists the 85 factory kits, then the library, then the project's 64 slots. The library stays whatever project is loaded.

VOICES (ON MOTION'S PAGE, WHITE 1–5)

The engines a cast may use: **1 LXR** · **2 RNG** Rings · **3 PLT** Plaits · **4 MIC** MICRO, NOISE · **5 KCK** D1 the LXR's kick. All lit: the spell picks; none: engines kept.

WANDER (ARP THREE TIMES)

The pattern changes slowly, over minutes, until you are somewhere else. Patterns are never changed for good: the one you leave gets its steps back.

1 Tracks	Black keys (bar key 1: all / none)
2 Parts	White keys: what may change (SHIFT (OCT–) + white: only that one)
3 Quest	K1 on QUEST, how long with Journey
4 Set out	COPY (OCT+): here is home (the pattern, the voices, the morph kit)
5 Home	SHIFT (OCT–): back over Return bars; again: at once

Page	K1	K2	K3	K4
QUEST	Quest	Journey	Fate	Goal
PACE	Sound	Rhythm	Range	Stride
HOME	Return	Memory	Order	Sway

Sound	Bars a voice moves a notch (OFF: rhythm only)
Rhythm	Bars an Energy / rhythm step, at the pattern's start
Range	How far Energy swings (thin to twice as busy)
Stride	Step size, threads at once (1–3)
Goal	NONE (open road: the steps change), P01–P32 (walk there), SONG (the song's rows)
Fate	HOME · TREASURE (one change kept) · WOUND · LOST (here is home) · DICE
Memory	How often the road returns to a version you heard
Order, Sway	Goal SONG: the next row (IN ORDER, ROADS, ANY); how much the time varies

WANDER'S BAR KEYS (BLACK 8–11)

black 8	Every track, or none
black 9	**KEEP**: here is home now
black 10	**REST**: the road waits; again, on
SHIFT + black 10	**POSTCARD**: where you are into the first empty pattern, its voices LOCKED (SAVE to keep it)
black 11	Wander's knobs and keys as at first

THE QUESTS

ROAD one steady walk · **ROUND** out and back · **SPIRE** climb, summit, down · **HOLLOW** into the cave, to a pulse, out · **TIDE** ebb and flood · **DETOUR** side quests · **ASTRAY** anywhere, never home · **MAZE** by rule · **ROSARY** hits leave one by one, then return · **POND** the slowest · **WHEEL** an endless, rhythm-only beat

Rhythm under a morph: Sound OFF (or WHEEL), OSC/MODELS out, and a global LFO on MORPH sweeps between two kits while the road changes the steps.

A spell cast on the road is a side journey: reverse it and the road goes on. Coming home, each melody starts again from its top.

RUSH (PERFORM: RUSH)

Black key: the rush track. Turn **Rush**: the other drums go over to it (hats first, kick last), it rolls on the grid (16ths, 32nds), then free up to Top (1/64–1/256); the high-pass opens at the top. Slow turns 1% a detent, fast spins 10%.

REC + turn: RUSH locks in the steps. On RUSH pages the white keys are the steps: hold one and turn to lock it.

TRANSPOSE (PERFORM: TRANSPOSE)

White keys: –7 … +8 degrees of the scale (the 8th, breathing, is 0). Black keys: which tracks move. When: NOW, BEAT, BAR. Keys: LATCH or HOLD. Not saved.

BASE AND NOTE LOCKS

Base (SCALE, K4): the track's base note, ±2 octaves; every note follows it, but a step whose **Note** you turned on STEP (it reads Locked).

LONG NOTES

STEP's **Length**: AUTO, 1/32 … 1/2, 3/4, 1 BAR … 64 BARS, **INF** (a drone till the track's next note), TIE. Holds a voice with Gate ON (amp EG's next page).

ARPS (MELODY: SHAPE)

ARP UP, DN, U/D, then CONVERGE 1-4-2-3 · DIVERGE 2-3-1-4 · CON/DIV · LEAPFROG 1-3-2-4 · SPIRAL 1-2-4-3 · ALTERNATE · PAIRS 2-1-4-3 · ROTATE 1234 2341 · INVERT 1234 4321 · PEDAL 1-2-1-3-1-4. Over the chord tones, Spread wide.

ROADS (SONG, THIRD PAGE)

K1	K2	K3	K4
Song	Way: PLAY / ROADS	Surprise	Home

ROADS plays the song by its own chances: after a row, the row after another with the same pattern. Surprise lets in the rarer turns; Home brings it back to row 1 every so many bars.

CHANNELS

Channel	Default	Takes
Tracks D1 … OH	1–7	notes play the track · the LXR's CCs for its voice
Global	10	**patterns (program change), kits (CC 102 / 126, 103 / 127)**, a keyboard (notes, mod wheel): Global in (right)
Remote TRACKS	15	the remote map (page 6): per-track knobs, mute, solo · **patterns, kits (PC, CC 126, 127)**
Remote GLOBAL	16	the remote map (page 6): transport, effects, patterns · **patterns, kits (PC, CC 126, 127)**

Keep the remote channels apart from the track and global ones. A CC for a voice is taken on its track's channel; one with no voice (FX bus, SRate) on any track's.

LAUNCHING PATTERNS AND KITS

Program change 0–31	**Channel 10, 15, 16: pattern 1–32**, at the pattern's end (stopped: at once)
CC 102, value 0–63	**Channel 10: slot kit 1–64**, at once
CC 103, value 0–84	**Channel 10: factory kit 1–85**, at once
CC 126 · CC 127	**Channel 10, 15, 16: slot · factory kit**, as 102 · 103
CC 125, value 0–63	**Channel 10, 15, 16: the morph kit** (slot 1–64), as LOAD → MORPH
CC 124	**Channel 10, 15, 16: master volume** (127 full), saved in the settings
CC 0, value 0–63	A track's channel (10 at ALL): slot kit, as the LXR
GLOBAL 60 / 61	Remote channel 16, CC or note: the previous / next pattern

THE REST

One channel	Every track on one channel (MIDI CHANNELS) + a note each (MIDI NOTES): as a TR-8S
Notes out	CONFIG → MIDI OUT: a track's hits out on its channel (all OFF by default; TX N too)
Clock	Out always (24 PPQ, start, stop). In: turn the

THE SOUND BY CC (TRACK CHANNELS; 10 AT ALL)

	D1	D2	D3	SN	CY	HH
Volume	89	90	91	92	93	94
Pan	95	96	97	100	101	102
Drive	103	104	105	106	107	108
Sample rate	109	110	111	112	113	114
Coarse	9	11	13	15	17	19
Fine	10	12	14	16	18	20
Waveform	2	3	4	5	7	8
FM / mod wave	21	22	23	–	24 25	26 27
Filter freq	38	39	40	41	42	43
Resonance	44	45	46	47	48	49
Attack	50	52	54	56	58	60
Decay	51	53	55	57	59	61 CH 62 OH
Amp slope	63	64	65	66	67	68
Repeat	–	–	–	69	70	–
Pitch EG decay	71	72	73	74	–	–
Pitch EG amt	75	76	77	78	–	–
Pitch EG slope	79	80	81	82	–	–
FM amount	83	85	87	–	–	–
FM freq	84	86	88	–	–	–
LFO freq	116	117	118	119	120	121
LFO amount	122	123	124	125	126	127

Values go in as they are: lists (waveforms 0–5) take their small numbers, pans 63/64 center. HH CCs act on CH and OH, but for the decays.

MORE CCS

28, 29	SN noise frequency, noise / osc mix
30–33 · 34–37	CY · HH: mod 1 freq, mod 2 freq, mod 1 gain, mod 2 gain
115	Global sample rate

CHANNEL 10 (GLOBAL): GLOBAL IN

CONFIG → MIDI CHANNELS, page 2, KNOB 4. OFF: nothing.

Message on 10	KEYS (default)	PAT+KIT	ALL
Program change 0–31	pattern	pattern	pattern
CC 102 / 126 · 103 / 127	slot · factory kit	slot · factory kit	the sound
CC 125 · 124	morph kit · volume	morph kit · volume	the sound
Notes	selected track	–	selected track
CC 1 mod wheel	MACRO 1	–	–
CC 0 / 32 bank	–	–	CC 0: slot kit
Bend, other CCs	–	–	CCs: the sound, NRPN

Elixir sends a program change on 10 when its pattern changes (TX filter P). Clock and start/stop have no channel: followed with the tempo at MIDI. Send a kit after the pattern: a pattern can bring its own.

THE SAME CONTROL ON 10 (AT ALL) AND THE REMOTE

Remote	Channel 10 CC (D1 … HH)
15: Volume	89–94
15: Pan	95 96 97 100 101 102
15: Filter · Reso	38–43 · 44–49
15: Decay	51 53 55 57 59 · 61 CH, 62 OH
15: Pitch	9 11 13 15 17 19
15: Sample rate	109–114
15: LFO amount	122–127
16: SRate (11)	115
16: 60 / 61	program change (any pattern)

Whichever arrives last wins. The remote's sends, shuffle, morph, roll, FX and reverb knobs match NRPNs on 10. Remote 16's transport, mutes, solo, select, rolls and effects have no channel 10 twin.

TRACKS (CHANNEL 15)

	D1	D2	D3	SN	CY	CH	OH	sel
Volume	8	9	10	11	12	13	14	15
Pan	16	17	18	19	20	21	22	23
Filter freq	24	25	26	27	28	29	30	31
Resonance	32	33	34	35	36	37	38	39
Decay	40	41	42	43	44	45	46	47
Pitch	48	49	50	51	52	53	54	55
Delay send	56	57	58	59	60	61	62	63
FX send	64	65	66	67	68	69	70	71
Reverb send	72	73	74	75	76	77	78	79
Sample rate	80	81	82	83	84	85	86	87
LFO amount	88	89	90	91	92	93	94	95
DENSITY	96	97	98	99	100	101	102	103
Mute ⇄	104	105	106	107	108	109	110	111
Solo ⇄	112	113	114	115	116	117	118	119

Knobs are CCs (8–103); buttons (104–119) a CC or a note. Column 8: the selected track. CH and OH share the hat voice, but for their decays. DENSITY: the track's own, centered at 64, on top of 16's CC 28.

HOW IT BEHAVES

Buttons	A CC above 0 or a note on presses, CC 0 or a note off lets go
Mute/solo	PRESS: a press flips it · TOGGLE: the button's state is the mute (toggle pads)
PICKUP	(default) a knob acts once it passes the value: nothing jumps
ABS · REL	Straight to the position · endless encoders (64 ± n, or 1 / 127)
Recording	Under REC, a TRACKS knob records locks on its track
Feedback	Values and button states go back out on USB, so rings and lights follow
Patterns	60 / 61 step them; to launch one, send **program change 0–31 on the global channel** (page 5)

CONFIG → REMOTE: Tracks, Global (channels), Knobs (PICKUP / ABS / REL), Mute/solo (PRESS / TOGGLE).

GLOBAL (CHANNEL 16): KNOBS AND FADERS

8–15	8 Tempo	9 Shuffle	10 Morph	11 SRate	12 DJ filter	13 Roll rate	14 Repeat	15 Tape time
16–23	16 FX wet	17 P1	18 P2	19 P3	20 P4	21 Bus dirt	22 Echo>rev	23 Saturate
24–31	24 Rev level	25 Rev size	26 Rev damp	27 Mstr dirt	28 DENSITY	29 Ghost vel	30 Build	31 Vary
32–39	32 Macro 1	33 Macro 2	34 Macro 3	35 Macro 4	36 DRILL	37 JITTER	38 CUTS	39 PUMP
40–47	40 COMB note	41 COMB fb	42 CRUSH	43 REV len	44 LFO1 dep	45 LFO2 dep	46 LFO3 dep	47 DJ reso

GLOBAL (CHANNEL 16): KNOBS OFF THE GRID

Delay	96 Time	97 Feedback	98 Tone	99 Band	100 Wow	101 Glitch	102 Route	103 Rev>FX
RING · LFO 4	3 Wet	4 Slope	5 Tone	7 Tune	63 Spread	2 LFO4 dep		

GRAIN: Time is Position, Wow Size, Glitch Density (Saturate, 23, Scatter). Band 0: off. RING's root is the DJ filter (12), its Decay DJ reso (47).

GLOBAL (CHANNEL 16): BUTTONS, CC OR NOTE

Transport · held	48 PLAY/STOP	49 REC	50 FILL	51 REPEAT	52 FREEZE	53 THROW REV	54 THROW FX	55 FB PUSH
Held · patterns	56 TAPE STOP	57 LP sweep	58 HP sweep	59 REVERSE	60 ◀ pattern	61 pattern ▶	62 CTRL ALL tap/hold	63 *knob*
Select	64 D1	65 D2	66 D3	67 SN	68 CY	69 CH	70 OH	71 CA revert
Roll (held)	72 D1	73 D2	74 D3	75 SN	76 CY	77 CH	78 OH	79 sel
DRILL (held)	80 D1	81 D2	82 D3	83 SN	84 CY	85 CH	86 OH	87 sel
Effects: tap latches, hold holds	88 HALF	89 JITTER	90 CUTS	91 SHORT	92 PUMP	93 COMB	94 SPACE	95 CRUSH
DENSITY out ⇄	104 D1	105 D2	106 D3	107 SN	108 CY	109 CH	110 OH	111 all in
Roll (fader)	112 D1	113 D2	114 D3	115 SN	116 CY	117 CH	118 OH	119 sel

The effects are PERF's and work from any page. DENSITY out: 104–110 leave a track out of DENSITY (again: back in), 111 puts them all back. Roll faders: the value is the rate, 1–32 on the grid (1/4 … 1/32), 33–127 free (1/32 … 1/256), 0 off; several at once, while playing. Effects and CONTROL ALL: a tap (under ¼ s) latches, again off; a longer press holds (TOGGLE pads: the button's state). CONTROL ALL (62): a voice's CC / NRPN / TRACKS knob moves every track in it by its step, the panel's knobs too; 64–70 leave a track out (again: in); off keeps; 71 reverts.