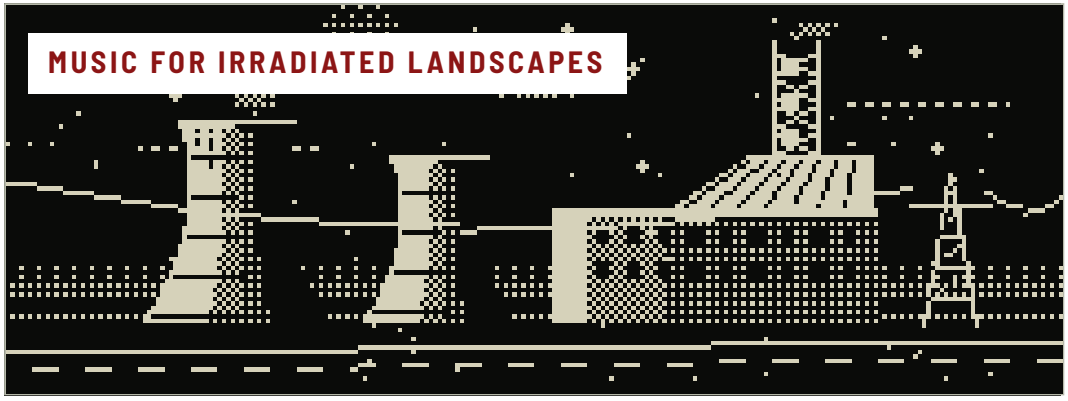
MONODRONE

A DRONE INSTRUMENT
FOR THE M-VAVE FM-1

WHAT IT IS

Performance based drone firmware. Monodrone is four layers of drone, with each holding a chord of up to four notes using one of twelve synthesis engines. All voices run into an end of chain process of dirt, filter, tape delay and reverb.

There is no sequencer. Set things running, bend them live, turn engines on and off, swap them out, or jump between scenes. You can manipulate the entire performance using the twelve punch-in effects and eight macros.



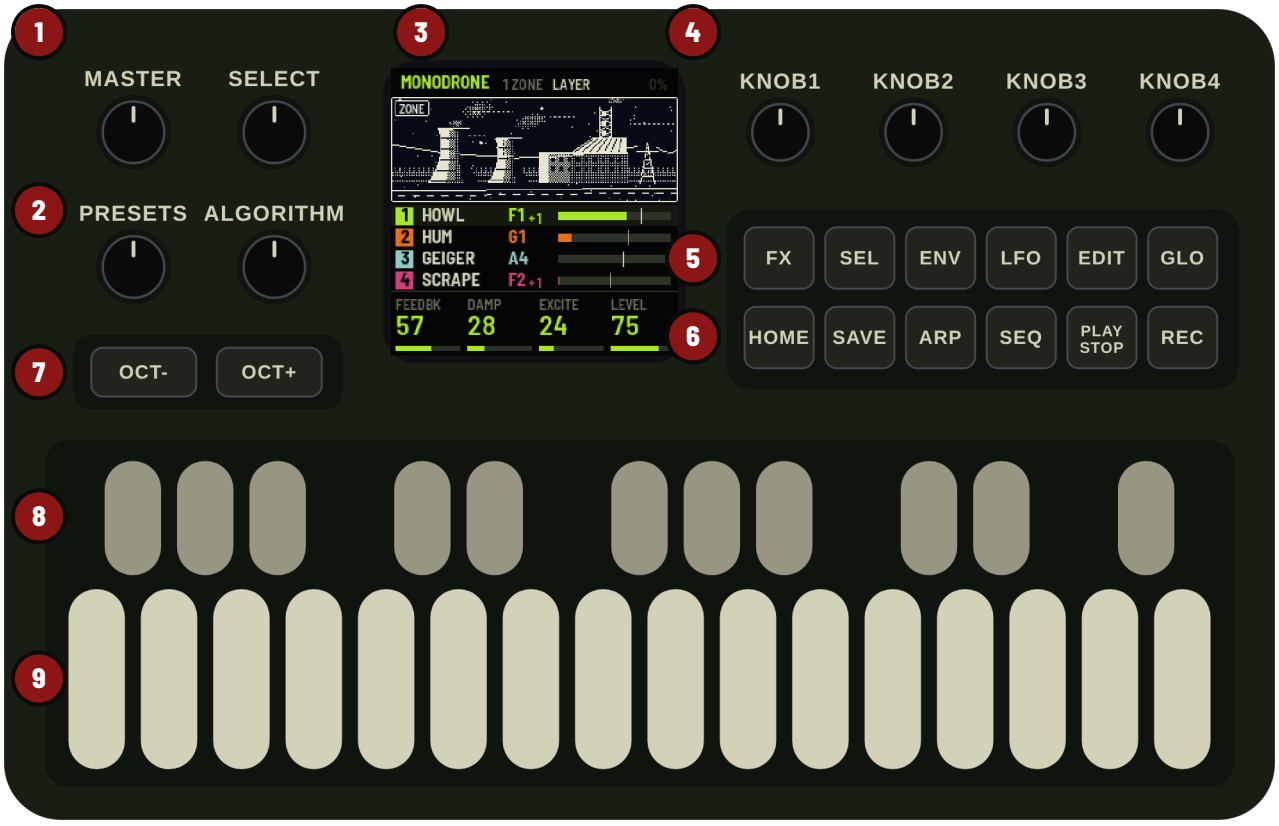
THIS FIRMWARE CONTAINS

4	12	12	8	16	8
LAYERS	ENGINES	PUNCHES	MACROS	SCENES	PLACES

QUICK START

1. Press `PLAY`. The scene swells in.
2. Play a chord on the keys and let go. It keeps sounding.
3. Turn `K1`–`K4` to shape the selected synth engine, or use `ALGORITHM` to change engine, or `PRESETS` to change scene.
4. Tap `FX` and hold one or more black keys to trigger. Controls are editable while held. FX latch after 2 seconds; press again to turn them off.

THE PANEL



1 MASTER
The output volume.

2 SELECT · PRESETS · ALGORITHM
SELECT: the layer. PRESETS: the scene. ALGORITHM: the layer's engine (in FX mode, the effect page).

3 SCREEN
The scene's animated place, the four layers, and what K1–K4 do on the page you're on.

4 K1–K4
The four controls named along the bottom of the screen. They follow the page.

5 FX · SEL · ENV · LFO · EDIT · GLO
FX mode, the SEL modifier, the macros, weather and scene, the layer's shape, and the mix.

6 HOME · SAVE · ARP · SEQ · PLAY · REC
The layer's pages, saving, freeze, the layer and the scene in or out, and SMEAR's memory.

7 OCT– / OCT+
The keyboard's octave. With SEL held, the selected layer's chord moves an octave; with GLO, every layer's.

8 BLACK KEYS
Notes. In FX mode, eleven punch-in effects.

9 WHITE KEYS
Notes. With SEL, recall scene 1–16; with SAVE, save to it; with GLO, keys 1–4 bring layers in and out.

THE TWELVE BUTTONS

AS LAID OUT ON THE FM-1 · TAP · HOLD · TOGETHER

FX

TAP
FX mode: the keys switch punch-in effects; ALGORITHM turns DIRT, FILTER, DELAY and REVERB.

TAP AGAIN
The next page: DIRT, FILTER, DELAY, REVERB, round. HOME leaves FX mode.

SEL

HOLD + KNOB
Try anything; let go and it springs back.

HOLD + WHITE KEY
Recall scene 1–16.

HOLD + PLAY
MUTATE: nudge the scene somewhere new.

HOLD + OCT– / +
The selected layer's chord an octave down or up.

ENV

TAP
MACRO, then MACRO 2, then GLOBAL.

HOLD + MACRO KNOB
Clockwise: full. Anticlockwise: off.

HOLD + GLO
Every macro off.

LFO

TAP
WEATHER, a slow wind through everything.

TAP AGAIN
SCENE: MORPH and PLACE.

EDIT

TAP
The selected layer's SHAPE page: TUNE, GLIDE, SWELL, DRIFT.

GLO

TAP
MIX: the four layers' levels.

TAP AGAIN
PAN: the four pans.

HOLD + WHITE KEY 1–4
Bring that layer in or out.

HOLD + OCT– / +
Every layer's chord an octave down or up.

HOME

TAP
LAYER, then SHAPE, then OUT.

HOLD + SELECT
Step through those pages.

IN FX MODE
Leaves FX mode, back to LAYER.

SAVE

TAP
Save the scene. Dim-lit means unsaved changes.

HOLD + WHITE KEY
Save into slot 1–16 instead.

TAP TWICE
Rename the scene.

ARP

TAP
FREEZE: the reverb and delay hold what they have, forever. Lit while on.

SEQ

TAP
The selected layer in or out over its SWELL. Lit while in.

PLAY

TAP
The whole scene in or out; it remembers which layers were in.

WITH SEL HELD
MUTATE.

REC

TAP
SMEAR's memory records (lit) or holds what it has.

PLAYING

THE DISTANT SOUNDS OF THE ZONE

Every key plays a note on the selected layer. Keys held together build a chord of up to four notes. Notes are instantly latched. Use the **SEQ** button to turn the selected voice on or off. Replace the chord while it's off and turn it on to let the new notes swell in, or play a new chord while the engine is running and let GLIDE move it to the new notes over a set time (3 ms by default).

Press harder on a held key and the chord swells louder and brighter.

FOUR VOICES

`SELECT` moves between voice layers 1–4. `ALGORITHM` changes its engine. While on the **HOME** page, the knobs act on that layer's settings.

`PLAY` brings the whole scene in or out. `SEQ` mutes the selected layer. Hold `GLO` and tap white keys 1–4 to bring single layers in or out. Changing notes never unmutes a layer.

FREEZING IN THE WASTELAND

`ARP` **freezes** the reverb and delay: whatever is in them hangs forever. `REC` makes the SMEAR engine's memory record (lit) or hold what it has.

OCTAVES

`OCT−` `OCT+` shift the keyboard (it starts on F1–G3). Hold `SEL` and tap them to move the selected layer's chord itself an octave down or up; it will follow the GLIDE time as it moves there and then stays. Hold `GLO` instead to move every layer's chord together.

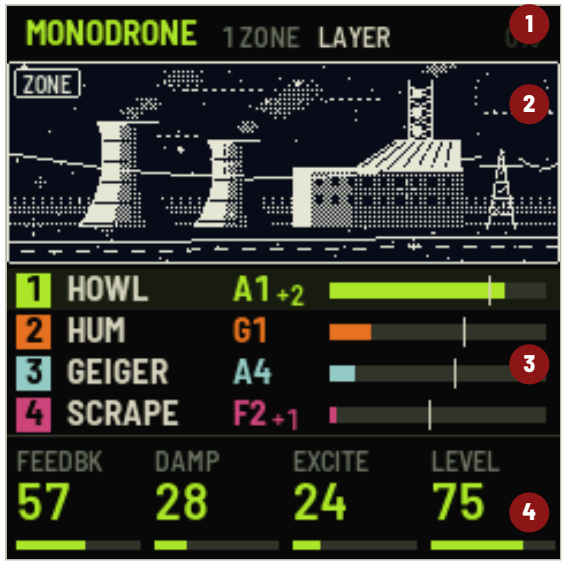
TRY, THEN SNAP BACK

Hold `SEL` and turn anything on any page. Let go and every knob springs back to where it was.

MIDI

USB or the TRS jack. Notes build chords like the keys. CC1 the layer's K1 · CC7 level · CC74 cutoff · CC71 resonance · CC91 reverb · CC93 delay · aftertouch is pressure.

THE SCREEN



1. Scene number and name, the page, and the CPU load.
2. The scene's place, alive: smoke, dust, sparks. Punches show here too.
3. The four layers: engine, chord root (+ more notes) and level. The bright row is selected.
4. What K1–K4 do on this page, and their values.

THE TWELVE ENGINES

ALGORITHM CHANGES IT · K1 / K2 / K3 ON THE LAYER PAGE · K4 IS LEVEL

HIVE — A pair of cross-modulating sines into a sharpening clip, with a sub
BEAT · CROSS · SHARP

SWARM — Five detuned saws through a resonant low-pass
SPREAD · BRIGHT · GRIT

ROT — Two-operator FM with feedback, mostly inharmonic ratios
RATIO · INDEX · FEEDBK

WIND — Noise through two resonant band-passes, with a brown rumble
FOCUS · SWEEP · RUMBLE

HOWL — A tuned, saturated feedback loop; past about 70 % it screams by itself
FEEDBK · DAMP · EXCITE

GEIGER — Random clicks, raw or ringing at pitch, with bursts of fire crackle
RATE · RING · FIRE

SMEAR — Grains of the last 1.5 s of the other audible layers, at the chord's pitches
SIZE · SCATTER · DENSITY

HUM — A transformer: mains buzz, a rattling lamination, sag and ripple
BUZZ · RATTLE · SAG

SCRAPE — Bowed & scraped metal plates, friction and hollow ringing
PRESS · METAL · GRIND

CHOIR — A dead choir of voices intoning dark, breathy vowels
VOWEL · BREATH · CROWD

STATIC — Shortwave tuned to a dead channel: static, a drifting whistle, a fading signal
TUNE · SIGNAL · FADE

CHAOS — The logistic map clocked at pitch, bending a sine; the clock fractures
CHAOS · BREAK · GRIT

GOOD TO KNOW

SMEAR grains what the other layers play: give it something sounding. **REC** records its memory (lit) or holds what it has.

HOWL and **ROT** feed back: past about 70 % they take on a life of their own.

Each engine's K1 is also what WEATHER's TIMBRE and TANGLE move.

PAGES AND KNOBS

EACH BUTTON OPENS A PAGE · K1–K4 FOLLOW IT

HOME Shows the selected layer's control pages, one page per press. Hold HOME and turn SELECT to step between them too.

LAYER	ENGINE	ENGINE	ENGINE	LEVEL
SHAPE	TUNE	GLIDE	SWELL	DRIFT
OUT	LEVEL	PAN	–	–

EDIT A shortcut leading straight to the layer's SHAPE page.

SHAPE	TUNE	GLIDE	SWELL	DRIFT

TUNE ±12 semitones · GLIDE 3 ms – 8 s, how long the layer takes to slide to new notes · SWELL 20 ms – 41 s, the layer's fade in and out · DRIFT its own slow wander.

GLO Easy access to the mixing controls. Shows the four layer's output settings, side by side. Press again for PAN.

MIX	LVL 1	LVL 2	LVL 3	LVL 4
PAN	PAN 1	PAN 2	PAN 3	PAN 4

Hold GLO and tap white keys 1–4 to bring layers in and out.

LFO WEATHER: a slow wind through everything. Press again for SCENE.

WEATHER	SPEED	TIMBRE	FILTER	ROOM
SCENE	MORPH	PLACE	–	–

SPEED sets the LFO speed; TIMBRE sets how far the LFO moves each layer's K1 setting, FILTER sets the amount the LFO effects the global filter cutoff, and ROOM how much it effects the delay and reverb. MORPH: how slowly a new scene glides in (0.1–20 s). PLACE: the picture, one a click.

FX **+ ALGORITHM** In FX mode, FX or ALGORITHM turns through the effects chain's four pages.

DIRT	DRIVE	CRUSH	RATE	MIX
DELAY	TIME	FDBK	TONE	MIX
FILTER	CUTOFF	RESO	MODE	SWEEP
REVERB	SIZE	DAMP	MOD	MIX

The end-of-chain FX parameters: Distortion, Delay, Filter and Reverb. These controls are described in greater detail on **THE EFFECTS CHAIN** page

ENV opens the macros and GLOBAL: page 8. Holding a punch key in FX mode turns K1–K4 into its controls: page 9.

THE EFFECTS CHAIN

Tap **FX** so it lights; tap it again, or turn **ALGORITHM**, to step through the four pages; K1–K4 set the page on screen. The chain runs in this order after all four layers, and is saved with the scene. While FX mode is on the keys are punches: **HOME** for notes.

DIRT — DISTORTION AND LO-FI

K1 DRIVE	Gain into a saturator, up to about 30×. The level is evened out, so it gets thicker rather than louder.
K2 CRUSH	Bitcrush depth, from clean (15 bits) down to 3 bits.
K3 RATE	Sample-rate reduction, from none down to 1/48 of the rate: aliasing and whine.
K4 MIX	The wet / dry mix for all distortion types.

FILTER — ONE RESONANT FILTER OVER EVERYTHING

K1 CUTOFF	20 Hz to 20 kHz. Fully open with MODE at LOW, the filter is out of the circuit.
K2 RESO	Resonance, up to a sharp whistling peak.
K3 MODE	Blends low-pass › band-pass › high-pass.
K4 SWEEP	How far the filter's own slow drift moves the cutoff, up to about three octaves. Adds to WEATHER's FILTER.

DELAY — A TAPE-STYLE ECHO

K1 TIME	20 ms to 1.5 s. Turning it while echoes sound bends their pitch, like tape.
K2 FDBK	Repeats. The top of the knob goes past 100 %, so it builds and saturates. ARP (freeze) holds it forever.
K3 TONE	Dark, muffled repeats through to bright ones.
K4 MIX	The wet / dry mix for the delay.

REVERB — THE ROOM

K1 SIZE	Decay time, from 0.4 s up to about 30 s.
K2 DAMP	Darkens the tail as it decays.
K3 MOD	Movement and shimmer in the tail. WEATHER's ROOM adds to it.
K4 MIX	The wet / dry mix for reverb.

The macros push these on top of yours: ROT the DIRT page, VAST the reverb and delay, RUNAWAY and RUNOFF the delay feedback and filter resonance.

THE MACROS

Each macro control changes many other settings at once, without perman1ently changing any of the original values. At 0 they do nothing. Designed for playing, building over time, quick on / off stabs by holding the ENV button, sweeps and snap backs by holding SEL while tweaking.

MACRO	ROT	VAST	NAUSEA	STARVE
ROT	Drive, crush, downsampling: all of the dirt in, darker.			
VAST	A bigger, wetter room; longer echoes. Endless at full.			
NAUSEA	Detune, unrest, drift; the weather moves faster and deeper.			
STARVE	A dying power supply: layers sputter, pitches sag, bits and rate fall, the sound drops out.			

MACRO 2	TANGLE	RUNAWAY	RUNOFF	DELUGE
TANGLE	Layers modulate each other in a ring: a layers loudness moves the next layer's K1, then ring modulation.			
RUNAWAY	Every feedback pushed toward high pitched screaming at a fifth above the scene's highest note (1.4–2.8 kHz).			
RUNOFF	The same feedback screaming low: a fifth below the lowest note, 70–140 Hz.			
DELUGE	A hammered, bubbling sub under a steady wall of noise.			



QUICK MOVES

Hold ENV and turn a macro knob: clockwise jumps to full, anticlockwise to off.

ENV + GLO: instantly turns every macro off.

ENV from any page lands on MACRO; again for MACRO 2, again for GLOBAL.

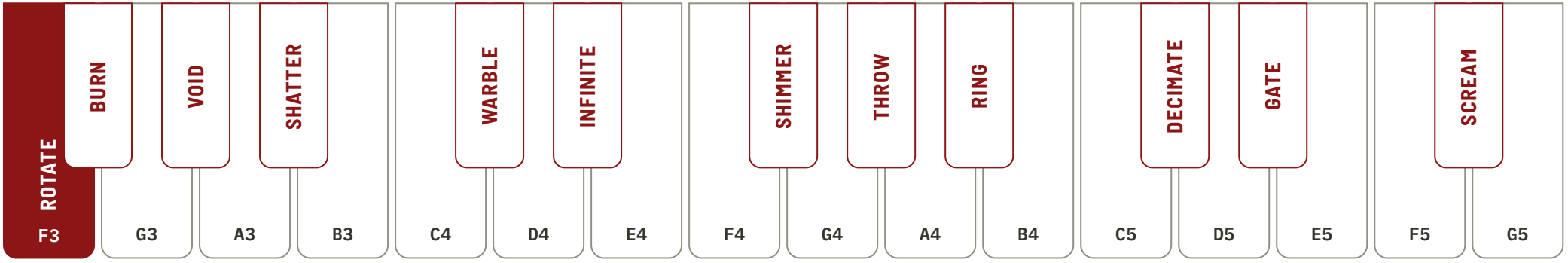
GLOBAL

GLOBAL	DETUNE	SUB	HISS	UNREST

DETUNE rubs voices apart, SUB adds a low sine an octave under, HISS adds tape hiss and hum, UNREST makes everything unsteady. Global sounds can be heard even when all layers are off.

FX MODE

1. Tap FX. It lights, and the keys now switch effects instead of playing notes.
2. **Hold** a key. The effect is on while you hold it.
3. **Latch** it. Hold an FX key for 2 s, or tap it twice. Press again to let it go.
4. FX again: the next effects page. HOME for notes. Latched effects keep going.



IN FX MODE THE OTHER WHITE KEYS DO NOTHING · KEY NAMES LISTED AT THE STARTING OCTAVE

HOLD AND TWIST

While you hold an effect's key, the screen shows its name and K1–K3 become its own controls. K4 is always **FADE**: how long the effect takes to come in and go out, from 0 to 10 seconds.

Turning a knob while you hold an FX key stops the 2-second latch, so you can shape the effect without it sticking. Let go and you're back on your page. The FX settings are kept when you save.

Several FX can run at once, and they interact. Hold down multiple keys and explore to find the combinations that please you. BURN, VOID, SHATTER, WARBLE, DECIMATE, SCREAM and GATE also show in the pictured evnironment.



THE PUNCHES

WHAT EACH ONE DOES · K1 · K2 · K3 · K4 IS ALWAYS FADE

BURN F♯
Crushed fuzz, held to the level going in
FUZZ · BITS · FADE

VOID G♯
Pours into the reverb, then holds it forever as the dry falls away
SOAK · DRY · DARK · FADE

SHATTER A♯
Glitch slices of the last moment, sometimes reversed
SIZE · REPEAT · REVERSE · FADE

WARBLE C♯
A slow, soft pulse moving through the sound
RATE · DEPTH · WOW · FADE

INFINITE D♯
A black hole: everything pulled down into an endless dark smear
FALL · DARK · DRAG · FADE

SHIMMER F♯
The reverb an octave down, fed back in, cascading lower
MIX · FEED · FADE

THROW G♯
The delay takes everything and runs near endless; let go and it rings off
FDBK · ECHO · FADE

RING A♯
Ring modulation against a low, unsteady carrier
FREQ · WOBBLE · MIX · FADE

DECIMATE C♯
Down to a few kilohertz and a few bits
RATE · BITS · FADE

GATE D♯
A failing supply: chopped on and off at uneven lengths
SPEED · DEPTH · FADE

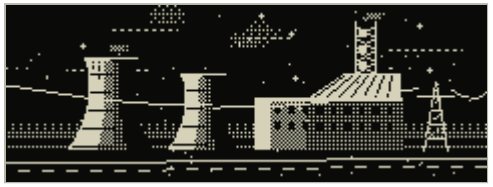
SCREAM F♯
Locked feedback on a harmonic of the lowest note: a steady squeal
PITCH · FDBK · DRIVE · FADE

ROTATE F
The stereo field turns, unsteadily (the lowest white key)
SPEED · WOBBLE · FADE

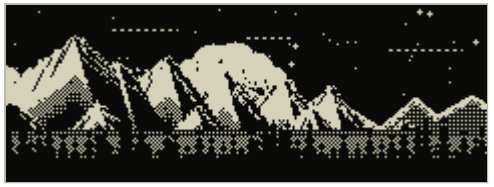
Key names are at the keyboard's starting octave, counting from the left: the first black key is BURN, the last is SCREAM, the lowest white key is ROTATE.

SCENES AND PLACES

SIXTEEN SCENES · EIGHT PLACES



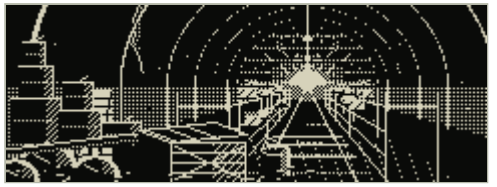
REACTOR 1 · 7 · 9



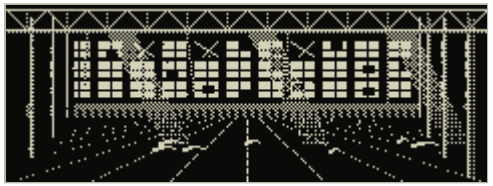
PEAKS 2 · 5 · 15



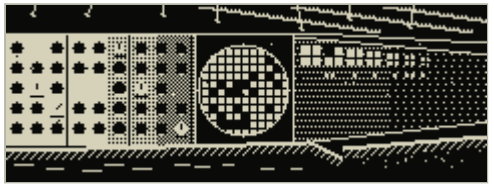
DUNES 3 · 8 · 14



BUNKER 4 · 12



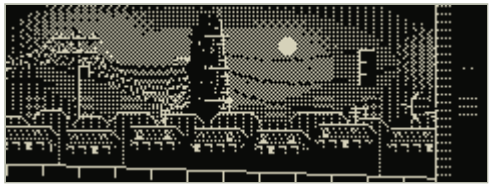
FACTORY 6 · 10 · 16



CONTROL 13



CHANNEL 11



CITY any, by PLACE

Every place is alive: smoke, dust, falling ash and Geiger sparks move over it, and the punches tear into it. Any scene can show any place: LFO twice for SCENE, then K2 PLACE, one place a click. The numbers are the factory scenes that use each. Places are aesthetic in nature only. Scenes can be saved to store layer, note, fx setting combinations. SCENES can be renammed by pressing SAVE twice.

DEFAULT MONODRONE SCENES

1. **ZONE** Howling chord, mains hum, Geiger clicks, and scraped metal
2. **DRONEVIL** Doubled saw walls, heavy dirt and sub
3. **LYRA** Cross-modulated sine chords, a low howl
4. **DUST** Wind, fire crackle, static; crushed
5. **CORTINI** Saw triad, choir, smeared grains; long reverb
6. **RADIO** Two shortwave sets, raw clicks, chaos
7. **REACTOR** Hum chord, screaming howl, a Geiger storm
8. **ASH** Smeared grains and a dark choir
9. **INFECTUM** Low choir over a 25 Hz hum; vast
10. **MEATGRND** Saw fifths, chaos and metal, driven hard
11. **REMOTE** Static, wind, sparse tones; long echoes
12. **SOYLENT** Two beating howls, choir; seasick
13. **µSIEVERT** Dense Geiger over mains hum
14. **ABYSS** Wind, grains, choir; wide and washed
15. **FROST** Saws hard left, howl hard right
16. **OMEGA** Metal, hum and clicks in an industrial room

SAVING AND SAFETY NETS

SCENES

PRESETS	Turn through the scenes. While playing, a new scene glides in over MORPH (LFO › SCENE › K1); stopped, it waits for PLAY.
SEL + white key	Jump straight to scene 1–16 (white keys from the left).
SAVE	Save into the current scene. SAVE glows dimly while there are unsaved changes.
SAVE + white key	Hold SAVE and tap a white key to save into that slot instead.
SEL + PLAY	MUTATE: nudge the scene somewhere new. SAVE keeps it.
Hold SEL + knob	Turn anything, on any page; let go of SEL and it all springs back.

A scene keeps every layer (engine, chord, knobs, SHAPE, OUT), the effects chain, WEATHER, GLOBAL, the punch settings, its place and its name. Macros and FX mode are not saved. Your saved scenes survive firmware updates.

RENAMING



1. Press SAVE twice, quickly.
2. K1 moves the cursor, K2 changes the letter: A–Z, 0–9, - . / # µ.
3. SAVE keeps the name and saves. Any other button cancels.

THE LIGHTS

FX	FX mode is on: keys are effects.
PLAY (green)	At least one layer is sounding.
SEQ	The selected layer is in.
ARP	FREEZE is on.
REC	SMEAR's memory is recording.
SAVE (dim)	Unsaved changes.
Page button	The page you are on.
Keys	Bright: the selected layer's notes and active punches. Dim: the other layers' notes; in FX mode the punch keys.

The interactive manual, the web installer and a browser emulator: **monoeater.github.io/FM-1_Monodrone**

Back to stock: hold OCT– while switching on.