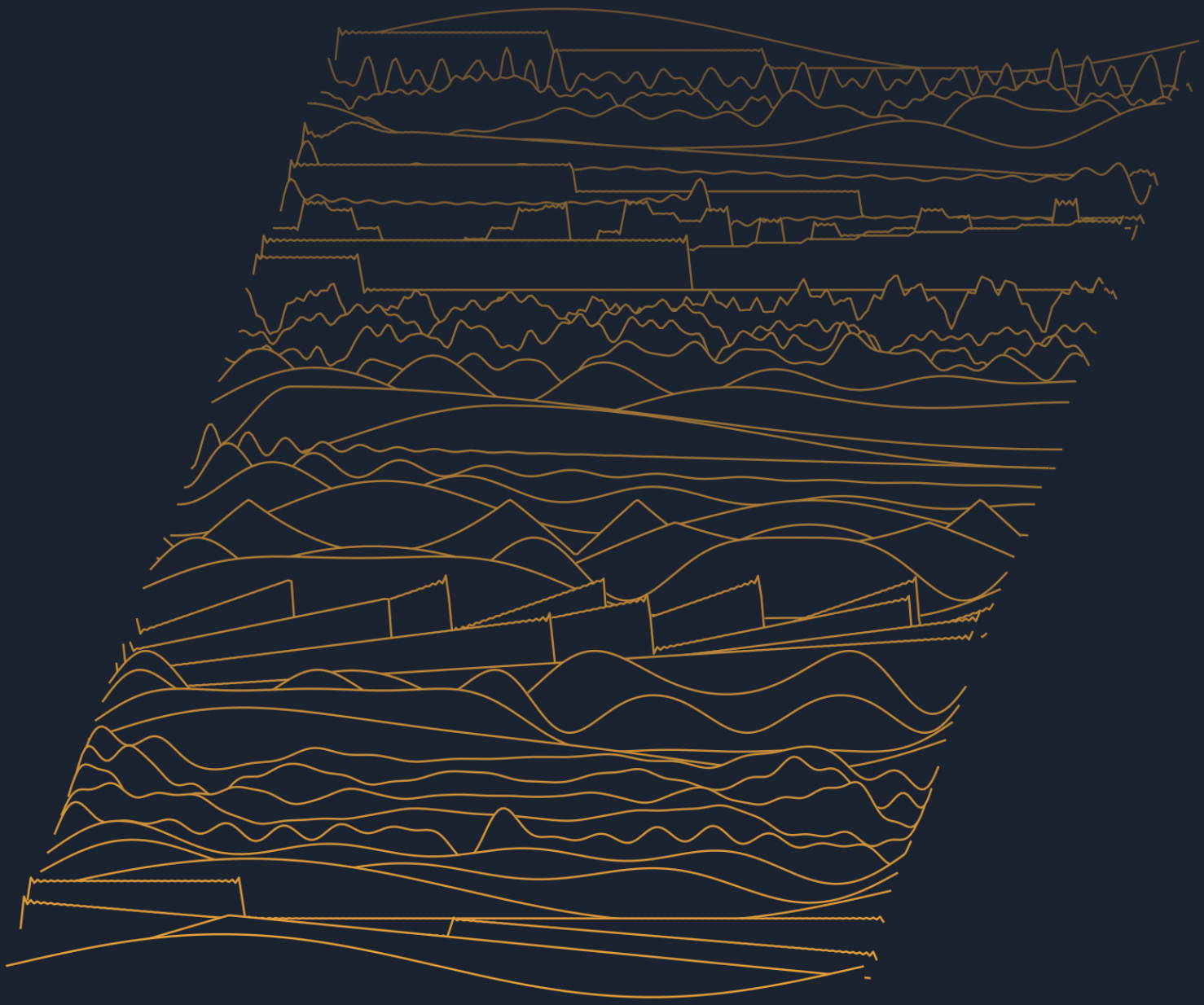
BLUE LANTERN MODULES · WAVETABLE OSCILLATOR

TecWT

User Manual



52 engines · 99 band-limited waves · ADSR, chords, effects · 96 kHz

Eurorack module · Blue Lantern Modules, Chandler, Arizona

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CHAPTER 1

Welcome

TecWT is a digital **wavetable oscillator** for Eurorack. It has 52 engines built around a library of **99 carefully designed single-cycle waves**, organised into 12 themed banks.

One encoder and a four-character display give you every engine and setting. On top of the oscillator, TecWT has an internal envelope, a quantizer, bit and sample-rate reduction, built-in effects, and a second settings page (MORE) full of performance tricks.

What's inside

52 engines: wavetable banks and morphing, plus granular, vector, plucked string, kick drum, wavefolder, lo-fi crusher, acid filter, mirror, cross-modulation, random waves, drawbar organ, comb filter, bouncing ball, phaser, rectifier, snare, hi-hat, clap, electric piano, marimba and bells, an endless Shepard tone, worn tape and chip-tune chords. An **ADSR envelope** that follows the gate. **Chord mode** with strum and inversions, and unison detune. **Effects**: chorus, ring modulator, echo, drive and a multimode filter. The **MORE page**: FM-jack routing, an internal clock, ratchets, probability, swing, random notes, an arpeggiator, glide, vibrato, 8 presets, favorite engines, display modes and your own boot logo.

Highlights

- **99 waves in 12 banks**: analog shapes, organ, vowels, FM, sync, folding, resonance, phase distortion, metal, 8-bit, glass and noise spectra, plus three bonus waves.
- **Seamless morphing.** Every engine glides continuously between neighbouring waves, so slow CV sweeps never step.
- **Alias-free by design.** Each wave exists at three bandwidths and TecWT always plays the brightest version that stays clean at the current pitch.
- **12 bank engines** for direct, playable access to each bank with a dedicated tone control.
- **17 algorithm engines** that use the whole table in new ways: 2-D maps, self-scanning, unison, chords, formants, FM, phase distortion, ring modulation, percussion, wave sequencing, sub-oscillators and more.
- **23 special engines** that send the waves through strings, drums, filters, folders, crushers, tape and resonators.
- **Full 96 kHz rendering** with smooth, zipper-free parameter changes.

Quick start

1. Power on. After the start-up animation the display shows **ANLG**, the first engine.
2. Turn the encoder to choose an engine. The change is immediate.
3. Patch a V/OCT source and listen while you turn **TIMBRE** (which wave) and **COLOR** (the engine's second dimension).
4. Click the encoder to open the settings menu; click again to return.

NOTE Your pitch calibration and settings are kept in the module's memory and are not affected by choosing engines.

CHAPTER 2

Panel and controls

Knobs and display

Control	Function
Encoder + display	Turn to select the engine. Click to open or close the settings menu. Hold for 1 second on special menu items (calibration, presets, logo editing, factory reset). On the engine screen, hold to mark a favorite engine.
FINE	Fine tuning.
COARSE	Coarse tuning. Its range is set by RANG in the settings menu.
FM (attenuverter)	Amount and polarity of the FM input. In META mode it scales engine selection instead.
TIMBRE	Selects the wave. In bank engines it sweeps the 8 waves of the bank; in algorithm engines it sweeps the whole 99-wave table.
TIMBRE attenuverter	Amount and polarity of the TIMBRE CV input.
COLOR	The engine's second dimension: tone, detune, chord, formant, decay and so on (see each engine).

Inputs and output

Jack	Function
TRIG	Resets the oscillator phase (hard sync) in most engines, strikes PING, PLUK, KICK, BNCE, SNAR, HATS, CLAP, EPNO and MODL, opens the ACID filter, advances STEP, restarts TRKR, and fires the internal envelope (in ADSR mode TRIG is a gate).
V/OCT	1 V/octave pitch input (calibrated).
FM	Pitch modulation, scaled by the FM attenuverter. Selects the engine in META mode.
TIMBRE	CV for TIMBRE, added to the knob (0 V to +5 V spans the full range).
COLOR	CV for COLOR, added to the knob (0 V to +5 V spans the full range).
OUT	Audio output.

The display

The four-character display shows the current engine name (or the note or a level meter, see DISP on the MORE page). All engine names are designed to be read on the 14-segment display. In this manual they appear like this:

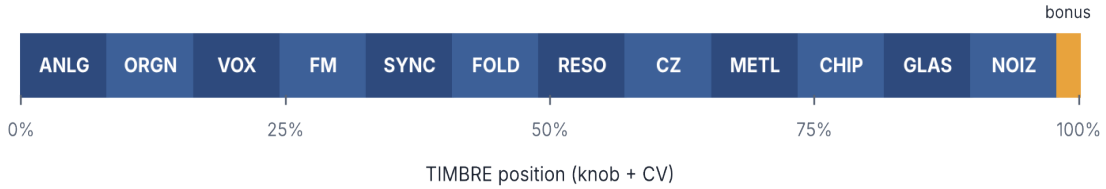


CHAPTER 3

How TecWT works

The wavetable

At the heart of TecWT is one long table of 99 single-cycle waves. The first 96 are grouped into 12 banks of 8 waves each, in this order:



The last three are bonus waves: a hollow saw, a choir "aah" and a sine.

Bank engines (ANLG … NOIZ) play one bank at a time. TIMBRE sweeps its 8 waves from first to last.

Algorithm engines (MAP … TWIN) and the **special engines** (GRAN … TRKR) use the whole table. TIMBRE travels through all 99 waves, crossing from bank to bank, as shown in the map above.

Morphing

Between two waves, TecWT blends smoothly: at the half-way point you hear an even mix of both. Combined with per-sample parameter smoothing, this means slow CV sweeps, envelopes and LFOs on TIMBRE never step or click.

Brightness levels

Every wave is stored at three bandwidths: **bright** (up to 127 harmonics), **warm** (32 harmonics) and **dark** (8 harmonics). TecWT always plays the brightest version that stays free of aliasing at the current pitch, so high notes stay clean instead of turning harsh. The switches (around 600 Hz and 2.4 kHz) only remove harmonics above 19 kHz, so you won't hear them.

In the bank engines, **COLOR** gives you direct access to these levels as a tone control: fully clockwise is the brightest, 12 o'clock is warm, and fully counter-clockwise is dark and round.

Triggers

A trigger at the TRIG input does the following, depending on the engine:

Engine	Trigger action
Most engines	Hard sync: the oscillator restarts its cycle (patch another oscillator for classic sync).
PING	Strikes the sound: a new attack.
STEP	Advances to the next wave of the sequence.
PLUK, KICK, BNCE	Plucks the string, hits the drum, drops the ball.
SNAR, HATS, CLAP, EPNO, MODL	Plays the drum, the key or the mallet.
TRKR	Restarts the arpeggio.

Engine	Trigger action
ACID	Opens the filter envelope (and syncs).
GRAN, DRAW, SHEP	No effect on the sound.
CHRD	No effect on the sound.

NOTE Triggers also fire the internal AD envelope. As soon as any envelope amount (env FM, TIM, COL or VCA) is above zero, TRIG is reserved for the envelope and hard sync is switched off; PING, STEP, PLUK, KICK, BNCE, ACID and the drums, keys and mallets still respond.

CHAPTER 4

Bank engines

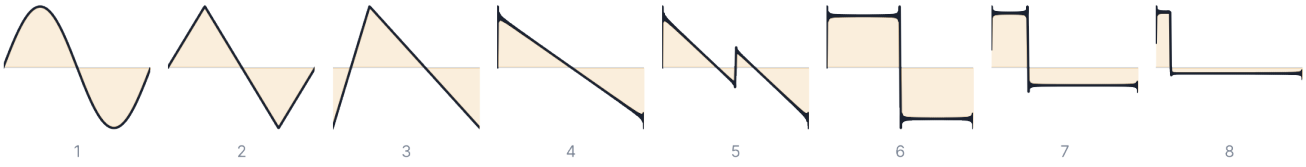
The twelve bank engines give direct, playable access to one bank of 8 waves each. All of them share the same controls:

Control	Function
TIMBRE	Morphs through the bank's 8 waves (wave 1 fully counter-clockwise, wave 8 fully clockwise).
COLOR	Tone: dark (counter-clockwise) → warm (12 o'clock) → bright (clockwise).
TRIG	Hard sync.

ANLG Analog Classics

Engine 1 · bank 1

The essential shapes of subtractive synthesis in one continuous sweep, from the purest sine to a thin, nasal 10% pulse.



TIP Slowly modulate TIMBRE between waves 6 and 8 with an LFO for classic pulse-width modulation.

ORGN Drawbar Organ

Engine 2 · bank 2

Eight tonewheel-style drawbar registrations, built from the classic 16', 5⅓', 8', 4', 2⅔', 2', 1⅗', 1⅓' and 1' footages.



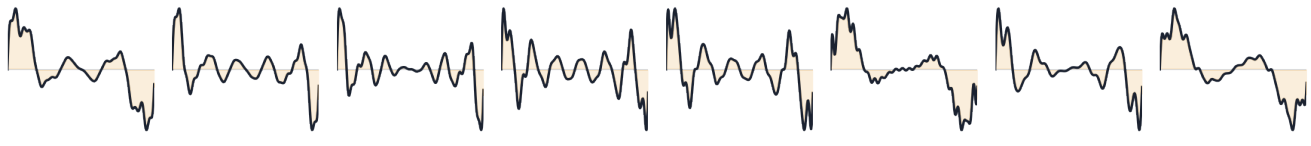
TIP Add DRFT and a touch of SIGN from the settings menu for a slightly unstable, vintage character.

VOX

Vowels

Engine 3 · bank 3

Single-cycle vowel formants. Sweeping TIMBRE makes the oscillator talk, moving smoothly through the mouth shapes.



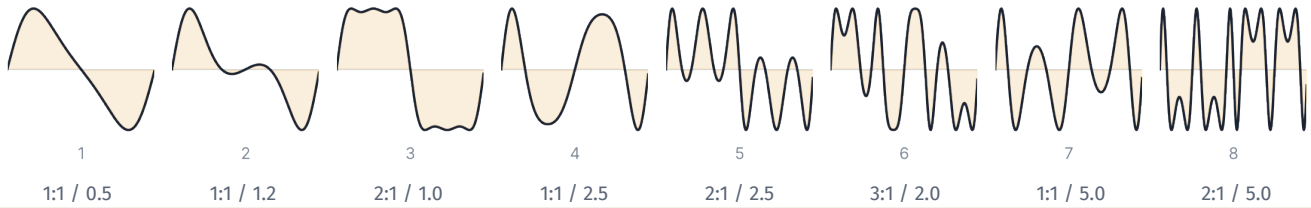
TIP Formants are fixed in each wave, so vowels sound most natural between about C2 and C4. Sequence TIMBRE for robotic speech.

FM

FM Spectra

Engine 4 · bank 4

Frozen two-operator FM tones. The waves move from soft 1:1 sounds to bright, brassy and metallic spectra (shown as ratio/index).



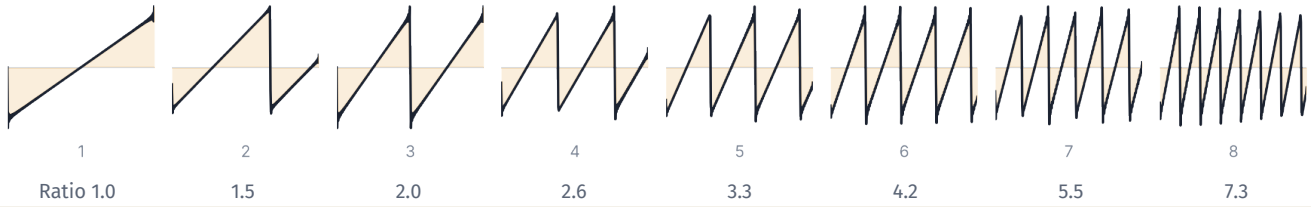
TIP For live, continuously variable FM use the WVFM and FDBK algorithms instead.

SYNC

Hard Sync

Engine 5 · bank 5

Hard-synced sawtooth waves with the slave ratio rising from 1 to 7.3. Sweeping TIMBRE gives the classic tearing sync-lead sweep with a single oscillator.



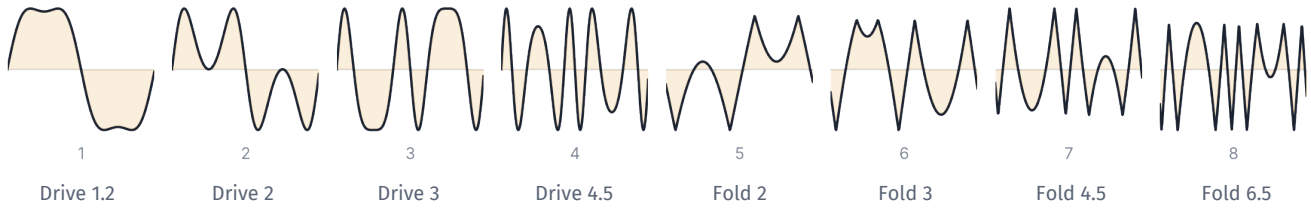
TIP Patch an envelope into TIMBRE for the signature sync “zap” on every note.

FOLD

Wavefolder

Engine 6 · bank 6

Waves 1–4 are a sine driven through a smooth shaper at increasing gain. Waves 5–8 use an asymmetric triangle folder, which adds even harmonics and a hollow, west-coast tone.



1	2	3	4	5	6	7	8
Drive 1.2	Drive 2	Drive 3	Drive 4.5	Fold 2	Fold 3	Fold 4.5	Fold 6.5

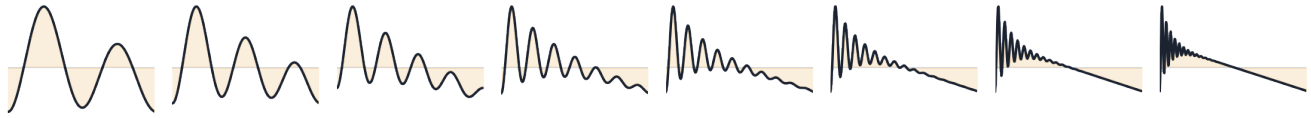
TIP TIMBRE behaves like a folder's drive control: patch audio-rate or envelope CV for animated timbres.

RESO

Resonant Filter

Engine 7 · bank 7

A sawtooth through a resonant low-pass filter, with the cutoff stepping from the 2nd to the 34th harmonic. TIMBRE acts as a cutoff knob whose resonant peak tracks pitch perfectly.



1	2	3	4	5	6	7	8
Cutoff 2	3	4.5	7	10	15	23	34

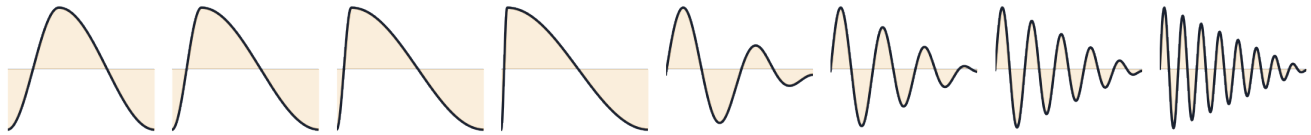
TIP An AD envelope on TIMBRE (env TIM) gives filter-sweep plucks with no external filter.

CZ

Phase Distortion

Engine 8 · bank 8

Tones in the style of Casio's CZ series. Waves 1–4 are phase-distorted saws growing sharper; waves 5–8 are the characteristic “resonant” windowed waves.



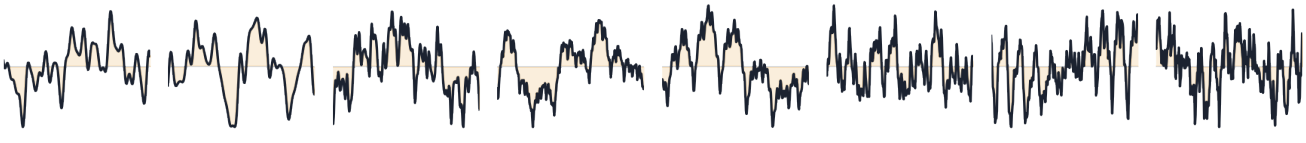
1	2	3	4	5	6	7	8
PD saw 1	PD saw 2	PD saw 3	PD saw 4	Reso 2×	Reso 3.5×	Reso 5×	Reso 8×

TIP The crossing from wave 4 to 5 is where the hollow CZ “resonance” appears. Park TIMBRE there and modulate gently.

METL Metallic

Engine 9 · bank 9

Sparse partial sets (bell-like series, primes, squares, Fibonacci numbers and more) with fixed random phases. Glassy, gong-like and clangorous.



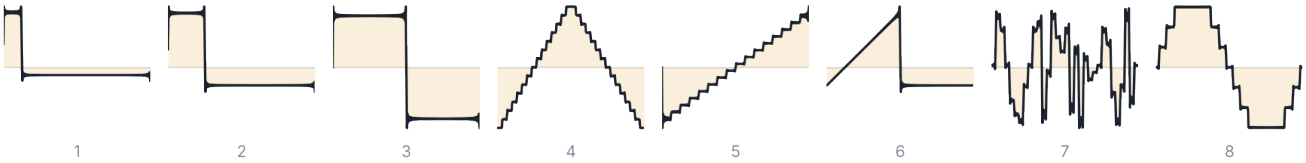
1 Bell · 2 Primes · 3 Squares · 4 Fibonacci · 5 Gong · 6 Chime · 7 Pairs · 8 Shimmer

TIP Combine with the internal envelope on VCA for struck metal percussion.

CHIP 8-bit

Engine 10 · bank 10

Video-game console waves: narrow pulses, stepped triangles and saws, logic-combined and random-step waves. They are band-limited, so the character comes from the shapes, not from aliasing.



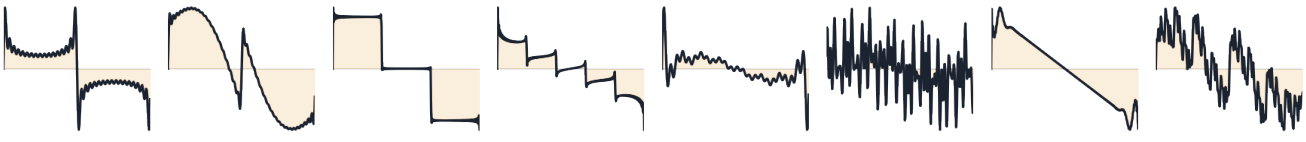
1 Pulse 12.5% · 2 Pulse 25% · 3 Square · 4 4-bit triangle · 5 4-bit saw · 6 Saw AND pulse · 7 Random steps · 8 3-bit sine

TIP For true lo-fi grit, add BITS and RATE reduction from the settings menu.

GLAS Glass

Engine 11 · bank 11

Designed additive spectra: odd-only, even-heavy, notched combs, isolated bands, bright tilts and an octave stack. Clean, airy and digital.



1 Odd only · 2 Even heavy · 3 No 3rds · 4 No 5ths · 5 Band 8–24 · 6 Bright tilt · 7 Formant hole · 8 Octave stack

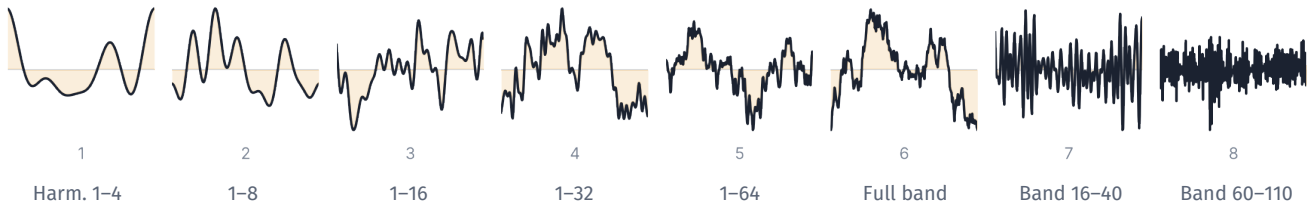
TIP Wave 8 (octaves only) is a great organ-like drone source under slow TIMBRE motion.

NOIZ

Noise Spectra

Engine 12 · bank 12

Random spectra with fixed random phases, from narrow to full band. Because every cycle repeats, these are pitched, grainy noise tones.



TIP At very low pitches these become rhythmic, buzzing textures. Try the LFO range in RANG with OCTV −2.

CHAPTER 5

Algorithm engines

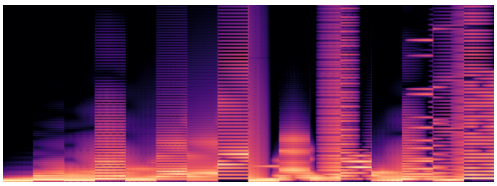
The seventeen algorithm engines use the whole 99-wave table. In all of them **TIMBRE** chooses the wave (or the starting point) anywhere in the table, following the map in chapter 3, and **COLOR** controls what makes the engine unique.

Each engine has a *sound portrait*: a picture of an 8-second recording of the module playing an arpeggio. During the first half TIMBRE sweeps the whole table; during the second half COLOR sweeps from minimum to maximum. Time runs left to right and frequency (0–12 kHz) bottom to top.

MAP

2-D Wave Map

Engine 13



The whole table laid out as a grid of 12 banks × 8 waves. COLOR selects the bank and TIMBRE selects the wave within it, with smooth morphing in both directions.

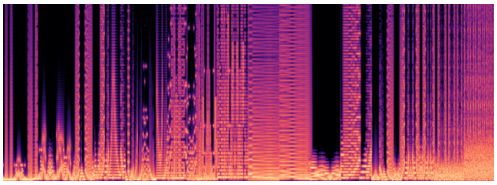
TIMBRE	Wave within the bank (1–8)
COLOR	Bank: ANLG → NOIZ
TRIG	Hard sync

TIP Two LFOs or envelopes on TIMBRE and COLOR turn MAP into a vector-synthesis joystick.

SCAN

Self-Scanning

Engine 14



An internal triangle LFO sweeps the wave position back and forth over ±12 waves around the TIMBRE setting, for motion without any patching.

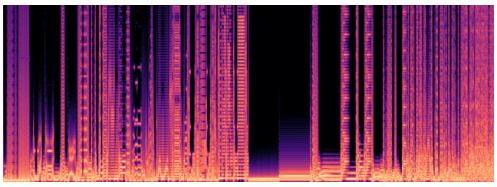
TIMBRE	Centre of the scan
COLOR	LFO speed: off at the minimum, then 0.05 Hz → 20 Hz
TRIG	Hard sync

TIP At slow speeds SCAN is an evolving pad; at the fastest it becomes a buzzing, vibrato-like timbre wobble.

WNDR

Wander

Engine 15



A smooth random walk drifts the wave position up to ±16 waves around TIMBRE. Never the same twice.

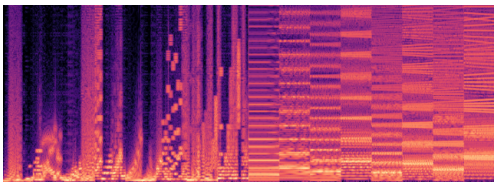
TIMBRE	Centre of the wander
COLOR	Speed: a new destination every 1 s (min) to every 8 ms (max)
TRIG	Hard sync

TIP Low COLOR settings give organic drones; high settings give a sample-and-hold flavour of timbre jumps.

SUPR

Super Unison

Engine 16



Five detuned wavetable voices for huge, supersaw-style chorus. Every wave in the table can be thickened this way.

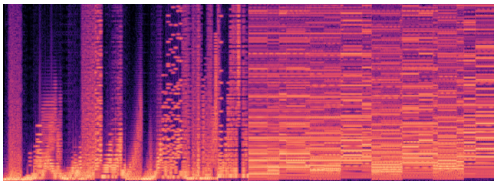
TIMBRE	Wave (whole table)
COLOR	Detune spread, 0 → ±1.5 semitones. Finer control near the minimum.
TRIG	Syncs the centre voice

TIP Try the GLAS and VOX regions of the table at moderate detune for lush choirs and pads.

CHRD

Chords

Engine 17



Four-voice chords from a single V/OCT input, all playing the same wave.

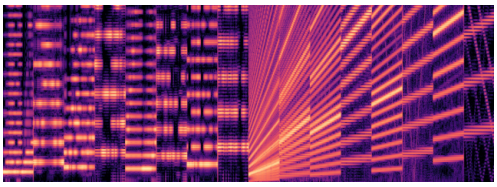
TIMBRE	Wave (whole table)
COLOR	Chord type (13 steps): oct + 5th, 5ths, sus4, sus2, minor, major, m7, dom7, maj7, add9, dim7, aug, 4ths
TRIG	Not used

TIP Sequence COLOR with a stepped CV for chord progressions over a fixed root.

FORM

Formant

Engine 18



A windowed oscillator running at a multiple of the pitch, reset smoothly every cycle. It creates a moving resonance: vocal, VOSIM-like and very expressive.

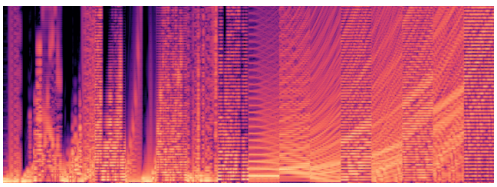
TIMBRE	Wave used by the formant
COLOR	Formant ratio 1× → 16× (limited near 9.5 kHz at high notes)
TRIG	Hard sync

TIP Sweep COLOR with an envelope for wah and talk-box effects.

WVFM

Wave FM

Engine 19



The selected wave is phase-modulated by a sine at the same pitch, so FM brightness and grit work with any wave.

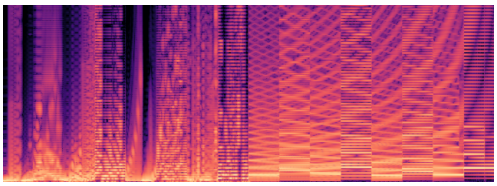
TIMBRE	Carrier wave
COLOR	Modulation index. Finer control near the minimum.
TRIG	Hard sync

TIP The CHIP and ANLG regions take FM particularly well.

BEND

Phase Bend

Engine 20



Casio-style phase distortion applied to any wave: the first half of each cycle is squeezed and the second half stretched.

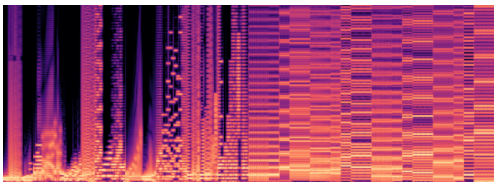
TIMBRE	Wave being bent
COLOR	Bend amount (knee moves from 50% to 3% of the cycle)
TRIG	Hard sync

TIP On smooth waves BEND adds a resonant-sounding edge; on complex waves it compresses the detail into a bright, buzzy attack.

RING

Ring Modulator

Engine 21



The selected wave multiplied by an internal sine at a ratio of the pitch, from sub-octave to inharmonic bell ratios.

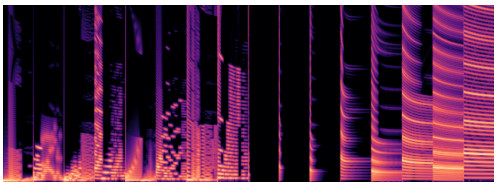
TIMBRE	Wave being modulated
COLOR	Sine ratio (12 steps): 0.25, 0.5, 1, 1.0035 (slow beating), 1.5, 2, 2.76, 3, 3.5, 4.2, 5, 7.13
TRIG	Hard sync

TIP Ratios 2.76, 4.2 and 7.13 are inharmonic: use them for bells and metallic percussion.

PING

Struck Wave

Engine 22



A self-contained percussive voice. Each trigger restarts the wave with a bright, slightly pitch-dropping attack, which then darkens and fades.

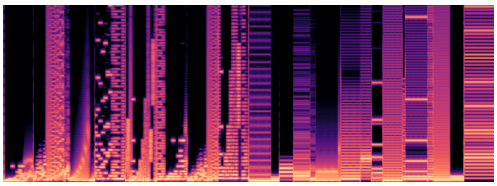
TIMBRE	Wave being struck
COLOR	Decay time: 5 ms → 5 s
TRIG	Strikes the sound

TIP PING needs triggers: patch the TRIG input, or set TSRC to AUTO to strike on every pitch change.

STEP

Wave Sequencer

Engine 23



Every trigger advances through an 8-step cycle of waves, gliding quickly (2 ms) to each new wave. Rhythmic timbre sequencing from a single gate.

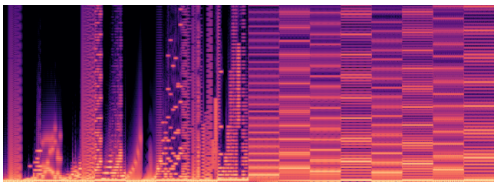
TIMBRE	Starting wave of the cycle
COLOR	Jump size per step: 1 → 12 waves
TRIG	Advances the step and resets the phase

TIP Small jumps give subtle timbre motion; large jumps leap across banks for dramatic changes.

SUB

Sub Oscillators

Engine 24



The selected wave reinforced with sub-oscillators for bass and solid leads.

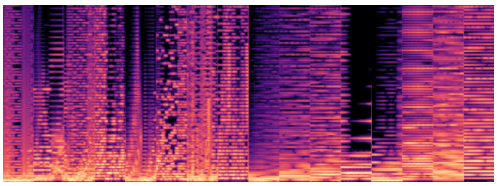
TIMBRE	Main wave
COLOR	First half: a sine one octave below fades in. Second half: a soft square two octaves below is added.
TRIG	Syncs all oscillators

TIP With COLOR fully clockwise and OCTV at −1, SUB is a complete bass voice on its own.

SHIM

Shimmer

Engine 25



A root, an octave and a twelfth, each drifting independently and slowly through the table. Living, evolving pads from a single note.

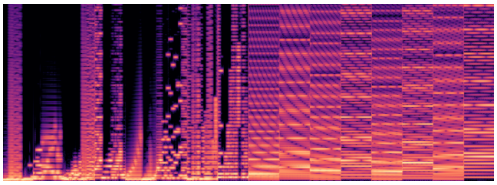
TIMBRE	Centre wave of all three voices
COLOR	Level of the upper voices (0 = root alone)
TRIG	Syncs the root voice

TIP Add a long reverb after SHIM for instant ambient textures.

PHAS

Phase PWM

Engine 26



The wave minus a phase-shifted copy of itself, which brings pulse-width-modulation behaviour to any wave. A slow internal wobble adds movement.

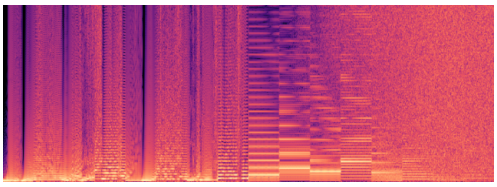
TIMBRE	Wave (whole table)
COLOR	Phase offset 8% → 50% of a cycle
TRIG	Hard sync

TIP On the sawtooth (ANLG region) PHAS is a true PWM oscillator.

FDBK

Feedback

Engine 27



Self-modulation: the output phase-modulates the oscillator. It goes from clean, through sharp and gritty, to full chaos.

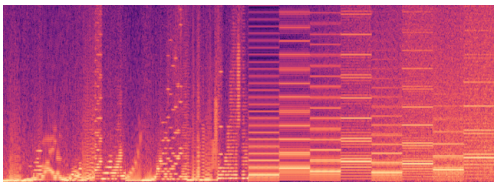
TIMBRE	Wave (whole table)
COLOR	Feedback. Clean below noon, gritty around 3 o'clock, chaotic near the maximum.
TRIG	Hard sync

TIP Modulate COLOR around the edge of chaos for screaming, unstable leads.

AIR

Breath

Engine 28



The wave is modulated by filtered noise in both phase and amplitude: breathy, wind-like and flute-like tones.

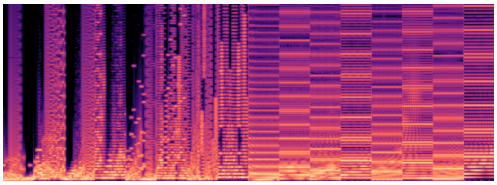
TIMBRE	Wave (whole table)
COLOR	Noise amount. Subtle below noon, windy at the top.
TRIG	Hard sync

TIP Use the smooth waves at the start of the table (sine, triangle) with moderate COLOR for flutes and pan pipes.

TWIN

Twin

Engine 29



Two voices a few cents apart. The second voice plays a wave further along the table, so two different timbres beat against each other.

TIMBRE	Wave of the first voice
COLOR	Distance to the second voice's wave: 0 → 24 waves
TRIG	Hard sync

TIP COLOR at minimum gives a simple chorused oscillator; higher settings give complex, two-timbre blends.

CHAPTER 6

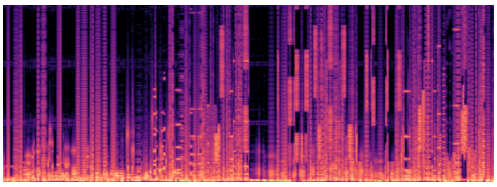
Special engines

The twenty-three special engines follow TWIN. They use the whole 99-wave table like the algorithm engines: **TIMBRE** chooses the wave and **COLOR** controls what makes the engine unique. Many of them also play chords and unison from the MORE page (see chapter 8).

The sound portraits work as in chapter 5: an arpeggio with TIMBRE swept during the first half and COLOR during the second half.

GRAN Granular Cloud

Engine 30



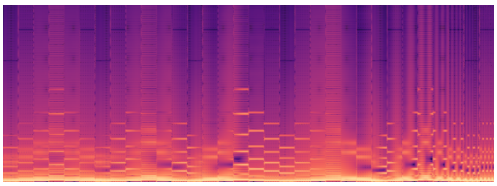
Three overlapping grains (30–150 ms, smooth windows), each picking its own wave near TIMBRE. Soft, shimmering clouds that never repeat.

TIMBRE	Centre of the cloud
COLOR	Spray: how far the grains wander (up to ±24 waves). Above 3 o'clock the grains also jump by octaves and fifths.
TRIG	Not used

TIP Add CHOR DEEP and a long ECHO: GRAN becomes an ambient pad on its own.

VECT Vector Orbit

Engine 31



Vector synthesis: four corner waves (a saw, a vowel, a metallic bell and a glass tone) mixed by a point circling the centre, like a joystick moved in a circle.

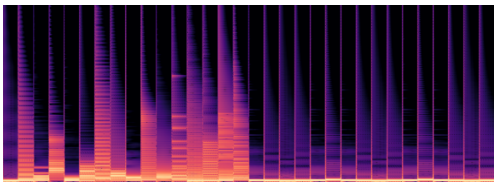
TIMBRE	Radius of the orbit (centre = an even mix of all four)
COLOR	Orbit speed, 0.05 Hz → about 20 Hz
TRIG	Hard sync

TIP Small radius and slow speed for gentle motion; full radius and fast speed for a growling, animated tone.

PLUK

Plucked String

Engine 32



A physical string model (Karplus-Strong) plucked with one cycle of the chosen wave. Smooth waves give soft nylon tones, bright waves give steel and harp.

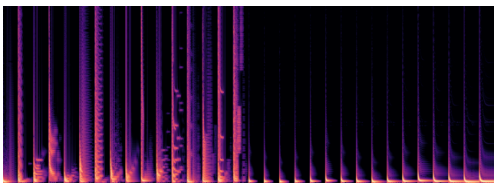
TIMBRE	Wave used as the pick
COLOR	Decay: from a short, muted pluck to a long ringing string
TRIG	Plucks the string

TIP PLUK needs triggers. Patch TRIG, or use ICLK and the arpeggiator on the MORE page.

KICK

Wave Drum

Engine 33



A drum voice: the wave with a fast falling pitch sweep and its own decay. Sine-like waves make kicks and toms; complex waves make zaps and electro percussion.

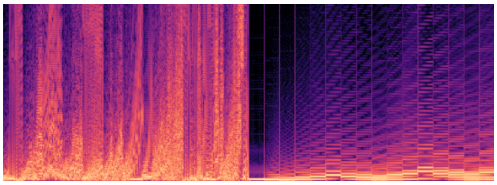
TIMBRE	Wave of the drum
COLOR	Length and depth together: short and tight (80 ms, 1 octave of sweep) → long and boomy (1.2 s, 3 octaves)
TRIG	Hits the drum

TIP Play KICK from ICLK with RTCH and SWNG for instant rhythms; set V/OCT low (or OCTV −2) for deep kicks.

WFLD

Wavefolder

Engine 34



A west-coast wavefolder after the wavetable: as the drive rises the wave folds back on itself, adding bright, moving harmonics.

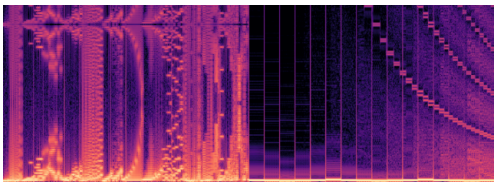
TIMBRE	Wave going into the folder
COLOR	Drive 1× → 8×
TRIG	Hard sync

TIP An envelope on COLOR (env COL) gives a strike of bright folds that settles back to the pure wave.

LOFI

Lo-Fi Crusher

Engine 35



A built-in bit crusher and sample-rate reducer for one engine: from slightly gritty to broken 3-bit video-game sound.

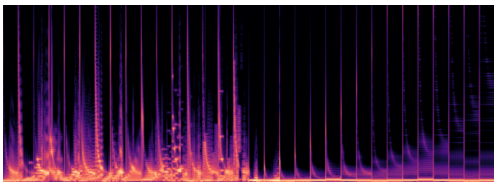
TIMBRE	Wave
COLOR	Crush: bit depth 12 → 3 bits, sample-rate reduction up to 32×
TRIG	Hard sync

TIP Unlike BITS and RATE in the menu, LOFI is on a knob, so it can be modulated with CV or the envelope.

ACID

Acid Filter

Engine 36



The wave through a resonant 12 dB low-pass filter with its own decay envelope: squelchy, classic bass-line tones.

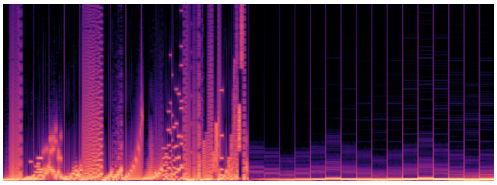
TIMBRE	Wave going into the filter
COLOR	Cutoff, 50 Hz → 6 kHz. Each trigger adds up to 4 octaves of envelope on top.
TRIG	Opens the filter (and syncs)

TIP Clock it with ICLK, set GLID to 3 and DRIV to 6 for a full acid line; random notes with TRNT.

MIRR

Mirror

Engine 37



The wave mixed with its own mirror image (played backwards). The sum keeps only the even part of the shape, the difference only the odd part.

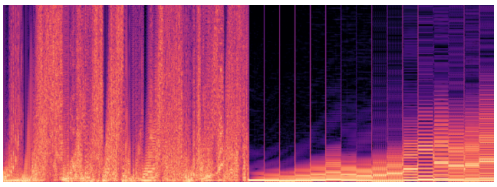
TIMBRE	Wave
COLOR	Fully counter-clockwise: even part → 12 o'clock: the wave → fully clockwise: odd part
TRIG	Hard sync

TIP On asymmetric waves (saws, CZ, FOLD) the two ends sound very different: modulate COLOR for a hollow-to-bright sweep.

XMOD

Cross Modulation

Engine 38



The wave is phase-modulated by a second wave taken from the opposite half of the table, so every carrier gets a different, rich modulator.

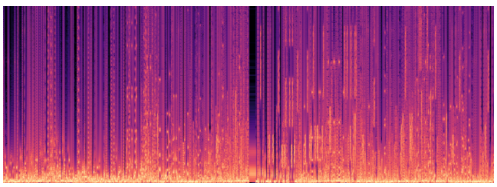
TIMBRE	Carrier wave (the modulator follows 48 waves away)
COLOR	First half: modulation index. Second half: full index with ratio 1.5, 2, 3, 4
TRIG	Syncs both waves

TIP Use a stepped CV on COLOR to jump between ratios for bell and metallic tones.

DICE

Random Waves

Engine 39



A new random wave is chosen on every single cycle. At low ranges it adds a subtle, analog-like shimmer; at high ranges it becomes a gritty, noisy buzz.

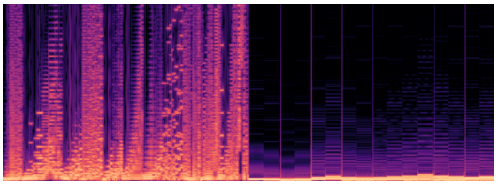
TIMBRE	Centre wave
COLOR	Range of the dice: 0 (fixed wave) → ±48 waves
TRIG	Hard sync

TIP With COLOR low and TIMBRE in VOX or GLAS, DICE sounds like a breathy, living version of the wave.

DRAW

Drawbar Organ

Engine 40



Four footages (sub, root, octave and twelfth) of the same wave, mixed by 8 registrations. Any wave of the table becomes an organ.

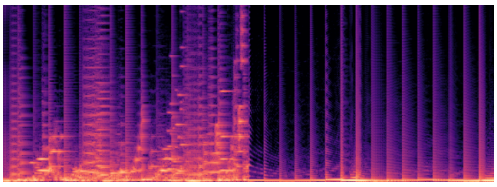
TIMBRE	Wave of all four footages
COLOR	Registration (8 steps), from the root alone to full and bright
TRIG	Not used

TIP Use with CHOR ENS and a little VIB for a rotary-speaker flavour.

COMB

Comb Filter

Engine 41



The wave through a resonant comb filter tuned to the note. The comb adds a metallic, flanged or string-like resonance.

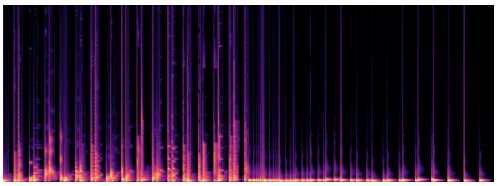
TIMBRE	Wave going into the comb
COLOR	Comb tuning: from a quarter to two periods of the note
TRIG	Hard sync

TIP Sweep COLOR slowly for a flanger-like effect that tracks pitch.

BNCE

Bouncing Ball

Engine 42



Every trigger drops a ball: a series of pings that get quieter and faster, like a ball bouncing to rest.

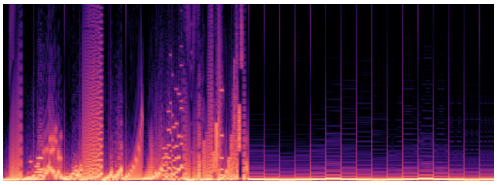
TIMBRE	Wave of the pings
COLOR	Bounciness: the first gap, 100 → 400 ms
TRIG	Drops the ball

TIP Random CV on TIMBRE and a slow clock make playful, generative percussion. Add ECHO for more bounces.

PHSR

Phaser

Engine 43



The wave through a 4-stage phaser with feedback and its own sweep. Classic swirling motion built into the oscillator.

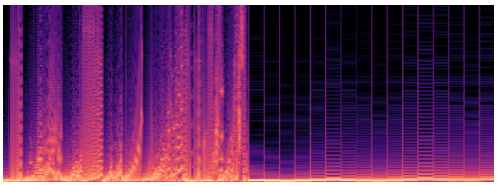
TIMBRE	Wave
COLOR	Sweep rate, 0.05 Hz → about 20 Hz
TRIG	Hard sync

TIP Slow COLOR on pads and strings, fast COLOR for a vibrato-like wobble.

RECT

Rectifier

Engine 44



Half-wave and full-wave rectification of the wave. Full-wave rectifying jumps the tone up an octave with a bright, buzzy character.

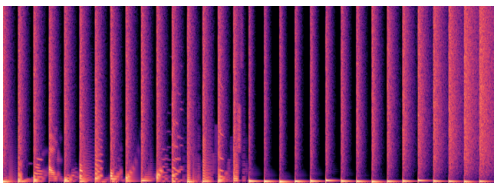
TIMBRE	Wave
COLOR	Plain wave → half-wave (12 o'clock) → full-wave (octave up)
TRIG	Hard sync

TIP Modulate COLOR around the second half for octave-switching effects.

SNAR

Snare Drum

Engine 45



A snare: a short tone from the wave with a little pitch drop, plus filtered noise for the rattle of the snares.

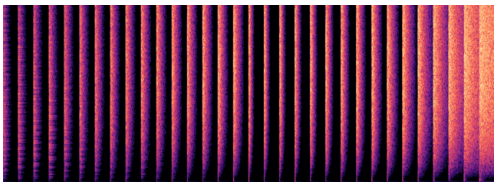
TIMBRE	Wave of the drum body
COLOR	Snappy: more noise and a longer rattle (20 → 130 ms)
TRIG	Hits the drum

TIP Low V/OCT and a smooth wave for a fat 808-style snare; higher, with a bright wave, for a tight rim-like crack.

HATS

Hi-Hat

Engine 46



Metallic cymbal sound from six square waves at inharmonic ratios (the classic analog drum-machine recipe), high-passed.

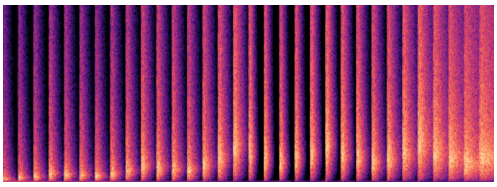
TIMBRE	Metal → noise
COLOR	Closed → open (decay 20 ms → 600 ms)
TRIG	Hits the hat

TIP V/OCT retunes the metal: a stepped CV makes the hats change colour every step.

CLAP

Hand Clap

Engine 47



Three quick bursts of noise and a tail, through a band-pass filter: the sound of a group clapping.

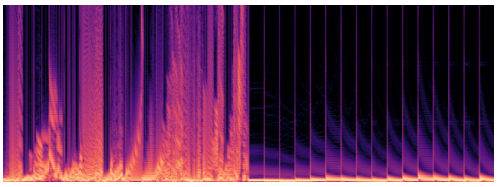
TIMBRE	Tone of the clap (band-pass 700 Hz → 5 kHz); V/OCT moves it too
COLOR	Length of the tail
TRIG	Claps

TIP Add a short ECHO for a bigger room.

EPNO

Electric Piano

Engine 48



An FM electric piano: the wave is phase-modulated by a sine at the same pitch. The attack is bright and mellows as the note rings out.

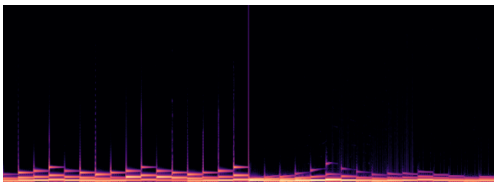
TIMBRE	Wave (smooth waves for classic tines, bright ones for a harder sound)
COLOR	Hardness: how bright the attack is
TRIG	Plays a note

TIP Use with CHOR LITE and a little VIB for a classic stage-piano tone. Notes ring for about a second.

MODL

Mallets

Engine 49



Modal percussion: one cycle of the wave strikes three tuned resonators, like a mallet hitting a drum skin, a marimba bar, a glockenspiel or a bell.

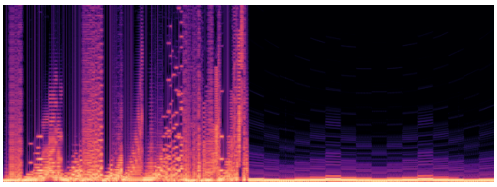
TIMBRE	The mallet (the wave): soft waves for felt mallets, bright waves for hard ones
COLOR	Material: membrane → marimba → bar → bell (they morph into each other)
TRIG	Strikes

TIP With ICLK and the arpeggiator, MODL plays marimba patterns on its own.

SHEP

Endless Tone

Engine 50



A Shepard tone: four octaves of the wave glide up or down forever, fading in at the bottom and out at the top, so the pitch seems to rise (or fall) without end.

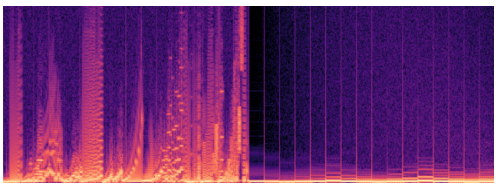
TIMBRE	Wave
COLOR	Direction and speed: 12 o'clock is still, clockwise rises, counter-clockwise falls (up to an octave in 2 s)
TRIG	Not used

TIP Slow speeds and echo make tension-building risers for live sets.

TAPE

Worn Tape

Engine 51



The wave as if played from an old cassette: wow and flutter wobble the pitch, the tape saturates, the highs roll off and hiss creeps in.

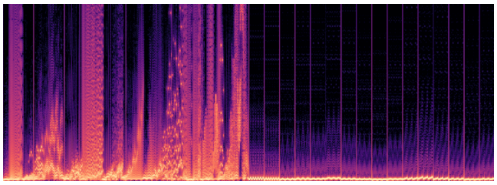
TIMBRE	Wave
COLOR	Wear: from a clean tape to a well-loved one
TRIG	Hard sync

TIP TAPE plays chords from the MORE page: try CHRD MIN7 with the ADSR for lo-fi keys.

TRKR

Chip Arpeggio

Engine 52



The classic chip-music chord: the wave jumps through the notes of a chord 50 times a second, so one voice sounds like a chord.

TIMBRE	Wave
COLOR	Chord: octave, power, major, minor, sus4, maj7, min7, diminished
TRIG	Restarts the arpeggio

TIP Square and pulse waves (TIMBRE in the CHIP region) give the authentic 8-bit sound.

CHAPTER 7

Settings menu

Click the encoder to enter the menu, turn to choose an item, and click to edit it. Turn to change the value and click again to go back to the list. Settings are saved automatically and kept when the power is off.

On the display, the envelope items start with a small envelope symbol (shown here as “env”).

Item	Values	Function
WAVE	52 engines	Engine selection (also directly on the encoder).
META	OFF / ON	When ON, the FM input selects the engine instead of modulating pitch. Rising CV steps upward through the list from the engine selected with WAVE.
BITS	2BIT … 16B	Bit depth of the output (2, 3, 4, 6, 8, 12, 16 bits). Lower values add digital crunch.
RATE	4KHZ … 96K	Output sample rate (4, 8, 16, 24, 32, 48, 96 kHz). Lower values add aliasing and a lo-fi character.
TSRC	EXT. / AUTO	Trigger source. EXT.: the TRIG jack. AUTO: also triggers automatically when the V/OCT pitch changes by more than about half a semitone.
TDLY	NONE … 4ms	Delays incoming triggers by 125 µs to 4 ms, so a V/OCT voltage arriving just after the gate is captured correctly.
ENV	AD / ADSR	Envelope type. AD: fires on each trigger (as before). ADSR: follows the gate at TRIG.
env ATT	0 … 15	Attack time of the internal envelope.
env DEC	0 … 15	Decay time of the internal envelope.
env SUS	0 … 15	Sustain level (ADSR only).
env REL	0 … 15	Release time after the gate falls (ADSR only).
env FM	0 … 15	Envelope amount to pitch.
env TIM	0 … 15	Envelope amount to TIMBRE (wave position).
env COL	0 … 15	Envelope amount to COLOR.
env VCA	OFF / ON	When ON, the envelope also shapes the output level, so the module becomes a complete voice.
RANG	EXT. / FREE / XTND / 440	Range of the COARSE knob. EXT.: ±4 octaves around the V/OCT note. FREE: ±4 octaves around C3. XTND: wider range, without accurate V/OCT scaling. 440: locked to A = 440 Hz, for tuning.
OCTV	−2 … +2	Octave transposition.
QNTZ	OFF, SEMI, scales	Quantizes V/OCT to semitones or to one of 53 scales: church modes, blues, pentatonic, folk, Japanese, gamelan, gypsy, Arabic, flamenco, whole tone, quarter-tone scales, Indian ragas and (new) 6 chord-tone scales MAJ, MIN, MAJ7, MIN7, DOM7 and SUS4, which only play the notes of the chord.
ROOT	C … B	Root note of the quantizer scale.

Item	Values	Function
FLAT	OFF / ON	Detunes low and high notes slightly, like the tracking imperfections of an analog VCO.
DRFT	OFF, 1, 2, 3, FULL	Random pitch drift, like an unstable analog oscillator.
SIGN	OFF, 1, 2, 3, FULL	Adds subtle waveform imperfections that are unique to your module.
CHOR	OFF, LITE, DEEP, ENS	Chorus: light, deep, or a three-voice ensemble.
RING	OFF, 30 … 1200 Hz	Ring modulator after the oscillator, for robotic and metallic tones.
ECHO	0 … 15	Echo level (0 = off). A BBD-style echo with a darkening repeat.
TIME	125 … 1200 ms, CLK	Echo time, or locked to the clock at TRIG (or ICLK): CLK, CLK. (dotted), CLKT (triplet), CL/2, CLx2.
FDBK	0 … 15	Echo repeats.
MORE	—	Opens the MORE page (chapter 8).
BRIG	3 levels	Display brightness.
CAL.	—	Pitch calibration (see below).
CV tester	—	Bar graphs of the TIMBRE, COLOR, V/OCT and FM inputs, for checking CV ranges.
TCWT	—	Version. Click to show the start-up animation; **holding for 1 s restores all factory settings, including calibration**. (To reset only the sound, use INIT on the MORE page.)

The internal envelope

With ENV on AD, the attack–decay envelope fires on every trigger. With ENV on **ADSR**, it follows the gate at TRIG: attack, decay to the sustain level while the gate is high, and release when it goes low. Either way the envelope amounts can modulate pitch (env FM), the wave position (env TIM), COLOR (env COL) and the output level (env VCA). With env VCA on, TecWT becomes a complete voice: patch only a gate and a pitch CV.

TIP Try RESO or SYNC with env TIM at 8–10 and a short decay for plucked, filter-like sounds without any external filter. For pads: ENV ADSR, ATT 9, SUS 12, REL 11, VCA on.

META mode

With META on, the FM input selects the engine (FMDS on the MORE page then has no effect). 0 V plays the engine chosen with WAVE, and rising voltages step upward through the list. While META is active, the display follows the engine currently playing.

TIP Feed a slow random or stepped CV into FM in META mode for a constantly changing sound palette.

Calibrating V/OCT

Pitch tracking is calibrated at the factory and normally never needs attention. To recalibrate:

1. Disconnect any cable from the **FM** input.
2. Connect a calibrated V/OCT source (keyboard or MIDI-to-CV converter) to **V/OCT**.
3. Set **COARSE** and **FINE** to 12 o'clock.
4. In the menu, go to **CAL.** and hold the encoder for 1 second. The display shows **>C2**.

5. Send exactly **1 V** and click the encoder. The display shows **>C4**.
6. Send exactly **3 V** and click the encoder. Calibration is saved.

NOTE Holding the encoder on the version item (**TCWT**) restores all factory settings and also erases your calibration. Only do this if you intend to recalibrate.

CHAPTER 8

The MORE page

TecWT has a second page of settings, so the main menu stays short. In the menu, scroll to **MORE** and click: the MORE page opens. **BACK** (first and last item) returns to the main menu. Settings are edited as usual: click to edit, turn, click to return. Everything is saved with your settings, and the calibration is never touched.

TIP Every trick works on every engine unless noted. Start with ICLK (no patching needed), then add RTCH, PROB.

FM jack and randomness

Item	Values	What it does
FMDS	PTCH TIMB COLR ECHO RING CHRD PRST	What the FM jack controls: pitch (default), TIMBRE, COLOR, echo, ring frequency, the chord, or the preset (PRST: 0–5 V picks preset 1–8).
RNDT / RNDC	0–15	Each trigger moves TIMBRE / COLOR by a random amount.

Rhythm and triggers

Item	Values	What it does
RTCH	1–4	Ratchet: each note repeats 1–4 times, spread over one clock step.
PROB	6–100 %	Probability that a trigger plays.
SWNG	50–75 %	Swing: every other note is played late.
ICLK	OFF, 40–240 BPM	Internal clock (quarter notes): the module plays with nothing patched at TRIG.
GATE	13–100 %	Gate length of the notes made by ICLK and ratchets (for the ADSR).
TRNT	OFF 1OCT 2OCT	Each note jumps to a random note (in the QNTZ scale when one is set).
OCTJ	OFF 25–100 %	Chance of a random octave jump, up or down.

Arpeggiator and voice

Item	Values	What it does
ARP	OFF UP DOWN UPDN RAND UP2 CONV	Arpeggiator, stepped by each trigger (or ICLK). CONV plays from the outside in.
ACRD	OCT 5TH MAJ MIN SUS4 MAJ7 MIN7 DOM7 ADD9 DIM	The chord the arpeggiator plays.
ARNG	1–3	Arpeggiator range in octaves.
GLID	0–15	Glide between notes (up to 2.5 s).
VIB / VRAT	0–15 / 0–15	Vibrato depth (up to a semitone) and rate.

Chord mode

Chord mode and DTUN work on the 12 bank engines and on SCAN, WNDR, PING, STEP, SUB, KICK, WFLD, LOFI, ACID, COMB, BNCE, PHSR, RECT and TAPE. SUPR, CHRD, SHIM, TWIN, GRAN, DRAW and SHEP already have several voices; the other engines play one note.

Item	Values	What it does
CHRD	OFF OCT 5TH MAJ MIN SUS4 MAJ7 MIN7 DOM7 ADD9 DIM	Chord mode: three voices on a chord from one V/OCT. Four-note chords leave out the fifth.
STRM	0–15	Strum: the notes of the chord start up to 30 ms apart.
INV	ROOT 1ST 2ND	Chord inversion.
SPRD	OFF ON	Spread: the top note goes up an octave.
HARM	OFF ON	Chord and arpeggio notes stay in the QNTZ scale (diatonic chords).
DTUN	0–15	Unison: two detuned copies of the voice (when CHRD is OFF).

Effects

The effects run after the oscillator, on top of CHOR, RING and ECHO in the main menu. If everything is turned on at once on the heaviest engines, TecWT automatically lightens the chorus, drive and filter so the sound never breaks up.

Item	Values	What it does
DRIV	0–15	Drive (soft saturation).
FILT / FCUT	OFF LP HP BP / 0–31	Output filter and its cutoff.

Presets and workflow

A preset stores the engine and every sound setting, from both pages. With FMDS on PRST, a CV on the FM jack switches presets.

Item	Values	What it does
SAVE	SV 1–SV 8	Choose a slot, then **hold** the encoder: the display says SAVD.
LOAD	LD 1–LD 8	Choose a slot, then **hold** the encoder: LOAD (or EMPT for an empty slot).
INIT	–	Hold the encoder: all sound settings back to default (calibration, presets and favorites stay).
FAVS	OFF ON	On the engine screen, **hold** the encoder to mark an engine as a favorite (FAV+ / FAV–). With FAVS ON, the encoder only stops on favorites.

Display

Item	Values	What it does
DISP	NAME NOTE LEVL	Engine screen: the engine name, the note being played, or a level meter.

Item	Values	What it does
SAVR	OFF 1MIN 5MIN 10M	Screensaver: the logo text scrolls after this long without touching the encoder.
LOGO	OFF ON	Boot logo: the logo text scrolls at power-up. **Hold** the encoder on LOGO to edit the text (turn to choose each letter, click for the next).

CHAPTER 9

Patch ideas

Patch	Engine	How
Talking bass	VOX	OCTV −1, COLOR at 12 o'clock. Sequence TIMBRE with a stepped CV alongside the bass line so every note gets its own vowel.
Filterless pluck	RESO	Turn on env VCA, set DEC to 6 and env TIM to 10, with TIMBRE low. Each trigger opens a resonant "cutoff" that falls with the envelope.
Instant pad	SHIM	COLOR at 2 o'clock, TIMBRE in the GLAS region (about 80%). Hold a chord progression on V/OCT, or quantize to a mode with QNTZ.
Huge lead	SUPR	COLOR at 10 o'clock for a gentle spread, TIMBRE in the ANLG or SYNC region. Add a slow LFO on TIMBRE.
Chord machine	CHRD	QNTZ to a major scale. Patch a stepped CV into COLOR to change chord quality while a sequencer plays roots.
Generative percussion	PING	TSRC on EXT., clock into TRIG, random CV into TIMBRE, COLOR at 9 o'clock. Every hit is a different metal or wood.
Timbre sequencer	STEP	Clock into TRIG, COLOR at minimum for small steps through a bank, or at maximum for bold jumps across the table.
Vector synthesis	MAP	Two slow LFOs at different rates on TIMBRE and COLOR. The sound wanders across the 12 × 8 wave map.
Sync sweep	SYNC	Envelope or slow LFO on TIMBRE. The hard-sync sweep is baked into the bank, so no second oscillator is needed.
Acid line	ACID	ICLK 130, TRNT 1OCT with QNTZ on a minor scale, GLID 3, DRIV 6. COLOR sets the cutoff; each note opens the filter.
Drum machine	KICK	ICLK 120, SWNG 60 %, RTCH 2 now and then. TIMBRE low for kicks, higher for zaps; RNDT adds variation.
Strummed chords	ANLG	ENV ADSR with VCA on, CHRD MIN7, STRM 10, CHOR LITE and a little ECHO. Play roots from a keyboard gate.
Harp arpeggio	PLUK	ICLK 100, ARP UPDN, ACRD MAJ7, ARNG 2, ECHO 7 with TIME on CLK. (dotted).
One-module drum kit	KICK	META on, and a stepped CV (a sequencer) into FM: each step picks a drum. Clock TRIG from the same sequencer.
Lo-fi keys	TAPE	ENV ADSR, VCA on, CHRD MIN7, STRM 6, COLOR at 1 o'clock. A slow ECHO finishes the cassette feel.
Granular drone	GRAN	COLOR at 1 o'clock, CHOR DEEP, ECHO 9 with FDBK 10. A slow CV on TIMBRE.
Breathing flute	AIR	TIMBRE fully counter-clockwise (sine and triangle), COLOR at 11 o'clock, env VCA on with a slow attack.

CHAPTER 10

Quick reference

#	Display	Engine	TIMBRE	COLOR	TRIG
1	ANLG	Analog Classics	8 waves of the bank	Tone (dark → bright)	Sync
2	ORGN	Drawbar Organ	8 waves of the bank	Tone (dark → bright)	Sync
3	VOX	Vowels	8 waves of the bank	Tone (dark → bright)	Sync
4	FM	FM Spectra	8 waves of the bank	Tone (dark → bright)	Sync
5	SYNC	Hard Sync	8 waves of the bank	Tone (dark → bright)	Sync
6	FOLD	Wavefolder	8 waves of the bank	Tone (dark → bright)	Sync
7	RESO	Resonant Filter	8 waves of the bank	Tone (dark → bright)	Sync
8	CZ	Phase Distortion	8 waves of the bank	Tone (dark → bright)	Sync
9	METL	Metallic	8 waves of the bank	Tone (dark → bright)	Sync
10	CHIP	8-bit	8 waves of the bank	Tone (dark → bright)	Sync
11	GLAS	Glass	8 waves of the bank	Tone (dark → bright)	Sync
12	NOIZ	Noise Spectra	8 waves of the bank	Tone (dark → bright)	Sync
13	MAP	2-D Wave Map	Wave in bank	Bank	Sync
14	SCAN	Self-Scanning	Wave in table	LFO speed	Sync
15	WNDR	Wander	Wave in table	Wander speed	Sync
16	SUPR	Super Unison	Wave in table	Detune	Sync (centre)
17	CHRD	Chords	Wave in table	Chord type	—
18	FORM	Formant	Wave in table	Formant ratio	Sync
19	WVFM	Wave FM	Wave in table	FM index	Sync
20	BEND	Phase Bend	Wave in table	Bend amount	Sync
21	RING	Ring Modulator	Wave in table	Ratio	Sync
22	PING	Struck Wave	Wave in table	Decay	Strike
23	STEP	Wave Sequencer	Wave in table	Jump size	Next step
24	SUB	Sub Oscillators	Wave in table	Sub mix	Sync
25	SHIM	Shimmer	Wave in table	Upper voices	Sync (root)
26	PHAS	Phase PWM	Wave in table	Phase offset	Sync
27	FDBK	Feedback	Wave in table	Feedback	Sync
28	AIR	Breath	Wave in table	Noise	Sync
29	TWIN	Twin	Wave in table	Wave distance	Sync
30	GRAN	Granular Cloud	Centre	Spray	—
31	VECT	Vector Orbit	Orbit radius	Orbit speed	Sync
32	PLUK	Plucked String	Pick wave	Decay	Pluck
33	KICK	Wave Drum	Wave	Length / sweep	Hit
34	WFLD	Wavefolder	Wave	Drive	Sync

#	Display	Engine	TIMBRE	COLOR	TRIG
35	LOFI	Lo-Fi Crusher	Wave	Crush	Sync
36	ACID	Acid Filter	Wave	Cutoff	Filter env
37	MIRR	Mirror	Wave	Even / odd	Sync
38	XMOD	Cross Modulation	Carrier	Index / ratio	Sync
39	DICE	Random Waves	Centre	Range	Sync
40	DRAW	Drawbar Organ	Wave	Registration	—
41	COMB	Comb Filter	Wave	Comb tuning	Sync
42	BNCE	Bouncing Ball	Wave	Bounciness	Drop
43	PHSR	Phaser	Wave	Sweep rate	Sync
44	RECT	Rectifier	Wave	Rectify	Sync
45	SNAR	Snare Drum	Body wave	Snappy	Hit
46	HATS	Hi-Hat	Metal / noise	Closed / open	Hit
47	CLAP	Hand Clap	Tone	Tail	Clap
48	EPNO	Electric Piano	Wave	Hardness	Note
49	MODL	Mallets	Mallet	Material	Strike
50	SHEP	Endless Tone	Wave	Up / down speed	—
51	TAPE	Worn Tape	Wave	Wear	Sync
52	TRKR	Chip Arpeggio	Wave	Chord	Restart

CHAPTER 11

Specifications

Engines	52 (12 bank engines, 17 algorithm engines, 23 special engines)
Wavetable	99 single-cycle waves: 12 banks × 8, plus 3 bonus waves
Wave resolution	256 samples per wave, interpolated at 16 bits and more
Anti-aliasing	3 bandwidth levels per wave (127 / 32 / 8 harmonics), chosen automatically by pitch
Polyphony	Up to 5 internal voices (SUPR), 4 (CHRD, DRAW, SHEP), 3 (SHIM, GRAN, and chord mode on 26 engines), 2 (TWIN)
Sample rate	96 kHz, with selectable reduction down to 4 kHz
Output resolution	16-bit, with selectable reduction down to 2 bits
Parameter smoothing	Per sample, on TIMBRE and COLOR
Internal modulation	AD or ADSR envelope to pitch, TIMBRE, COLOR and level; FM jack routable to 7 destinations; random TIMBRE/COLOR per trigger
Rhythm	Internal clock 40–240 BPM, ratchets, probability, swing, arpeggiator (6 patterns, 10 chords, 1–3 octaves)
Effects	Chorus (3 modes), ring modulator, echo up to 1.2 s (clock sync), drive, LP/HP/BP filter
Presets	8 slots, selectable from the menu or by CV; favorite engines
Pitch features	1 V/oct calibrated input, quantizer (semitones plus 53 scales), octave switch, drift, flattening, glide, vibrato, chord mode
Settings storage	Non-volatile; settings, presets and calibration are retained when the power is off. Calibration is kept in its own memory area
Format	Eurorack module with a 4-character LED display

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